JACARANDA

HUMANITIES AND SOCIAL SCIENCES 9

FOR WESTERN AUSTRALIA

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jacaranda
A Wiley Brand

First published 2018 by
John Wiley & Sons Australia, Ltd
42 McDougall Street, Milton, Qld 4064

Typeset in 11/14 pt Times LT Std Roman

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ISBN: 978-0-7303-4930-3 (paperback)

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Cartography by Spatial Vision, Melbourne, and MAPgraphics Pty Ltd, Brisbane

Illustrated by various artists, diacriTech and Wiley Composition Services

Typeset in India by diacriTech

Printed in Singapore by
Markono Print Media Pte Ltd

10 9 8 7 6 5 4 3 2 1

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It is recommended that teachers should first preview resources on Indigenous topics in relation to their suitability for the class level or situation. It is also suggested that Indigenous parents or community members be invited to help assess the resources to be shown to Indigenous children. At all times the guidelines laid down by the relevant education authorities should be followed.

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CONTENTS

Overview x
Acknowledgements xii

UNIT 1 OUR DEMOCRATIC RIGHTS 1

1 Choosing a government 3

1.1 Overview 3
1.2 Australia's political parties 4
1.3 Voting and the electoral process 8
1.4 Influencing your vote 16
1.5 After the election — the formation of government 21
1.6 The role of the Prime Minister and Cabinet 26
1.7 SkillBuilder: Creating and analysing a table 31
1.8 Review 33

2 Australia's court system 35

2.1 Overview 35
2.2 The court hierarchy 36
2.3 The roles of particular courts 41
2.4 Different courts, different jurisdictions 45
2.5 How the courts make laws 51
2.6 SkillBuilder: Problem solving and decision making 55
2.7 Review 57

3 Australia's justice system 59

3.1 Overview 59
3.2 Is everyone equal before the law? 60
3.3 What makes our courts independent? 63
3.4 Who has the right of appeal? 66
3.5 What happens when the system fails? 68
3.6 SkillBuilder: Creating and analysing a survey 73
3.7 Review 76

UNIT 2 AUSTRALIA AND THE GLOBAL ECONOMY 79

4 The Australian economy 81

4.1 Overview 81
4.2 Participants in the Australian economy 83
4.3 Objectives of the Australian economy 89

4.4 Indicators of economic performance 93
4.5 Trade with other economies 99
4.6 Global events and the Australian economy 102
4.7 SkillBuilder: Questioning and research 105
4.8 Review 106

5 The global economy 108

5.1 Overview 108
5.2 Globalisation and the international economy 109
5.3 Imported products in our local shops 113
5.4 Global supply chains 117
5.5 Transnational corporations 120
5.6 SkillBuilder: Developing graphs from tables 124
5.7 Review 125

6 Managing financial risk 127

6.1 Overview 127
6.2 The role of banks and other deposit-taking institutions 128
6.3 Different types of investment 131
6.4 Protection from financial risk 133
6.5 Managing debt 138
6.6 SkillBuilder: Reading a sharemarket chart 140
6.7 Review 143

7 Innovation and competition in the marketplace 144

7.1 Overview 144
7.2 Innovation 145
7.3 Emerging techniques 148
7.4 Pursuing competitive advantage 153
7.5 Strategies to create competitive advantage 156
7.6 Corporate social responsibility and competitive advantage 162
7.7 SkillBuilder: Analysing a business case study 166
7.8 Review 168

8 Australia's changing work environment 169

8.1 Overview 169
8.2 Participants in the Australian workplace 170
8.3 Changing roles of employees 174
8.4 Employer responsibilities in the workplace 177
8.5 Government responsibilities in the workplace 180
8.6 SkillBuilder: Preparing a résumé 181
8.7 Review 184

UNIT 3 BIOMES AND FOOD SECURITY 185

9 The world of Geography 187

9.1 Overview ... 187
9.2 Geographical concepts ... 189
9.3 Review ... online only

10 All the world is a biome 198

10.1 Overview ... 198
10.2 SkillBuilder: Describing spatial relationships in thematic maps ... online only
10.3 What is a biome? ... 200
10.4 How do we use the grassland biome? ... 203
10.5 What are coastal wetlands? ... 205
10.6 SkillBuilder: Constructing and describing a transect on a topographic map ... online only
10.7 Why are coral reefs unique? ... 208
10.8 What are Australia's major biomes? ... 211
10.9 Why are biomes different? ... 213
10.10 How do we protect biomes? ... online only
10.11 Review ... online only

11 How can we feed the world? 219

11.1 Overview ... 219
11.2 How can we feed the world? ... 220
11.3 What does the world eat? ... 223
11.4 How does traditional agriculture produce food? ... 226
11.5 How did Indigenous people achieve food security? ... 229
11.6 SkillBuilder: Constructing ternary graphs ... online only
11.7 How have we increased our food? ... 234
11.8 How are biomes modified for agriculture? ... 236
11.9 How is food produced in Australia? ... 239
11.10 What does a farming area look like? ... 242
11.11 SkillBuilder: Describing patterns and correlations on a topographic map ... online only
11.12 Why is rice an important food crop? ... 245
11.13 Why is cacao a special food crop? ... online only
11.14 Daly River: a sustainable ecosystem? ... online only
11.15 How can aquaculture improve food security for Indigenous people? ... online only
11.16 Review ... online only

12 What are the impacts of feeding our world? 250

12.1 Overview ... 250
12.2 How does producing food affect biomes? ... 251
12.3 Where have all the trees gone? ... 253
12.4 SkillBuilder: GIS — deconstructing a map ... online only
12.5 Paper profits, global losses? ... online only
12.6 Should we farm fish? ... 257

12.7 **SkillBuilder: Interpreting a geographical cartoon** online only
12.8 How do we lose land? 263
12.9 Irrigation: success or failure? 265
12.10 **Does farming use too much water?** online only
12.11 Why is global biodiversity diminishing? 267
12.12 **Does farming cause global warming?** online only
12.13 **Review** online only

13 Are we devouring our future? 271

13.1 Overview 271
13.2 Who's not hungry? 272
13.3 Who is hungry? 275
13.4 **SkillBuilder: Constructing and describing complex choropleth maps** online only
13.5 **How does a famine develop?** online only
13.6 Will land loss lead to food shortages? 278
13.7 **SkillBuilder: Interpreting satellite images to show change over time** online only
13.8 Are we running dry? 283
13.9 Climate change: freeze or fry? 286
13.10 **Why is food being wasted?** online only
13.11 **Review** online only

14 2050 — food shortage or surplus? 290

14.1 Overview 290
14.2 Can we feed the future world population? 291
14.3 Can we improve food production? 294
14.4 What food aid occurs at a global scale? 298
14.5 **SkillBuilder: Constructing a box scattergram** online only
14.6 Do Australians need food aid? 301
14.7 Is trade fair? 304
14.8 **SkillBuilder: Constructing and describing proportional circles on maps** online only
14.9 How do dietary changes affect food supply? 307
14.10 Can urban farms feed people? 309
14.11 **Review** online only

15 Geographical inquiry: Biomes and food security 313

15.1 Overview 313
15.2 Process 314
15.3 Review 315

UNIT 4 GEOGRAPHIES OF INTERCONNECTIONS 317

16 How do we connect with places? 319

16.1 Overview 319
16.2 How do we 'see' places? 320
16.3 SkillBuilder: Interpreting topological maps ..... online only
16.4 How do we move around our spaces? ..... online only
16.5 What does our land mean to us? 323
16.6 How do places change? 326
16.7 How do we access places? 328
16.8 To walk or not to walk 333
16.9 SkillBuilder: Constructing and describing isoline maps ..... online only
16.10 Are we all on an equal footing? 337
16.11 How do we connect with the world? ..... online only
16.12 Review ..... online only

17 Tourists on the move 341

17.1 Overview 341
17.2 What is tourism? 342
17.3 Who goes where? 347
17.4 SkillBuilder: Constructing and describing a doughnut chart ..... online only
17.5 Who comes and goes in Australia? 350
17.6 SkillBuilder: Creating a survey ..... online only
17.7 SkillBuilder: Describing divergence graphs ..... online only
17.8 What are the impacts of tourism? 354
17.9 What can we learn from our travels? 357
17.10 Are zoos and aquariums eco-friendly? ..... online only
17.11 What is cultural tourism? 359
17.12 Is sport a new tourist destination? 362
17.13 Review ..... online only

18 Buy, swap, sell and give 366

18.1 Overview 366
18.2 How does trade connect us? 367
18.3 How does trade connect Australia with the world? 369
18.4 How is food traded around the world? 373
18.5 SkillBuilder: Constructing multiple line and cumulative line graphs ..... online only
18.6 How has the international automotive trade changed? 377
18.7 Are global players altering the industrial landscape? 379
18.8 Why is fair trade important? 382
18.9 Why does Australia give foreign aid? 384
18.10 Why is the illegal wildlife trade a cause for concern? ..... online only
18.11 SkillBuilder: Constructing and describing a flow map ..... online only
18.12 Review ..... online only

UNIT 5 THE MAKING OF THE MODERN WORLD 389

DEPTH STUDY 1: Investigating the Industrial Revolution (1750–1914)

19 Technology and progress: Industrial revolution (1750–1914) 391

19.1 Overview ... 391
19.2 Examining the evidence ... 393
19.3 Causes of the Industrial Revolution ... 395
19.4 The agricultural revolution ... 398
19.5 The growth of empire ... 403
19.6 Entrepreneurs, banks and the middle class ... 407
19.7 The population explosion ... 410
19.8 Power: from horses, wind and water to steam ... 413
19.9 Making textiles: from home to factory ... 417
19.10 Coal and iron ... 421
19.11 Canals, roads, railways and shipping ... 424
19.12 Industrial innovation spreads to the world ... 431
19.13 **SkillBuilder: Identifying continuity and change** ... online only
19.14 **Review** ... online only

20 The impact on people: Industrial revolution (1750–1914) 436

20.1 Overview ... 436
20.2 Examining the evidence ... 438
20.3 The impact of enclosure ... 440
20.4 Conditions in factories and mines ... 445
20.5 Child labour ... 449
20.6 Urban conditions and people's health ... 453
20.7 Poor laws and workhouses ... 455
20.8 Social unrest and trade unions ... 459
20.9 The growth in ideas ... 463
20.10 Reformers and progress ... 470
20.11 **SkillBuilder: Analysing different perspectives** ... online only
20.12 **Review** ... online only

21 Movement of peoples (1750–1914) 475

21.1 Overview ... 475
21.2 Examining the evidence ... 477
21.3 Overview of slavery ... 479
21.4 Slavery and the cotton trade ... 484
21.5 The end of slavery? ... 486
21.6 Crime and punishment ... 489
21.7 Transportation to Australia ... 491
21.8 Convict life ... 496

21.9 Emigration to Australia 499
21.10 Migration to the goldfields 503
21.11 **SkillBuilder: Analysing cause and effect** ..... online only
21.12 **Review** ..... online only

UNIT 6 THE MAKING OF THE MODERN WORLD 509

DEPTH STUDY 2: Investigating World War I (1914–1918)

22 World War I 511

22.1 Overview 511
22.2 Examining the evidence 513
22.3 What caused the Great War? 516
22.4 The world at war 522
22.5 Australians in the Great War 525
22.6 Gallipoli 528
22.7 Gallipoli: the historical debate 533
22.8 Trench warfare 535
22.9 The Western Front 538
22.10 The home front 541
22.11 The conscription issue 547
22.12 The Eastern Front: collapse and revolution 550
22.13 Peace and commemoration 554
22.14 The war's impact on Australia's international relations 558
22.15 **SkillBuilder: Analysing photos** ..... online only
22.16 **Review** ..... online only

Glossary 564
Index 575

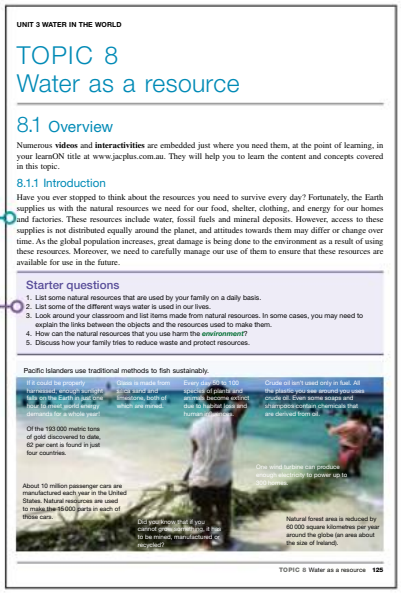
OVERVIEW

The *Jacaranda Humanities and Social Sciences* series has been created specifically for the Western Australian Curriculum. The series covers concepts related to human behaviour and interaction within social, cultural, environmental, economic and political contexts. The suite of resources in the *Humanities and Social Sciences* series is designed to enrich the learning experience and improve learning outcomes for all students.

The *Humanities and Social Sciences* series is designed to cater for students of all abilities: no student is left behind and none is held back. The series is written with the specific purpose of helping students deeply understand humanities and social science concepts. The content is organised around a number of features, in both print and online through Jacaranda's *learnON* platform, to allow for seamless sequencing through material to scaffold every student's learning.

Topic introductions provide context.

Start each topic with engaging questions and discussions.


UNIT 3 WATER IN THE WORLD

TOPIC 8
Water as a resource

8.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

8.1.1 Introduction

Have you ever stopped to think about the resources you need to survive every day? Fortunately, the Earth supplies us with the natural resources we need for our food, shelter, clothing, and energy for our homes and factories. These resources include water, fossil fuels and mineral deposits. However, access to these supplies is not distributed equally around the planet, and attitudes towards them may differ or change over time. As the global population increases, great damage is being done to the environment as a result of using these resources. Moreover, we need to carefully manage our use of them to ensure that these resources are available for use in the future.

Starter questions

1. List some natural resources that are used by your family on a daily basis.
2. List some of the different ways water is used in our lives.
3. Look around your classroom and list items made from natural resources. In some cases, you may need to explain the links between the objects and the resources used to make them.
4. How can the natural resources that you use harm the **environment**?
5. Discuss how your family tries to reduce waste and protect resources.

Pacific Islanders use traditional methods to fish sustainably.

If it could be properly harnessed, enough sunlight falls on the Earth in just one hour to meet global energy demands for a whole year!

Glass is made from silica sand and limestone, both of which are melted.

Every day 50 to 100 species of plants and animals become extinct due to habitat loss and human activities.

Crude oil isn't used only in fuel. All the plastic you see around you uses crude oil. Even some soaps and shampoos contain chemicals that are derived from oil.

Of the 193 000 metric tons of gold discovered to date, 62 per cent is found in just four countries.

One wind turbine can produce enough electricity to power up to 400 homes.

About 10 million passenger cars are manufactured each year in the United States. Natural resources are used to make the 15 000 parts in each of those cars.

Did you know that if you can't grow something, it has to be mined, manufactured or recycled?

Natural forest area is reduced by 60 000 square kilometres per year around the globe (an area about the size of Ireland).

TOPIC 8 Water as a resource 125

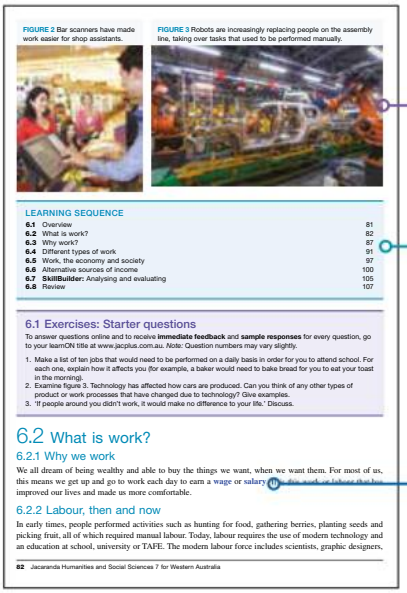


FIGURE 2 Bar scanners have made work easier for shop assistants.

FIGURE 3 Robots are increasingly replacing people on the assembly line, taking over tasks that used to be performed manually.

LEARNING SEQUENCE

6.1	Overview	81
6.2	What is work?	82
6.3	Why work?	87
6.4	Different types of work	91
6.5	Work, the economy and society	97
6.6	Alternative sources of income	100
6.7	**SkillBuilder:** Analysing and evaluating	105
6.8	Review	107

6.1 Exercises: Starter questions

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. Note: Question numbers may vary slightly.

1. Make a list of ten jobs that would need to be performed on a daily basis in order for you to attend school. For each one, explain how it affects you (for example, a baker would need to bake bread for you to eat your toast in the morning).
2. Examine figure 3. Technology has affected how cars are produced. Can you think of any other types of product or work processes that have changed due to technology? Give examples.
3. 'If people around you didn't work, it would make no difference to your life.' Discuss.

6.2 What is work?

6.2.1 Why we work

We all dream of being wealthy and able to buy the things we want, when we want them. For most of us, this means we get up and go to work each day to earn a **wage** or **salary** [illegible] that has improved our lives and made us more comfortable.

6.2.2 Labour, then and now

In early times, people performed activities such as hunting for food, gathering berries, planting seeds and picking fruit, all of which required manual labour. Today, labour requires the use of modern technology and an education at school, university or TAFE. The modern labour force includes scientists, graphic designers,

62 Jacaranda Humanities and Social Sciences 7 for Western Australia

Engaging images reinforce concepts.

See the learning sequence at a glance.

An extensive glossary of key terms in print, and as a hover-over feature in your *learnON* title

Your FREE online *learnON* resources contain hundreds of videos, interactivities and traditional worksheets to support and enhance learning.

12.12 SkillBuilder: Creating and analysing overlay maps

online only

WHAT ARE OVERLAY MAPS?

An overlay map usually consists of two or more maps of the same area. A base map is overlaid with a transparent overlay, showing different information. Overlay maps allow users to see the relationships between the information on two or more maps.

FIGURE 1 Base map with overlay

Go online to access:
- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

learnON ONLINE ONLY
Watch this eLesson: Creating and analysing overlay maps (eles-1645)
Try out this interactivity: Creating and analysing overlay maps (int-3141)

12.13 How could my community be made more liveable?

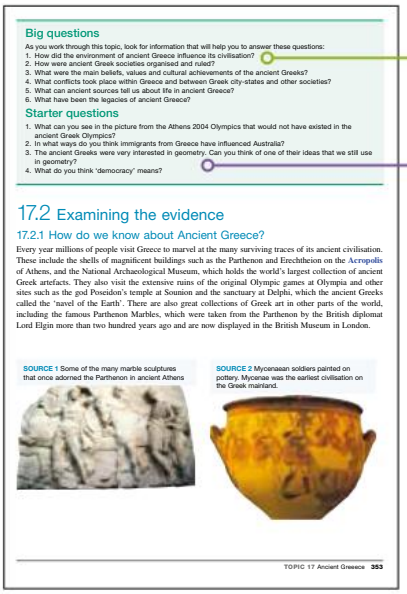
12.13.1 Transport strategies

FIGURE 1 Recreational riding along a trail mainly designed for bicycles

People in towns and cities are always looking for strategies to improve their living conditions. A community is made up of people from a range of age groups, a number of different land uses, a range of needs and a variety of interests. Ideas and plans for improvement may be overarching or targeted.

The movement of people within and between neighbourhoods is an important issue in towns and cities. The humble bicycle is now seen as a way of increasing mobility, reducing traffic congestion, reducing air pollution and boosting health. Bicycle tracks

248 Jacaranda Humanities and Social Sciences 7 for Western Australia


Big questions

As you work through this topic, look for information that will help you to answer these questions:
1. How did the environment of ancient Greece influence its civilisation?
2. How were ancient Greek societies organised and ruled?
3. What were the main beliefs, values and cultural achievements of the ancient Greeks?
4. What conflicts took place within Greece and between Greek city-states and other societies?
5. What can ancient sources tell us about life in ancient Greece?
6. What have been the legacies of ancient Greece?

Starter questions

1. What can you see in the picture from the Athens 2004 Olympics that would not have existed in the ancient Greek Olympics?
2. In what ways do you think immigrants from Greece have influenced Australia?
3. The ancient Greeks were very interested in geometry. Can you think of one of their ideas that we still use in geometry?
4. What do you think 'democracy' means?

17.2 Examining the evidence

17.2.1 How do we know about Ancient Greece?

Every year millions of people visit Greece to marvel at the many surviving traces of its ancient civilisation. These include the shells of magnificent buildings such as the Parthenon and Erechtheion on the **Acropolis** of Athens, and the National Archaeological Museum, which holds the world's largest collection of ancient Greek artefacts. They also visit the extensive ruins of the original Olympic games at Olympia and other sites such as the god Poseidon's temple at Sounion and the sanctuary at Delphi, which the ancient Greeks called the 'navel of the Earth'. There are also great collections of Greek art in other parts of the world, including the famous Parthenon Marbles, which were taken from the Parthenon by the British diplomat Lord Elgin more than two hundred years ago and are now displayed in the British Museum in London.

SOURCE 1 Some of the many marble sculptures that once adorned the Parthenon in ancient Athens

SOURCE 2 Mycenaean soldiers painted on pottery. Mycenae was the earliest civilisation on the Greek mainland.

TOPIC 17 Ancient Greece 353

Carefully graded questions cater for all abilities.

Answers, immediate feedback and sample responses for every question are available in *learnON*.

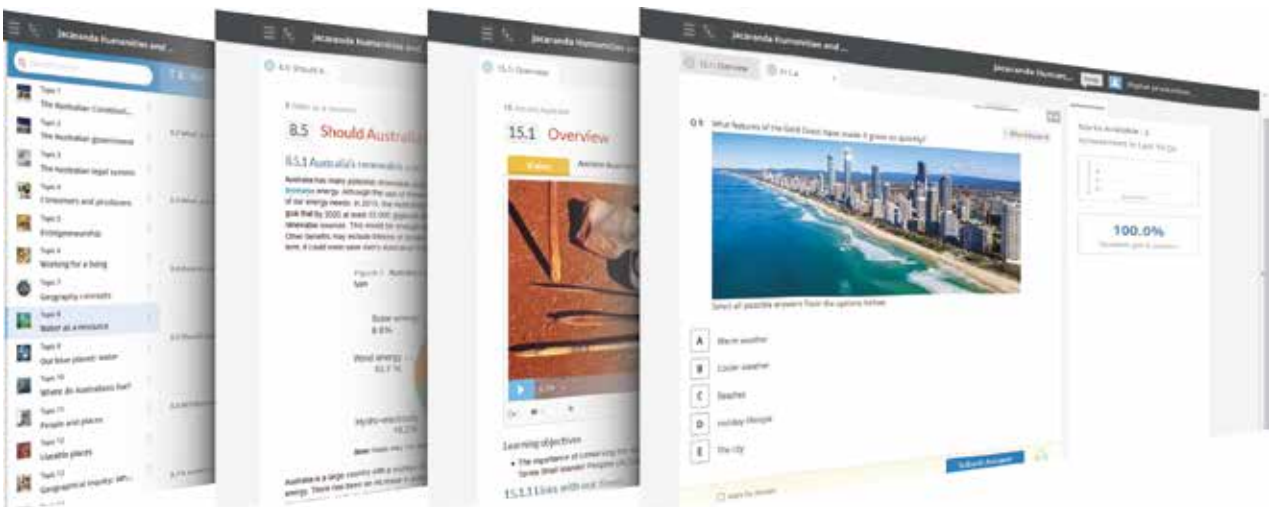
learnON

learnON is Jacaranda's immersive and flexible digital learning platform that transforms trusted Jacaranda content to make learning more visible, personalised and social. Hundreds of engaging videos and interactivities are embedded just where you need them — at the point of learning. At Jacaranda, our 'learning made visible' framework ensures immediate feedback for students and teachers, with customisation and collaboration to drive engagement with learning.

The *Humanities and Social Sciences* series contains a free activation code for *learnON* (please see instructions on the inside front cover), so students and teachers can take advantage of the benefits of both print and digital, and see how *learnON* enhances their digital learning and teaching journey.

learnON includes:

- students and teachers connected in a class group
- hundreds of videos and interactivities to bring concepts to life
- fully worked solutions to every question
- immediate feedback for students
- immediate insight into student progress and performance for teachers
- dashboards to track progress
- collaboration in real time through class discussions
- comprehensive summaries for each topic
- dynamic interactivities help students engage with and work through challenging concepts.
- formative and summative assessments
- and much more …



ACKNOWLEDGEMENTS

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UNIT 1
OUR DEMOCRATIC RIGHTS

1 Choosing a government 3

2 Australia's court system 35

3 Australia's justice system 59

TOPIC 1
Choosing a government

1.1 Overview

1.1.1 Australia's system of government

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

In Australia we have a form of government known as a representative democracy. This means that people elect representatives to sit in the parliament to make laws on their behalf. Members of parliament are elected for a set period of time, so they have to be able to perform well enough to convince the voters to re-elect them after that period of time.

Our federal parliament is made up of the Governor-General, representing the Queen, and two 'houses' — the Senate (upper house) and the House of Representatives (lower house, also known as the people's house). Most members of parliament belong to an organisation known as a political party. The aim of each political party is to win a majority in the House of Representatives and form government. This means winning 76 or more of the 150 electorates (also called seats) in the lower house. Winning government enables the successful political party to run the country until the next election. The party's leader becomes the prime minister, and other senior members of the party become government ministers.

FIGURE 1 Federal Parliament House in Canberra

Each government minister is responsible for a government department, such as health, defence, communications, immigration, social services, the environment, education or foreign affairs. The government employees and public servants in these departments then become responsible for carrying out the policies of the government, acting on the instructions of the minister.

Whichever major party fails to win enough seats in the House of Representatives to form government becomes the Opposition. In the 2016 federal election, a coalition of the Liberal and National Parties won 76 seats and so formed government. The Labor Party won 69 seats and became the Opposition. The leader of the Opposition usually becomes prime minister if the Opposition party wins the next election.

Senior members of the Opposition become shadow ministers. For each government minister, there is a corresponding person in the Opposition who is a shadow minister. A shadow minister is expected to scrutinise the activities of the relevant minister, and will often publicly criticise that minister's performance. This is one way in which ministers and the government remain accountable to the people. Shadow ministers would expect to become ministers if the Opposition wins the next election.

Starter questions

1. Have you ever taken part in an election within your class, or in a sports club? What was the process used? Who voted and how was the vote conducted?
2. What are the names of the major political parties in Australia? Make a list of what you know about each one.
3. How often are elections held in Australia for the federal parliament? What is the difference between federal elections and state elections?
4. Who is the current prime minister of Australia? Which political party does this person represent? How did he or she become prime minister?
5. What is the name of your local federal electorate?
6. Who is your local member of federal parliament? Which political party does he or she represent?

INQUIRY SEQUENCE

1.1 Overview 3
1.2 Australia's political parties 4
1.3 Voting and the electoral process 8
1.4 Influencing your vote 16
1.5 After the election – the formation of government 21
1.6 The role of the Prime Minister and Cabinet 26
1.7 **SkillBuilder:** Creating and analysing a table 31
1.8 **Review** 33

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1.2 Australia's political parties

1.2.1 Different political parties represent different views

Political parties are groups of people who band together because they share the same views about issues they think are important. People join a political party because they support the party's views. The main aim of a political party is to get its candidates elected so it can control government.

Political parties in Australia range from traditional organisations to special interest groups. They work hard to promote their ideas and encourage members of the public to join them. Their main aim is to have

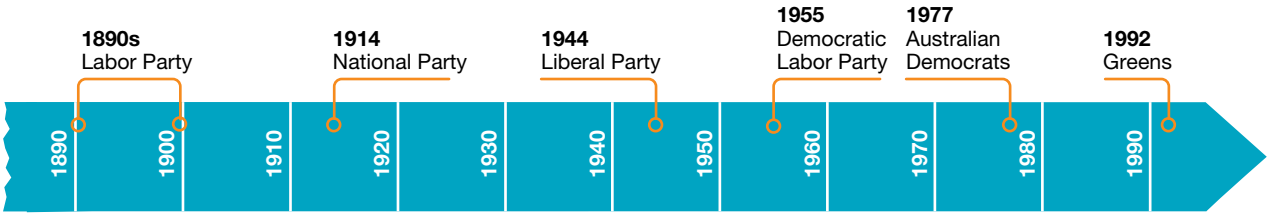
candidates elected to parliament. In this way they can aim to have laws passed that are consistent with their beliefs and values.

All political parties must be registered with the **Australian Electoral Commission**. There are two requirements for this registration:

1. the aims of the party must be submitted
2. the party must have at least 500 **eligible voters** unless the party already has a member in parliament at the time it is formed.

Figure 1 illustrates when the major political parties were formed in Australia.

FIGURE 1 Timeline of Australian political parties



1.2.2 Australian Labor Party

The Australian Labor Party (ALP) is the oldest political party in Australia. It was formed in the 1890s. Unemployment was then high and living conditions were harsh, so workers relied on their trade unions for support and protection. The unions felt they would be more effective if they could gain a voice in parliament. For this reason they formed their own political party to put forward their own candidates for election. This background has meant that trade unions have always had strong links with the Labor Party.

The ALP most recently held government in the federal parliament from 2007 to 2013. During that time it had two changes of leader — Kevin Rudd was initially elected prime minister only to be replaced by Julia Gillard, who in turn was replaced by Mr Rudd when he was reinstated as prime minister shortly before the September 2016 election. When the Labor government was defeated in that election, both Ms Gillard and Mr Rudd left the parliament and Bill Shorten became the Labor Party leader.

FIGURE 2 Leader of the Labor Party and the Opposition, Bill Shorten

The Labor Party believes that government has a responsibility to look after the people. Its main aims are to:

- ensure wealth and power is more evenly and fairly shared in society
- make sure everyone who wants to work can find a job
- abolish poverty and improve the living standards of all Australians
- ensure that all Australians can obtain the education, housing and community services they need.

1.2.3 The Liberal Party of Australia

The Liberal Party of Australia was founded by Robert Menzies in 1944 and first won government in the federal parliament in 1949. In a **coalition** with the National Party, the Liberal Party has been in government for 20 of the last 40 years. In the 2016 election, the Liberal–National coalition won 76 of the 150 seats in the House of Representatives and so was elected to government. The Liberal Party won the largest share of the coalition parties' seats and the leader of the Liberal Party, Malcolm Turnbull, therefore became prime minister.

The Liberal Party believes in individual freedom and free enterprise. Its main aims are to work towards:

- a lean government that minimises interference in daily life and minimises taxes
- a government that encourages private businesses and does not compete with them
- a just and humane society in which the family and the role of law and justice are maintained.

FIGURE 3 Prime minister and leader of the Liberal Party, Malcolm Turnbull

1.2.4 National Party of Australia

The Nationals were established as a federal party in 1920, originally as the Country Party. Since then, the Nationals have been able to form government on several occasions as the junior partner in coalition with the Liberal Party since 1949, and with other parties before that. When the National Party is in government with the Liberal Party, the leader of the National Party becomes deputy prime minister. This position is currently held by Barnaby Joyce. In Queensland, the Liberal Party and National Party combined to form the Liberal National Party (LNP) in 2008.

The Nationals are dedicated to representing people who live, work or operate a business in regional Australia. The Nationals fight for an equality of services, lifestyle and opportunity between the cities and the regions. Their main aims are to:

- provide strong representation of local communities
- ensure security for families through decent health, safety, social and economic welfare standards
- promote individual achievement, free choice and a fair go
- encourage investment, wealth generation and reward for private enterprise.

FIGURE 4 Deputy prime minister and leader of the National Party, Barnaby Joyce

1.2.5 Australian Greens

The Australian Greens party was formed in 1992. It grew out of the activism of environmental groups in the 1980s and based many of its principles on European Greens Parties. The party is currently led by Senator Richard Di Natale from Victoria. Its main aims are to:

- look after the environment and preserve the Earth's resources for the future
- ensure that everyone in our society is treated fairly and with respect
- create a safe, harmonious world in which force is not used to solve differences
- ensure that society is governed by the people, and not run by the wealthy and powerful.

FIGURE 5 Leader of the Greens Party, Richard Di Natale

1.2.6 Palmer United Party

The Palmer United Party (PUP) was founded in 2013 by the wealthy Queensland businessman, Clive Palmer. The party was deregistered in early 2017. He had previously been a supporter of the Liberal National Party in that state. The PUP won two seats in the Senate in the 2013 election, and Clive Palmer was elected to the House of Representatives for the Queensland electorate of Fairfax. He decided not to recontest his seat of Fairfax in the 2016 election and this seat is now held by Liberal National Party member, Ted O'Brien. The party is largely centred around the political views of its leader, and supports the following:

- increased growth in the mining industry
- regional self-government; for example, through the division of Queensland into two states by establishing the new state of North Queensland
- removal of all fees for tertiary education
- a closer economic relationship with Asian countries.

1.2.7 Other small parties

A number of small parties are also represented in the federal parliament.

- Katter's Australian Party has a member, Bob Katter, in the House of Representatives although he was originally a member of the National Party.

In the 2016 federal election, Katter's Australian Party won a seat in the House of Representatives. This seat was retained from the previous election.

- In 2013, Nick Xenophon, originally a member of the Liberal–National coalition, established his own party, Nick Xenophon Team, which won a seat in the House of Representatives and three Senate seats in the 2016 federal election.
- Pauline Hanson's One Nation Party won four seats in the Senate in the 2016 election.
- The Family First Party won one Senate seat in the 2016 federal election.

1.2.8 Independents

Members of parliament who do not belong to a political party are called independents. They sit alone in parliament and may choose to vote with one of the major parties or with minor parties, or abstain from voting. In the 2016 federal election, independent candidate Derryn Hinch won a Senate seat, as did independent Jacqui Lambie, while Cathy McGowan, an independent member of the House of Representatives, retained her seat of Indi in the 2016 federal election.

It is difficult for independent members to be elected because they do not have a party structure and membership to support them. An independent senator will usually be someone who has a high profile across his or her whole state. An independent attempting to be elected to the House of Representatives needs to gain strong local community support in the electorate.

FIGURE 6 Controversial politician Pauline Hanson has re-entered politics after several failed attempts at winning a seat in the both the QLD state parliament and the federal parliament. Her party, Pauline Hanson's One Nation party, won four Senate seats in the 2016 federal election.

FIGURE 7 Nick Xenophon, leader of the Nick Xenophon Team party, has a high profile throughout his home state of South Australia.

1.2.9 Majority rule

Winning the vote in an electorate gives the successful candidate a seat in the House of Representatives. The party with the majority of seats in this house forms the government, and its leader becomes prime minister. As the government, the winning party has the power to make laws for governing the country. Note that all laws must be agreed to by a majority vote in both houses of parliament, not just in the lower house.

1.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What is a political party?
2. What is a coalition?
3. How does a political party become the government?

Explain

4. Why is the trade union movement influential within the Labor Party?
5. Explain what the Liberal Party and National Party have in common that has allowed them to form a coalition in the federal parliament for over 65 years.
6. What are the key policies of the Greens? In what ways are they different from the major parties?
7. Why is it difficult for an independent to win a seat in parliament?

Discover

8. Select one of the political parties described in this section and use the **Political parties** weblinks in the Resources tab to visit that party's website.
   (a) What is your selected party's vision for the future of Australia?
   (b) Identify and explain six key policies that your selected party believes will help achieve this vision.

learnON RESOURCES — ONLINE ONLY

Explore more with these weblinks: Liberal Party, Labor Party, National Party, The Greens, Pauline Hanson's One Nation Party

1.3 Voting and the electoral process

1.3.1 The voting system

We elect representatives to state and federal parliaments, as well as to local councils, to make laws and to take other decisions on our behalf. It is important that the voting system is as fair as possible because this ensures that the composition of parliament is a true representation of the voters' wishes.

1.3.2 The Australian electoral system

The Australian electoral system is based on a number of key principles. These are:

- universal suffrage and secret ballot
- compulsory voting
- fixed or maximum terms for parliament
- one vote, one value
- combinations of single member and multimember electorates
- preferential voting and proportional representation.

FIGURE 1 Our democratic system is based on the principle that all Australian citizens over 18 vote to elect members of parliament.

Universal suffrage and secret ballot

Voting in all parliamentary elections in Australia is through universal adult **suffrage** *or* **franchise**. This means that all Australian citizens over the age of 18 have a right to vote. There are some exceptions to this. For example, anyone serving a prison term of three years or longer cannot vote while they are in prison, but can resume the right to vote once they are released.

We have not always had universal adult franchise in Australia. In the 1850s, colonial parliaments granted the franchise to adult males over the age of 21. In 1902, the right to vote in elections for the Commonwealth Parliament was extended to women over 21. Aboriginal and Torres Strait Islander people were excluded from voting until 1962. The right to vote was lowered from the age of 21 to 18 in 1973.

Australia was one of the first places in the world to introduce a secret ballot for voting. A secret ballot allows every voter to keep their vote private, so that no-one can force them to vote for a particular candidate. Before the introduction of the secret ballot, voters had to announce who they were voting for to an official. This vote was then recorded beside their name, so everyone could see who everyone else voted for. This system often led to the intimidation and bribery of voters. Most of the Australian colonial parliaments introduced the secret ballot in the 1850s. Under this system, voters fill out their voting papers in private, fold them so no-one can see, and place them in a ballot box. Once in the box, there is no way of identifying one voting paper from another.

FIGURE 2 Australia was one of the first countries in the world to use the secret ballot.

Compulsory voting

Compulsory voting is not required by the Australian Constitution, and was only introduced in Australia in 1924. Now, voting for federal, state and territory parliaments is compulsory for all eligible citizens over the age of 18. In some states, voting is also compulsory for local council elections. Failure to vote can result in a fine if the voter does not have a reasonable excuse, such as serious illness on the day of the election. To assist those who may have difficulty voting on election day, a number of alternative methods are available:

- Early voting centres are open in all electorates, often up to three weeks before the actual election. If a voter knows that he or she will be away from their home electorate on election day, it is possible to take advantage of this method.
- Voters can apply for postal votes, which allow them to receive ballot papers before the election and to post them to the appropriate electoral office. Envelopes containing these votes are opened face down to preserve the secrecy of the vote.
- It is possible to vote interstate or overseas if you have not been able to organise early voting or postal voting before travelling.

Australian Electoral Commission and the electoral rolls

All Australian citizens are required to register to vote when they turn 18. This can be done either online or by obtaining an enrolment form from an office of the Australian Electoral Commission (AEC).

The AEC is the official body responsible for the conduct of federal elections. It also maintains a record of all registered voters, known as the electoral roll. This record is updated regularly to allow for new voters to be added, changes of voter addresses to be recorded, and names to be removed when voters die. You can enrol to vote any time after turning 16, although you will not be able to vote until you have turned 18. Failure to enrol to vote can result in a fine.

Fixed or maximum terms for parliament

The Australian Constitution requires that elections for the House of Representatives be held at least every three years. They can be held before three years have elapsed — usually because the prime minister at the time chooses to hold an early election.

All of the states and territories are required to hold elections every four years except Queensland, which has elections every three years. Each state has its own rules for holding these elections. For example, in Victoria the state parliament has a fixed term, with an election held on the last Saturday in November every four years. In some other states, an early election is possible if a state government chooses it so.

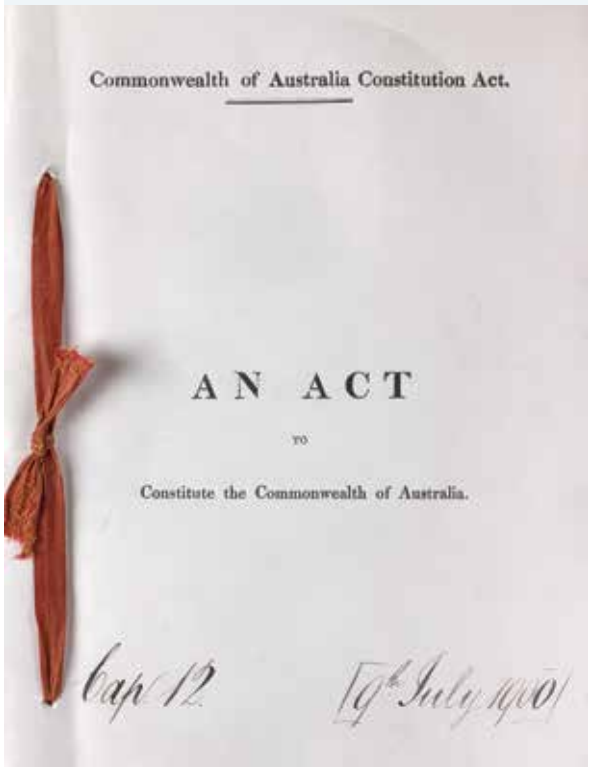
The Senate also has elections every three years, but the rules are different from those in the House of Representatives. All senators are elected for six years, so only half the senators have to face election every three years. This means that the six senators from each state elected in 2007 had to face election in 2013, while those elected in 2010 had to stand for re-election in 2016. However, the calling of a double dissolution (when both houses of parliament are 'dissolved', or shut down) by the prime minister meant that all senators had to face re-election in 2016, including those elected in 2013. There are two senators from each of the two territories, but they are elected only for three-year terms. Some of the states have similar arrangements for their upper houses, with only half the members facing election at a time.

One vote, one value

Each person has only one vote for each house of parliament, so all voters are equal. However, the numbers of representatives and senators elected to parliament differs because of provisions written into the Australian Constitution at federation.

FIGURE 3 All registered voters in an electorate have their names and addresses recorded in the electoral roll.

FIGURE 4 The Australian Constitution requires that elections for the House of Representatives be held at least every three years.



House of Representatives

As far as possible, all federal electorates for the House of Representatives have a similar number of voters. This is to ensure that all votes have as close as possible to equal value throughout Australia. It also means that each state has a different number of electorates, according to population. The average number of voters is around 90 000 in each electorate, with some anomalies. Because the Constitution allows for a minimum of five electorates in any state, Tasmanian electorates have about 70 000 voters each, as Tasmania has the lowest population of the states. Each of the territories is allowed to have two electorates. The population differences between the Northern Territory and the Australian Capital Territory means that each of the Northern Territory electorates has about 60 000 voters, while each of the ACT electorates has about 130 000 voters.

The Senate

One of the original functions of the Senate was to protect the interests of the six states. The representatives of the smaller states were concerned that they could be out-voted in the House of Representatives by the combined members from Victoria and New South Wales. For this reason, the Senate has an equal number of members from each state. Currently this stands at twelve per state, with two from each of the two territories, making a total of seventy-six. The principle of one vote, one value does not apply to the Senate. Consequently, New South Wales with almost 7.5 million people has the same number of senators as Tasmania, which has a population of just over 500 000.

Combinations of single member and multimember electorates

The Commonwealth, state and territory parliaments use a variety of methods to determine the way in which the voters are represented. The House of Representatives has 150 members, with each member representing a single electorate or seat. Figure 5 shows the number of electorates in each state and territory.

The Senate has a different form of representation. Each state and territory is a single electorate for the purpose of electing senators, so all senators effectively represent the entire state or territory rather than a smaller electorate. Each state is effectively a multimember electorate as it has 12 senators representing it at any given time.

The states and territories have a combination of single member and multimember voting systems.

- In New South Wales, Victoria, Queensland, South Australia, Western Australia and the Northern Territory, each lower house is made up of members elected from single member electorates.
- The Tasmanian and ACT lower houses elect members from multimember electorates.
- The New South Wales, Victorian, South Australian and Western Australian upper houses have multimember electorates.
- The Tasmanian upper house has 15 single member electorates.
- The two territories and Queensland have no upper house in their parliaments.

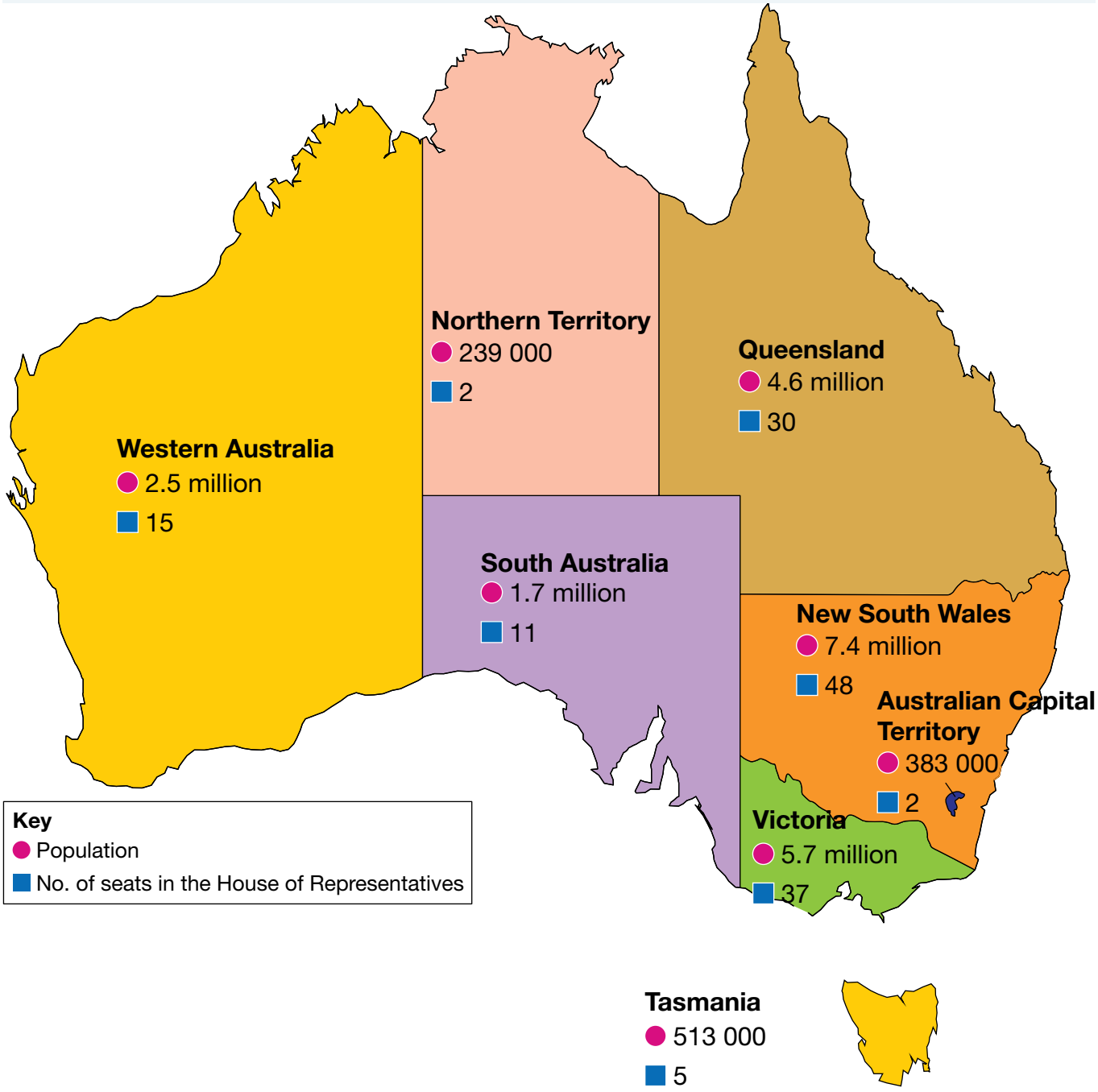
Preferential voting and proportional representation

The type of voting system used in Australian elections depends on whether the election involves single member electorates or multimember electorates. When an election occurs in a single member electorate, a system known as preferential voting is used. In multimember electorates, proportional representation voting is applied.

Preferential voting

A preferential system of voting is used for members of the House of Representatives, and state houses of parliament with single member electorates. This means that voters are usually required to vote for the candidates in order of preference. The voter places the number 1 in the square next to their preferred candidate, the number 2 next to their second preference, and so on down the ballot paper. In House of Representatives elections, voters are expected to place a number in every square. In some state elections, such as for the

FIGURE 5 Population and the House of Representatives



New South Wales lower house, a system of optional preferential voting is used. In this system, the voter only has to number as many squares as he or she wishes. Placing the number 1 beside a square is all that is required to make the vote count. (Section 1.5 discusses the process for counting preferences.)

Proportional representation

Proportional representation is the system of voting used in all elections for multimember electorates in Australia. It is also used for the Senate. In most cases, voters are required to number their preferences on the ballot paper. The votes are divided up in such a way as to elect the required number of successful candidates based on the proportion of the total vote given to each party.

FIGURE 6 The Tasmanian lower house is the only state lower house with multimember electorates.

The counting method is quite complex, but the end result is that the members elected will usually come from a variety of different political parties, including some parties with a relatively small share of the total vote. Candidates are grouped on the ballot paper according to the party they represent. The possibility of being elected with a relatively small share of the vote has usually resulted in a large number of small parties nominating candidates for the Senate. In the 2013 federal election, there were 97 candidates on the Senate ballot paper in Victoria; in New South Wales, the ballot paper included 110 candidates. In each case only six senators were to be elected.

With the number of candidates increasing over the years, it became very difficult for voters to mark all the squares without the risk of missing a number or mistakenly using a number twice. In order to deal with this problem, a system of 'above the line voting' has operated in Senate elections since 1984. This means that instead of placing a number in every square, the voter simply had to place the number 1 above the group representing the political party that he or she preferred. Each political party decides how they want their preferences distributed among the other candidates, so by voting above the line, voters agreed to have their preferences allocated accordingly. Over 90 per cent of voters have voted above the line in recent Senate elections. Voting rules for the Senate changed again following the 2013 election in which minor parties were able to get candidates elected to the Senate with a very small percentage of the primary vote. (The Australian Motoring Enthusiast Party candidate, for example, was elected to the Senate with 0.51 per cent of the primary vote in the 2013 election, but did not win a seat in the 2016 election due to the change

FIGURE 7 In House of Representatives elections, voters are required to number every square next to the candidates' names.

in Senate voting rules.) This so-called gaming of the system was seen as undemocratic, and the calls for reform resulted in a new system of voting for the Senate being introduced in the July 2016 election. Voters are now given the option of numbering at least six boxes above the line for the parties of their choice, or at least 12 boxes below the line for the individual candidates of their choice. The sample Senate voting papers in figures 8 and 9 show the two different methods of voting.

FIGURE 8 Voting below the line: voters must number at least 12 Senate candidates when choosing to vote below the line.

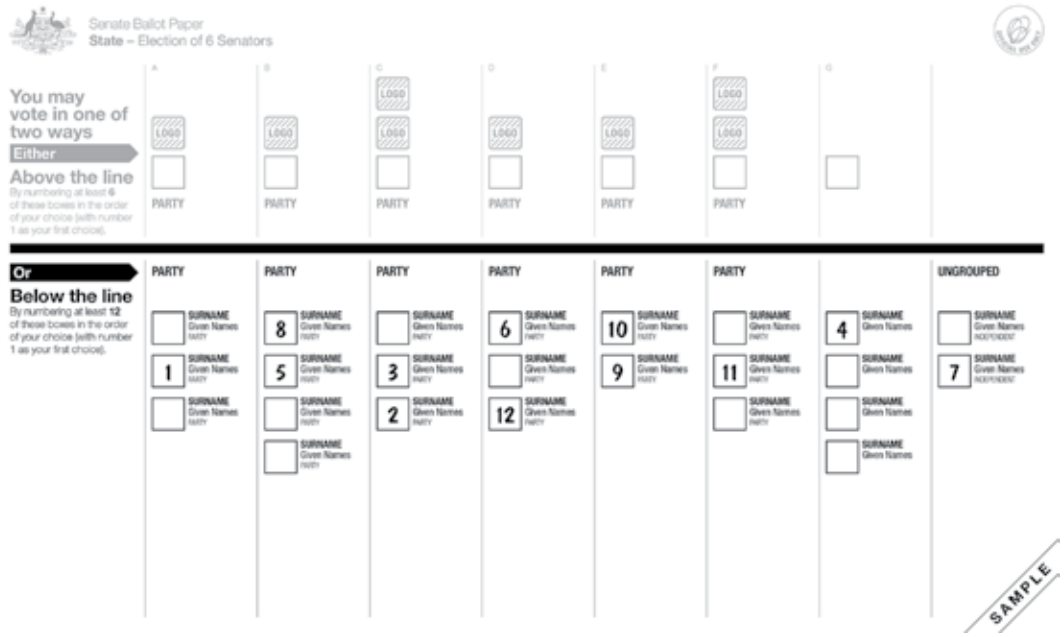
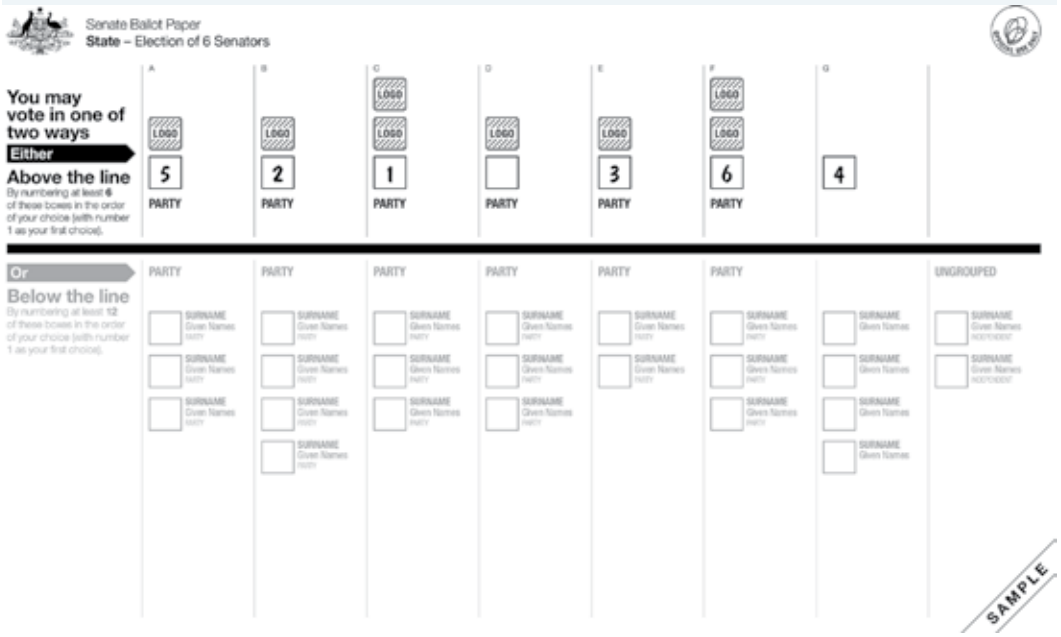


FIGURE 9 Voting above the line: voters can accept the preferences decided by political parties by voting above the line. Under this option, they must number at least six parties.



1.3.3 Federal election day

The procedure for voting in a federal election is shown in figure 10.

FIGURE 10 Voting in a federal election

Elections in Australia are always held on a Saturday. On election day, polling places are open between 8 am and 6 pm. Polling places are usually set up in schools, church halls and similar community buildings.

↓

As you approach the polling place, representatives of the different parties and independent candidates will offer you how-to-vote cards. These are designed to tell you how each party would like you to vote in order to have their candidate elected. They usually include a guide to where they would like you to direct your voting preferences. It is not compulsory to follow these cards — you can number the squares on the ballot paper in any order you wish — but most people do follow them.

↓

When you enter, an official will usually direct you to a table where polling clerks sit with blank ballot papers and copies of the electoral roll for your electorate.

↓

The polling clerk will ask you your name and then locate it in the electoral roll, checking that the address is correct. The clerk will then ask whether you have voted anywhere else that day.

↓

Once these details have been verified, the clerk will place a small mark next to your name in the electoral roll and issue you with two ballot papers.

↓

The House of Representatives ballot paper is always pale green in colour, while the Senate ballot paper is usually white. You take the ballot papers to one of the cardboard polling booths located in the polling place to cast your vote. Pencils are provided for you to fill in your ballot paper.

↓

If you have decided to vote for a particular political party, you can then vote in accordance with the relevant how-to-vote card handed to you outside the polling place. If you wish to number the squares differently from the how-to-vote card, you are free to do so.

↓

All squares must be numbered on the green ballot paper to record a formal vote.

↓

There are two choices for filling out the white Senate ballot paper.

↓ ↓

If you have a preference for a particular political party, you simply place the number '1' in the labelled box above the black line.

If you wish to exercise all your preferences, you must fill in every square below the line.

↓ ↓

If you miss any squares, or accidentally use the same number twice, your vote may be informal. Great care must be taken if you choose to vote below the line, so very few people vote this way.

↓

Once you have voted, you fold the ballot papers to keep your vote secret and take them to the ballot boxes. These are clearly marked for Senate and House of Representatives ballot papers, and are supervised by a polling official

↓

There are usually bins near the door for you to discard how-to-vote cards as you leave the polling place.

1.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What is the meaning of the term 'universal adult suffrage'?
2. What is the electoral roll? How does someone have his or her name and other details included in the electoral roll?
3. Identify two houses of parliament in Australia that have single member electorates.
4. Identify two houses of parliament in Australia that have multimember electorates.
5. What are how-to-vote cards?

Explain

6. What is the importance of the secret ballot?
7. Explain two ways in which you can vote if you are not going to be in your home electorate on election day.
8. Why is it important to have a maximum period of time between parliamentary elections?
9. Explain how the method of electing members to the House of Representatives upholds the principle of one vote, one value. Why is this not the case with the Senate?
10. Explain the difference between preferential voting and proportional representation.

Discover

11. Using internet resources, research the electoral system for your state or territory.
    (a) What is the voting system for the lower house? Does it have single member or multimember electorates?
    (b) What is the voting system for the upper house?
    (c) Do all members of the upper house face election at the same time? If not, explain the system used in the upper house of your state or territory.
12. What is the voting system for your local council? Is voting for local council compulsory in your area?

Think

13. The Australian Constitution does not make voting compulsory, but compulsory voting was introduced by the federal parliament in 1924. Most other countries with parliamentary systems similar to Australia's have voluntary voting. These include Great Britain, New Zealand, the United States and Canada. Over the years many people in Australia have argued that it is undemocratic to force people to vote, and that Australia should switch to voluntary voting.
    (a) Working in groups of four or five, use the internet to research the arguments both in favour of and against compulsory voting.
    (b) Discuss these arguments within your group and decide where your group stands on the issue (in favour, against or undecided).
    (c) Each group should then present its findings to the rest of the class.

learnON RESOURCES — ONLINE ONLY

Watch this eLesson: What is parliament? (eles-2077)

1.4 Influencing your vote

1.4.1 Political campaigns

The key aim of the major political parties is to win government. In order to achieve this, the parties devote a lot of effort and resources to convincing voters to support their candidates. In particular, the parliamentary leaders of the parties will be very visible in these campaigns.

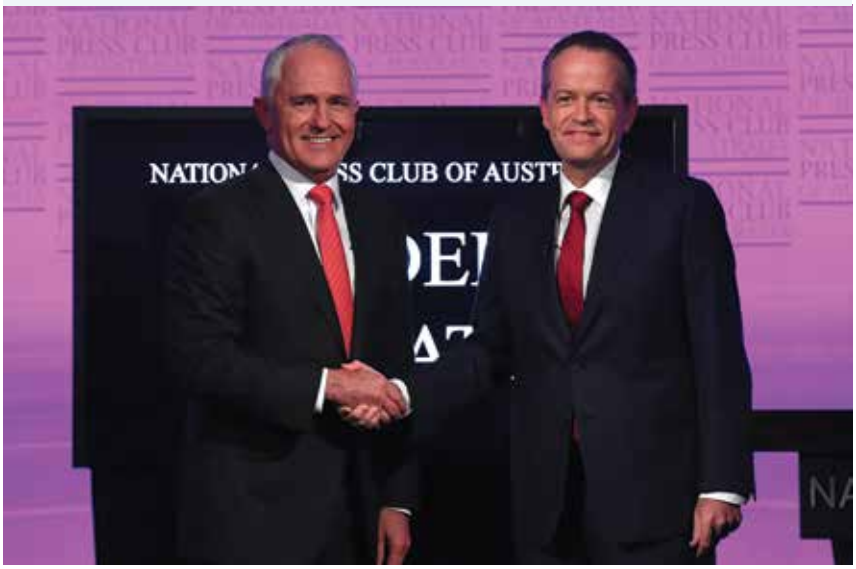
1.4.2 Public debate

During an election campaign, representatives of the parties will often seek opportunities to debate issues with representatives of different parties. Such debates can take a number of formats.

Leaders' debates

It has become a regular part of election campaigns for the leaders of the two major parties to take part in televised debates. This means that the leader of the Liberal Party and the leader of the Labor Party will meet face-to-face for an hour in a previously agreed format. Usually each leader has the opportunity to make an opening statement for a set period of time. This is followed by questions directed to both leaders by a panel of journalists who specialise in writing about political issues. Each leader then has an opportunity to make a final statement to conclude the debate.

FIGURE 1 Party leaders Malcolm Turnbull and Bill Shorten shake hands as they arrive for the leaders' debate at the National Press Club in Canberra on 29 May 2016.



The 2016 federal election debate between the leaders can be viewed by following the **Leaders' debate** weblink in the Resources tab.

Other debates

In addition to the party leaders, other representatives will often appear on TV and radio during an election campaign. Current affairs programs will invite party spokespeople on to debate issues that are within their area of responsibility. For example, the minister for health may appear representing the government while the shadow minister for health will represent the Opposition. Both will be asked questions and given the opportunity to explain their respective party's policies for improving health services. Each representative will be trying to convince the voters that they will be better off by voting for the representative's party.

Interviews and debates between politicians can be found by following the **Political interviews and debates** weblink in the Resources tab.

1.4.3 Traditional media

As well as appearing on current affairs programs to answer questions and debate issues, political parties and their leaders will attempt to use the full range of the media to get their message across. This includes the traditional media outlets of television news, newspapers and radio.

Television news

During an election campaign the two leaders travel around the country, accompanied by journalists and camera crew from all the television stations. Each day they attempt to make a significant announcement or promise that they hope will be broadcast on that evening's television news. This is a recognised strategy that all parties use to ensure they receive daily media coverage.

Newspapers

Just as they make use of television, political parties and their leaders also try to have their message put before voters in daily newspapers. Political parties provide detailed documentation to journalists on every policy and promise. Whether in print or online, newspapers provide an opportunity for these policies to be published in greater detail. Newspapers often use their online editions to provide the means by which their readers can comment on stories and issues of the day. Daily online opinion polls are also a feature of newspapers and allow them to gain speedy feedback from readers on a variety of issues.

FIGURE 2 Newspapers provide an opportunity to communicate political promises and policies in greater detail.

Radio

Radio provides another opportunity for political leaders and other party representatives to present their policies to the public. Current affairs programs on ABC Radio such as *AM* and *PM* carry out regular interviews with leaders, government ministers and Opposition spokespeople. During an election campaign, large portions of these programs are given over to discussing political issues. Talkback radio programs also give political leaders a chance engage with the public. In addition to being interviewed by the host of the radio program, politicians will often have the opportunity to respond to listeners who phone in and ask them questions.

FIGURE 3 During election campaigns, talkback radio hosts regularly interview political leaders.

1.4.4 Opinion polls

Opinion polls are surveys taken of people from all over Australia and from all walks of life. They are conducted by different polling companies. Most of these conduct their surveys by telephoning people and asking them a series of questions. While conducting their surveys, they often also ask the person being surveyed their age and level of income. This is done to help ensure that they survey a broad range of different people.

A small but important part of their business is to conduct surveys on people's attitudes to government policies and actions. To achieve this, they will survey people to find out whether they support or oppose a

FIGURE 4 Opinion polling companies conduct surveys by phoning large numbers of people.

particular policy or political promise. When an election is close, they will also conduct surveys to find out who people intend voting for. It is this polling that can provide the political leaders with feedback on how well they are performing. Opinion polls also alert the leaders to issues that voters are concerned about, and in this way can influence the policies and promises the leaders make during an election campaign.

1.4.5 Advertising

All political parties put together an advertising program as part of their election campaign. Television advertising is the most common form used, but parties will also advertise on radio and in the newspapers. Most advertising has to be short, with a message that is easy to understand. Political parties make use of slogans they hope will be easy to remember. They also try to create a negative impression of their opponents. The party leaders feature heavily in these advertisements because they want voters to identify with that leader as the next prime minister.

Some samples of advertisements used in the 2016 election campaign can be found by following the **Election campaign advertising** weblink in the Resources tab, which also has some commentary on the advertising campaign.

1.4.6 Interest groups

Each party has support among a number of interest groups throughout the community. The Liberal Party has support from a number of business groups, and many of these will donate money to help cover the cost of that party's advertising. In the same way, the Greens often get support from environmental groups, who will provide time and resources to help that party's campaign. Labor has strong links with the trade union movement, so the union movement donates large amounts to that party's campaign. Unions will also often campaign directly against the Liberal Party. In the 2007 election, for example, the unions campaigned strongly against the Liberal government's WorkChoices laws on the grounds that the laws harmed ordinary workers, who were often union members.

FIGURE 5 Unions launched the 'Your rights at work' campaign in response to the Liberal government's WorkChoices laws.

1.4.7 Other political party campaign activities

Political parties have a variety of additional campaign techniques that are used in most elections. These include:

- *Letterboxing*. Parties will print and distribute advertising leaflets during an election campaign. These will usually feature a photo and information about the local candidate, as well as information about the party's policies. Local party members then volunteer to walk around the electorate delivering the leaflets to letterboxes.
- *Polling*. As well as opinion polling companies carrying out surveys of voters' opinions, political parties carry out their own opinion polls, particularly during an election campaign. They want up-to-date feedback on how well their campaign is being received by the voters, whether their policies are popular or not, and how well the leaders are performing. The political parties carry out polling almost every day during an election campaign to achieve this.

- *Doorknocking*. A traditional method of campaigning has been for a candidate to walk around the electorate, knocking on doors to talk to voters. This is less likely to occur during the official campaign, but some candidates may have spent many hours doing this between elections, particularly if they are challenging a well-known member of parliament.
- *Letters to editor and talkback calls*. During an election campaign, there is always a strong emphasis on political issues in the letters pages of the newspapers as well as on talkback radio programs. Members and supporters of political parties regularly send letters to the newspapers, and phone up talkback radio programs during this time. They usually pretend to be ordinary members of the public, and do not reveal their party membership.
- *Handing out how-to-vote cards*. On election day, political parties rely on volunteers and ordinary party members to stand outside polling places and hand out how-to-vote cards.

1.4.8 Social media

In today's world it seems that millions of people are almost constantly connected. Your ability to access websites, email and social media from almost anywhere through your smartphone means that you can express an opinion on any issue, to almost anyone, anytime, anywhere. Political parties and their leaders are very aware of the significance of social media, and have been adopting social media to appeal to the public, particularly younger voters. In recent years they have expanded their efforts on social media in a variety of ways:

- All of the major parties have Facebook pages to keep their supporters updated, and most individual members of parliament have their own Facebook pages. As well as providing information about party policies, individual members use their Facebook pages to provide updates on their activities within their electorates.
- Almost every member of parliament in Australia today has a Twitter account. One of the first to do so was the former prime minister, Kevin Rudd. At its peak his Twitter account had over 1.3 million followers. Prime Minister Malcolm Turnbull has over 640 000 Twitter followers.
- As an example of the power of social media in politics, we only have to look at the American experience. When Barack Obama was running for president of the United States in 2008, his campaign team created election advertising to be shown on YouTube. The material was watched for 14.5 million hours, all free, which is the equivalent of $47 million worth of paid television advertising. President Obama launched his re-election campaign for 2012 on Facebook in April 2011. Voters in the United States can post comments, suggestions and ideas for the future on the president's Facebook page.

Members of parliament, supporters of particular political parties and opponents of the same political parties, as well as people campaigning for changes in the law, can all use social media to get their message across. Members of parliament and candidates for election can publicise their activities and gain immediate feedback from followers through the use of different social media platforms.

FIGURE 6 Everyone can use social media to get their message across.

1.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. Identify two ways in which candidates for parliament can engage in public debate during an election campaign.
2. How can a candidate use radio programs to help his or her campaign?
3. Which interest groups are most likely to support the Australian Greens Party?
4. Outline two ways in which a candidate can make direct contact with voters in his or her electorate.

Explain

5. How do political leaders make use of the evening television news during an election campaign?
6. What advantage do newspapers have over other media during an election campaign?
7. Why are opinion polls an important part of an election campaign?
8. What features must a political advertising campaign have to be successful?

Discover

9. Locate the Facebook page or Twitter account of the leader of one of the major parties.
   (a) What kind of information is made available through this medium?
   (b) How does the leader use social media to promote his or her image to voters?
   (c) Do you think it is successful or not? Give reasons for your answer.
10. Find your local member of parliament's Facebook page or Twitter account.
    (a) What information does the member provide in relation to his or her local community activities?
    (b) How does the member use the social media to promote his or her party's policies?

Predict

11. Imagine that opinion polls indicated that a political party's policy was unpopular with voters during an election campaign. The leader has to take action to change public opinion. What do you think might happen in the following circumstances?
    (a) The leader refuses to change the policy but initiates a new advertising campaign to better explain it.
    (b) The leader makes minor changes to the policy to make it more acceptable.
    (c) The leader drops the policy completely.

learnON RESOURCES — ONLINE ONLY

Explore more with these weblinks: Leaders' debate, Political interviews and debates, Election campaign advertising

1.5 After the election — the formation of government

1.5.1 Counting the votes

After all the polling places close at 6 pm on federal election day, counting of the votes commences immediately. The votes are counted at each polling place in an electorate and then added up for the electorate as a whole. When the votes for all electorates are eventually counted, it will be clear which candidates have won each electorate. The political party that wins at least 76 of the 150 seats in the House of Representatives will be declared the winner of the election and will form government for the next three years.

1.5.2 What's the result?

Once the doors of the polling place are locked at 6 pm, counting of the votes cast during the day commences. The count is usually carried out by the same electoral staff who have managed the election process at the polling place that day. House of Representatives votes are counted before Senate votes.

Counting the House of Representatives votes

The ballot boxes are opened and the green ballot papers are spread onto tables. The polling clerks then sort the ballots according to first-preferences votes, and count them as they go. Any **informal votes** are put to one side and not included in the count.

As well as the polling officials, each candidate is permitted to have at least one **scrutineer** present for the count. Scrutineers are usually members of the candidate's political party. They are required to fill out a form before the polling place closes, and to wear an identification badge while in the polling place. They will carefully watch the count to make sure it is conducted fairly and properly. Scrutineers have the right to challenge any aspect of the count. For example, if a vote is declared informal because there appears to be a mistake in filling it out, the scrutineer may challenge that decision if he or she believes it should be counted as a vote for his or her party's candidate.

FIGURE 1 Polling officials empty ballot boxes in readiness to count the votes.

FIGURE 2 The counting of votes is watched carefully by scrutineers representing each candidate.

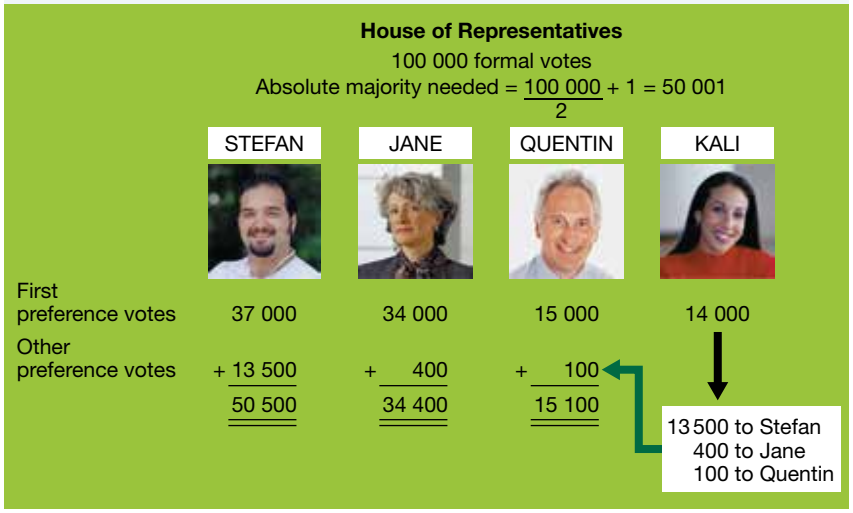
When first preferences have been counted, the results are phoned through to the divisional returning officer. This is the official in charge of the voting process for the whole electorate. The divisional returning officer then enters the results for each polling place in the electorate on the AEC's computerised election-management system. This system tallies the votes for all electorates across Australia and keeps a running total of seats won by each party. The media also has access to these results, and a number of TV channels run special election night programs in which they provide updates and commentary on the progress of the count.

FIGURE 3 Television channels present detailed coverage of vote counting on election night.

In order to be elected, a candidate has to have an absolute majority of votes. This means having 50 per cent of the votes plus one. For example, if there are 100 000 **formal votes** cast in an electorate, a candidate must have 50 001 votes to win. If one candidate has more than this number of first-preference votes, then he or she will be declared elected. If no candidate has that number of first-preference votes, then other preferences on ballot papers have to be counted. The process for doing so is illustrated in figure 4.

As you can see from the example in figure 4, none of the candidates has an absolute majority of 50 001 so preference votes have to be counted. This is done by excluding the candidate with the fewest first-preference votes. In this case, that candidate is Kali, with 14 000 votes. Her votes are counted again, according to where those voting for her allocated their second preference votes. In this case, 13 500 of those who gave Kali their first preference gave their second preference to Stefan. The other 500 of Kali's second-preference votes were split between Jane and Quentin as shown. This distribution of second-preference votes was enough to give Stefan an absolute majority. If there had been no clear winner after Kali's second-preference votes had been distributed, Quentin's votes would have been distributed in the same way — and so on until there was a clear winner.

FIGURE 4 Counting preferences in the House of Representatives seats



Counting the Senate votes

The proportional representation system used in the Senate is far more complex because it has to elect six senators from each state. Each state operates as one electorate for this purpose. You will notice that candidates on the Senate ballot paper are grouped according to the parties they represent. This is based on the expectation that most voters will support a party rather than individual senators in the election. If a voter votes below the line, he or she will usually give first preference to the first candidate in a group, second preference to the second candidate listed in that group and so on to the end of that group before moving to the next group.

If a voter votes above the line for a particular party, the vote is interpreted as giving the voting preferences in exactly the same way. This means that the first candidate gets all the first-preference votes for that party, while the other candidates only get second- or third-preference votes. In a preferential system like that used in the lower house, this would be problem because a candidate needs to have a certain number of first-preference votes to stay in the count. The Senate vote-counting system is quite different, however, so this not an issue.

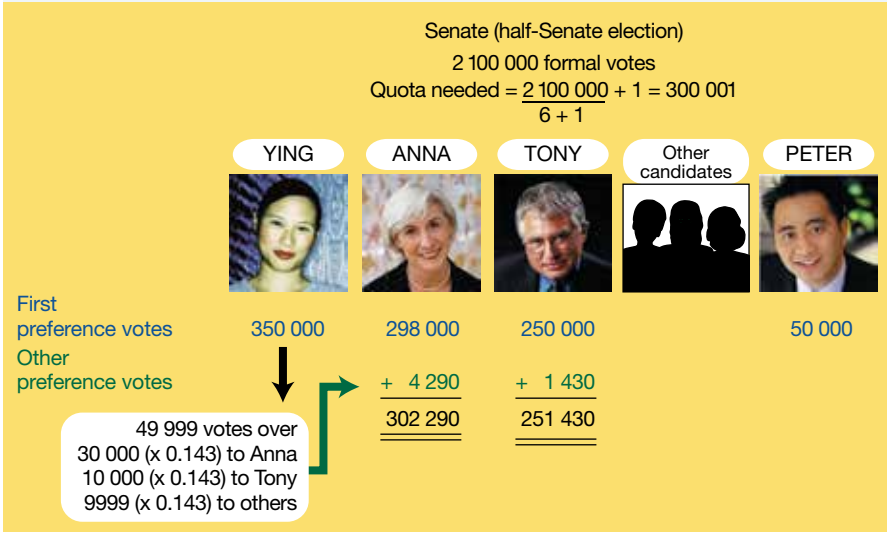
To be elected to the Senate, a candidate has to achieve a **quota** of votes. If a candidate gains more first-preference votes than is required to meet the quota, those surplus votes are distributed to the candidates who have gained second preferences in the votes for the candidate who won on first preferences. Usually that will be the candidate in the same group on the ballot paper whose name appears immediately below the candidate who won on first preferences. If the first candidate within a group gains more than two quotas worth of votes, the second person within that group will usually also be elected even though they might not have received any first-preference votes. To be elected, a candidate has to achieve a whole quota — either in first-preference votes or in the surplus passed on because of second preferences.

If a candidate requires a quota of 300 001 and gains 350 000 first-preference votes, he or she effectively has a second quota to pass on. Because it is not possible to guarantee that all voters will have given their second preference to the second candidate in the group, we cannot just choose any votes to pass on. Instead, we pass on a proportion of all votes — known as the transfer value — representing the ratio of surplus votes to the total number of votes received by the first candidate. This means that we divide the surplus above the quota by the total number of first-preference votes received by the first candidate.

Look at the example in figure 5. A quota is calculated by dividing the number of formal votes by the number of vacancies plus one, and then adding one to the result. In Australian senate elections, this usually

means dividing the number of formal votes by seven before adding one to the result. In figure 5, Ying gets a quota on first-preference votes. Her surplus votes are passed on to other candidates in the order in which second preferences appear on her ballot papers. This means that all the second preferences are passed on at the transfer value. This is calculated by dividing Ying's surplus votes (49 999) by the total of her first-preference votes (350 000). This gives a transfer value of 0.143.

FIGURE 5 Counting preferences in Senate seats



Once these votes are distributed, Anna has a quota and 2290 surplus votes. These will be passed on at a transfer value calculated by dividing her surplus (2290) by her original first-preference total (298 000), which would give a value of 0.008.

Once all the surplus votes have been passed on, if there are not enough candidates with full quotas to fill all the vacancies, the candidate with the fewest first preferences (Peter) is excluded. His preference votes are passed on at full value to those candidates who have not gained a quota. This process continues until the required number have quotas, and all vacancies are filled.

In recent Senate elections in most states, it has been fairly common for the major party candidates listed first in their group to receive two quotas, with some votes left over. As a result, the first two candidates standing for the ALP and for the Liberal–National coalition tend to fill the first four vacancies. It has also been common for the Greens, as the most popular of the minor parties, to have the first candidate in their group gain one quota in their own right. This provides the fifth of the six candidates required. Consequently, there are a number of candidates who have a portion of a quota but none with a whole quota. What happens to solve this issue?

Once all quotas have been allocated, the system becomes similar to that used in the House of Representatives vote counting. The candidate with the fewest first-preference votes is excluded, and his or her second preferences allocated to those other candidates who have not already gained a quota. This often means that the sixth successful candidate may not be known for some time after the election. It often happens that an independent, or a member of a very small party, can be elected to the sixth seat in some states.

1.5.3 Forming the federal government

The party that forms the government is the one that wins a majority of seats (electorates) in the House of Representatives. In most circumstances, enough votes will have been counted for this to be known on election night. However, this is not always the case. In the 2010 federal election, neither major party had a majority of seats in the lower house. Each won 72 seats, making a total of 144 out of the 150 seats in the House of Representatives. The remaining six seats were won by independents and representatives of minor parties.

It then became necessary for the leader of the Coalition, Tony Abbott, and the leader of the Labor Party, Julia Gillard, to negotiate with these six members to convince them to support his or her particular party. The Coalition or Labor had to gain the support of at least four of the six members to have a majority of votes in the lower house and therefore form government. It took 17 days from the date of the election before the necessary four members agreed to support one of the two parties. They chose the Labor Party, which was therefore returned to power with Julia Gillard retaining her position as prime minister.

An election will result in either the re-election of the existing government for another three-year term, or the defeat of the government and the election of the Opposition to form a new government. Since the end of World War II in 1945, there have been 28 federal elections held in Australia. On 21 of these occasions, the existing government has been returned. In only seven elections has there been a change of government.

If the party in government retains power, its leader remains as prime minister and his or her government continues as before. If the government is defeated, the leader of the Opposition prepares to take over as prime minister. The outgoing prime minister will usually visit the Governor-General to resign early in the week following election day. The newly elected prime minister then visits the Governor-General to be sworn in as prime minister.

Once counting is complete for all electorates and the result is finalised, government ministers will be appointed and will in turn be sworn into office by the Governor-General. From this point the new government takes control and has three years before having to face the voters again.

1.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What is the role of scrutineers during the counting of votes?
2. How is the result in each polling place communicated to the AEC's computerised election-management system?
3. What is required to achieve an absolute majority of votes?
4. How is a quota calculated for election to the Senate?

Explain

5. Why are preferences important in counting House of Representatives votes?
6. Why are votes above a quota passed on at a transfer value?
7. Explain the method for calculating the transfer value of Senate votes.

Discover

8. Using internet resources, investigate the Senate results in your home state or territory and answer the following:
   (a) How many quotas did the highest placed candidate receive?
   (b) How many major party candidates were elected from the passing on of surplus votes above a quota?
   (c) Name any independents or minor party candidates elected.
   (d) How many first-preference votes did these independents or minor party candidates receive?
   (e) What was the final party-by-party breakdown of the six successful candidates?

Think

9. The following first-preference votes were recorded for a House of Representatives seat at an election:

Candidate	Votes
Ahmed	32 000
Michael	21 000
Jan	29 000
Tran	8 000

   - Voters who gave first preferences to Jan gave 18 000 second preferences to Ahmed and 11 000 second preferences to Michael.
   - Voters who gave first preferences to Michael gave 8000 second preferences to Ahmed and 13 000 second preferences to Jan.
   - Voters who gave first preferences to Tran gave 3000 second preferences to Ahmed and 5000 second preferences to Jan.

   Who would win the seat?

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Explore more with these weblinks: Counting votes in the House of Representatives, Counting votes in the Senate, Swearing-in of a new prime minister

1.6 The role of the Prime Minister and Cabinet

1.6.1 Responsibilities and decision making of the Prime Minister and Cabinet

In 2015, the *Macquarie Dictionary* announced that their Word of the Year was 'captain's call'. As well as being a cricketing term, it refers to a series of ill-fated decisions made by the then prime minister, Tony Abbott. On a number of occasions, Abbott went against the wishes of his Cabinet and made his own decision — a captain's call. The reintroduction of awarding knighthoods, a failed remodelling of Medicare and a controversial paid parental leave program were all examples of such decisions. Abbott's flawed decisions contributed to his eventual downfall and replacement by Malcolm Turnbull. They are also an important example of the complexity of decision making within governments.

FIGURE 1 In this photograph, former Prime Minister Tony Abbott shakes the hand of Prince Philip. One of Mr Abbott's infamous 'captain's calls' was to award the Prince what many considered to be an undeserved knighthood.

Policy-making in Australian politics

Once the government has been elected, it is charged with the responsibility of running the country. Part of this responsibility is the development and implementation of policy — the rules and regulations which become the laws by which all Australian citizens must live. The policy-making process in Australian politics is complex. All members of parliament have a role to play in this process, although some individuals hold more influence than others.

FIGURE 2 The House of Representatives. Notice the long front bench where Cabinet members usually sit. The Prime Minister and leader of the Opposition sit on either side of the large table in the middle of the room.

Backbenchers

The House of Representatives is colloquially divided into backbenchers and frontbenchers. Traditionally young and inexperienced members of parliament, backbenchers occupy the back seats of the House of Representatives. They are involved in parliamentary debate, can serve on parliamentary committees and can suggest amendments to bills. Backbenchers can also suggest their own bills, which may or may not have the support of their party. Known

as **private members' bills**, this form of policy is rare and these bills are unsuccessful. The *Commonwealth Electoral Bill 1924* (which introduced compulsory voting to Australia) and the *Euthanasia Laws Bill 1996* (which outlawed euthanasia) are two notable exceptions.

Frontbenchers and Cabinet

Members of parliament with an allocated **portfolio** are referred to as frontbenchers because they occupy the front rows of the House of Representatives (see figure 3 for a list of the key members of Cabinet). Frontbenchers are usually more senior party members and so they can have significant influence on policy decisions. Frontbenchers are also members of *Cabinet*, a council of senior members of parliament who are specifically chosen to assist the prime minister with policy decisions and other executive functions. Interestingly, the Cabinet is not mentioned in the Constitution and each government is free to determine its specific functions. As a result, the sitting prime minister has a significant influence on how their Cabinet works. Furthermore, the prime minister is free to shuffle the roles of Cabinet members if he or she feels such a change is necessary.

A properly functioning Cabinet should direct government policy and make decisions regarding the most important national concerns. During the private and confidential meetings of Cabinet, issues and policies are discussed and votes conducted. Once a Cabinet vote has been cast, the final verdict must be supported by all members of Cabinet, regardless of personal opinion. This is known as Cabinet solidarity.

FIGURE 3 The key Cabinet members of the Turnbull government

Name	Portfolio
Malcolm Turnbull	Prime Minister
Barnaby Joyce	Deputy Prime Minister and Minister for Agriculture and Water Resources
Scott Morrison	Treasurer
Julie Bishop	Minister for Foreign Affairs
Marise Payne	Minister for Defence

(*Continued*)

Name	Portfolio
Peter Dutton	Minister for Immigration and Border Protection
Josh Frydenberg	Minister for the Environment and Energy
Nigel Scullion	Minister for Indigenous Affairs

The prime minister

As alluded to earlier, the final decision-making power in Australian politics is often left with the prime minister. Although the Governor-General can also make important decisions (mainly procedural in nature), the prime minister can develop his or her own policies, often in contrast to the views expressed by the prime minister's cabinet members. Prime ministerial policies still need to follow the same pathways as regular bills and in this way the power of the Prime Minister is kept in check.

TONY ABBOTT UNDER FIRE FROM CABINET COLLEAGUES OVER DECISION TO GRANT KNIGHTHOOD TO PRINCE PHILIP

By political editor Chris Uhlmann

Some of Prime Minister Tony Abbott's most senior colleagues are bewildered, angered and dismayed by his decision to award an Australian knighthood to Prince Philip.

Prince Philip and former Defence Force chief Angus Houston were named Australia's newest knights today, under an honours system reinstated by Mr Abbott last year.

Cabinet ministers have told the ABC the Prime Minister did not consult any of the leadership group before announcing the move.

Mr Abbott agreed it was a 'captain's call', saying he consulted only with Governor General Sir Peter Cosgrove and Order of Australia chairman Sir Angus.

Ministers said they would have opposed the knighthood, if asked.

One described it as a 'stupid' decision that would make the Government an object of ridicule.

Another said the Prime Minister's colleagues were willing him to succeed, but he had started the year badly and had made the job of trying to lift the Coalition's electoral credibility just that much harder.

'There is an old saying that when you are in a hole you should stop digging,' one minister said.

'Well, we've just punched through the Earth's crust.'

Another Coalition MP said the move reinforced the left-wing caricature of the Prime Minister: the appointment harked to Australia's past and the opportunity of making a positive statement about the future on the national day had been squandered.

The private anger of Coalition MPs and ministers was given public voice by the conservative chief minister of the northern territory, Adam Giles.

He said that when he read reports of the Prince's knighthood this morning he wondered if he had woken on April Fools' Day.

'It's Australia Day,' he said. 'We're not a bunch of tossers, let's get it right.'

The move to award an Australian knighthood to the Queen's husband has also been criticised by republicans, with former Western Australia premier Geoff Gallop calling it a 'sad reflection' on Australia.

And it drew fire on social media from commentators including Canberra press gallery veteran Laurie Oakes, who tweeted: 'Libs must wonder who can help a PM apparently determined to be seen as a joke. #jokeknighthood'.

Answering questions about the decision at an Australia Day event in Canberra today, Mr Abbott said he was 'really pleased' the Queen had accepted his recommendations on the knighthoods and added that whilst the Duke had not called to say thank you for the honour, he did not 'expect gratitude'.

And he said social media criticism of the move was akin to 'electronic graffiti'.

'I think that in the media, you make a big mistake to pay too much attention to social media. You wouldn't report what's sprayed up on the walls of buildings and look, as I said, social media has its place, but it's anonymous,' he told reporters.

'It's often very abusive and in a sense, it has about as much authority and credibility as graffiti that happens to be put forward by means of IT.'

Mr Abbott said he stood by the decision to award the knighthood to 93-year-old Prince Philip because 'the monarchy has been an important part of Australia's life since 1788'.

'Prince Philip has been a great servant of Australia, he's been a great servant of all the countries of the Commonwealth.

'Here in this country he's the patron of hundreds of organisations. He's the inspiration and wellspring of the Duke of Edinburgh's Awards which have provided leadership training for tens if not hundreds of thousands of Australians over the years.

'I'm just really pleased that in his 90s, towards the end of a life of service and duty we in this country are able to properly acknowledge what he's done for us.'

Asked how widely he had consulted before making the decision, Mr Abbott said: 'As you would expect, I consulted with the Chairman of the Order of Australia, and I consulted with the Governor-General. That's what you would expect.'

Asked if Prince Philip was a 'captain's pick' for the award, Mr Abbott said 'I'm not going to dispute your characterisation' before calling for questions on other topics.

Shorten says award for British royal 'a time warp'

Opposition Leader Bill Shorten, who yesterday called for a renewed debate on Australia becoming a republic, said giving a knighthood to an English royal on Australia Day was outside the mainstream of Australian thinking.

'It's a time warp where we're giving knighthoods to English royalty,' Mr Shorten told Fairfax Radio.

'On Australia Day, we're talking about Australia, Australian identity, the Government's managed to find a British royal to give a medal to, a knighthood to.'

He said that if Labor won office it would not continue the tradition of knights or dames.

'When we look at Australia in the 21st century, it's about who we're going to be as a people and I just think giving out a top award to a British royal is anachronistic.'

Prince has 'long relationship with Australia'

Earlier the head of Australians for Constitutional Monarchy, Professor David Flint, said the knighthood was an appropriate recognition for Prince Philip's 'long relationship with Australia'.

'He was a sailor in the convoys that protected Australian troops being taken to the Middle East in the Second World War,' Professor Flint said.

'He was also in the Pacific Fleet and he was actually in Tokyo Bay at the time the Japanese surrendered.

'He opened the '56 Olympics, he's got a very long relationship through the Duke of Edinburgh Awards scheme.'

But Mr Gallop said Mr Abbott's decision to start awarding Australian knighthoods had 'heavily polluted' the Australian honours system.

'As we try to reflect upon our nation ... one of Australia's highest honours goes to someone who's not part of our community,' he said.

'In effect this is the eccentricity of Tony Abbott's views on our constitution coming through.

'It certainly doesn't reflect the view of the Australian people through a meritocratic process.'

Famed for his off-the-cuff quips and gaffes, Prince Philip, who married Queen Elizabeth in 1947, is the longest serving royal consort in British history.

The Queen once described him as 'my strength and stay all these years'.

But the duke, a constant presence by his wife's side throughout her six decades on the throne, has suffered a series of health scares in recent years.

Source: ABC News, 26 January 2015.

1.6.2 Shaping Australian policy and law

Setting the policy agenda

Winning an election gives a government the right and responsibility to set the policy agenda for Australia. This is known as a mandate. Governments are free to decide on which areas they will focus their policy decisions. While all government responsibilities must be carefully administered and regulated, individual prime ministers and their parties may chose to focus on particular aspects. For example, former Labor prime minister Kevin Rudd oversaw reforms to schools and universities in what he referred to as the 'education revolution'. Other governments have focused on immigration and border protection, health care and changes to taxation law. Pressure groups and members of the public can also help set the policy agenda by attempting to influence their local members and other politicians. When successful, this influence can both contribute to the development of new policy and result in the amendment or even complete withdrawal of other policy decisions.

FIGURE 4 Former prime minister Kevin Rudd and his then deputy, Julia Gillard, promoting the 'education revolution'.

Parliamentary debate

Although the exact function of both houses of the Australian parliament differ, their general purpose remains the same — to debate issues of national significance and the laws proposed to deal with these issues. Within the walls of parliament, our elected representatives debate the merit of proposed legislation. Members of the ruling party, the Opposition and members of minor parties all participate in these discussions. Question Time is a designated part of the parliamentary schedule during which all members of parliament (MPs) can pose questions to other members and ministers. Members of the Opposition are free to question the government but often MPs ask members of their own party questions instead. Designed to provide an opportunity for ministers to promote their opinions or policies, these questions are known as Dorothy Dixers.

FIGURE 5 The Prime Minister, Malcolm Turnbull, has to explain the policies and decisions of his government.

Through these questions and debates, government decisions are scrutinised and the power of the ruling party is closely monitored. The role of the Opposition party, and the leader of the Opposition in particular, is crucial as this person or party has the most opportunity to ensure the accountability of the prime minister and Cabinet. This includes maintaining a close watch on the spending of public money and the administrative actions of the government.

1.6 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What does the phrase 'captain's call' refer to?
2. What are three roles or responsibilities of parliamentary backbenchers?
3. Who is final decision-making power in Australian politics often left with?

Explain

4. After reading the article about former Prime Minster Abbott's decision to award Prince Phillip with a knighthood, answer the questions below in small groups.
   (a) Why do you think Mr Abbott awarded the knighthood?
   (b) Do you believe this decision was justified?
   (c) Why did Mr Abbott's decision have such a significant impact?
5. During the private and confidential meetings of Cabinet, issues and policies are discussed and votes conducted. Once a Cabinet vote has been cast, who needs to support the final verdict? What is this known as?
6. Young and inexperienced members of parliament occupy the back seats of the House of Representatives and the more senior party members occupy the front seats of the House of Representatives. Explain why this is so.

Think

7. Do you believe that the Cabinet has any real power in the decision-making process in Australian politics? Justify your response.
8. Should the power of the prime minister be restricted? What are the positive and negative implications of the prime minister having a large amount of individual power?

1.7 SkillBuilder: Creating and analysing a table

1.7.1 Tell me

What is a table?

A table is a way of displaying information, or data, in an organised way. The data (text or numbers) is arranged in columns (reading down) and rows (reading across). The table is sometimes called a grid. This is because rows and columns are separated by lines to form a grid.

Why are tables useful?

- Tables provide a lot of information in a small amount of space.
- They are a very good way of arranging data so that it can be easily understood.
- The column and row headings help tell you what the data is about.
- The data in a table can be used to create a graph.
- The information in a table can be used to help people make decisions.

1.7.2 Show me

You are given a set of figures that provide details of the number of House of Representatives seats in 1901 compared with today, and the state-by-state population for 1901 and 2011 (the date of the last national census). You will be required to analyse and interpret this data, so you will need to create a table to assist you.

In 1901, the first Australian parliament had 26 members from NSW, 23 from Victoria, 9 from Queensland, 7 from South Australia, and 5 each from Western Australia and Tasmania. The population breakdown of the states in 1901 was as follows: NSW had 1.35 million people, Victoria had 1.2 million, Queensland had 498 000, South Australia had 36 000, Western Australia had 184 000 and Tasmania had 172 000. In 1901, the Northern Territory was included in South Australia, and the ACT in New South Wales.

Today, the breakdown of seats in the federal lower house is NSW 49, Victoria 37, Queensland 29, Western Australia 15, South Australia 11, Tasmania 5, and the two territories 2 each. Australian population in 2011 was: NSW had 7.21 million, Victoria had 5.53 million, Queensland had 4.47 million, Western Australia had 2.35 million, South Australia had 1.64 million, Tasmania had 511 200, Northern Territory had 231 300 and the ACT had 367 800.

This data can be summarised in a table by placing the dates, population and number of seats along the top as column headings, with the names of the states as labels for the rows. This would create something similar to table 1.

TABLE 1 Comparison of population and House of Representatives seats, 1901 and 2011

	1901		2011	
	Population	Seats	Population	Seats
NSW	1 350 000	26	7 210 000	49
Victoria	1 200 000	23	5 530 000	37
Queensland	498 000	9	4 470 000	29
South Australia	363 000	7	1 640 000	11
Western Australia	184 000	5	2 350 000	15
Tasmania	172 000	5	511 200	5
Northern Territory			231 300	2
ACT			367 800	2
Total	**3 767 000**	**75**	**22 310 300**	**150**

The following questions require an analysis and interpretation of the data:

1. As the total number of seats in the lower house has doubled since 1901, why hasn't the number of seats in each state simply doubled?
2. Compare New South Wales' proportion of the total population in 1901 with that in 2011. Has the state maintained, increased or decreased its share of the seats in the House of Representatives? Give reasons for your answer.
3. Which state has experienced the greatest increase in its share of the number of seats since 1901? Why has this occurred?
4. The number of seats in Tasmania has not increased despite an increase in population. Why is this?
5. Which state has the largest average population per electorate? Which state has the smallest average population per electorate?

Once you have answered these five questions, compare your answers with those in the **Analysing and interpreting data** worksheet in the Resources tab.

1.7.3 Let me do it

Draw up a table using the following data:

> In 2010 in the House of Representatives, Labor won 72 seats, the Liberal–National coalition won 72 seats, the Greens won one seat, a National Party member from Western Australia won one seat, and independents won four seats.
>
> In the 2013 election, Labor won 55 seats, the Coalition won 90 seats, and the Greens retained their one seat. Two new parties, Palmer United Party and Katter's Australian Party, each won a seat in Queensland, and two independents were also elected.

1. Create a table to present the data.
2. Answer the following questions in relation to your table:
   (a) Under the principle of majority rule, what did each of the major parties have to do to try and form government in 2010?
   (b) How many seats did the Coalition gain in the 2013 election compared with the 2010 election?
   (c) How many seats did the Labor Party lose in the 2013 election?
   (d) What is the size of the majority won by the Liberal–National coalition in 2013?
   (e) If the independents and minor parties retain their seats in the 2016 election, how many seats would the Labor Party have to win from the Coalition to form government?
   (f) How many seats could the Coalition afford to lose in the 2016 election and still retain government, assuming the independents and minor parties retain their current seats?

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Complete this digital doc: Analysing and interpreting data (doc-14635)

1.8 Review

1.8.1 Summary

Australia is governed by a system of parliamentary democracy in which government is formed by members of the political party that holds the majority of seats in the House of Representatives. Senior members of that party perform the functions of government by taking roles as government ministers. Each minister assumes responsibility for a particular area of government, and is also responsible for ensuring that government policies and promises are put into action. The power of the voters to choose a government is influenced by the following factors:

- Political parties — groups of people with similar opinions and values. Parties compete with each other at election time, each hoping to win enough seats in parliament to form government.
- The Australian electoral system — based on the principles of universal adult suffrage, secret ballot, compulsory voting, regular elections, and preferential and proportional voting systems based on single member and multimember electorates.
- The media — between elections, and particularly at election time, parties and their supporters use every available form of media to attempt to influence voters to support them.
- Our systems of voting — designed to reflect the will of the voters. This happens through preferential voting, which ensures that the candidate who is preferred by the majority of voters is likely to be elected. Proportional representation is also designed to return candidates who have the greatest support from the greatest number of voters.
- The prime minister and Cabinet have an important role to play in developing policies and making decisions on behalf of Australians. Different areas are divided into portfolios which are managed by frontbenchers, who are senior members of parliament.

1.8.2 Reflect

Consider the following facts in relation to a particular senate election:

- As usual, there are six vacancies to be filled.
- The number of formal votes cast is 1.4 million.
- Each party group has four candidates.
- About 95 per cent of voters vote above the line.
- The first placed Labor candidate receives 430 000 first-preference votes.
- The first placed Liberal–National coalition candidate receives 560 000 first-preference votes.
- The first placed Greens candidate receives 220 000 first-preference votes.
- The first placed Palmer United Party candidate receives 100 000 first-preference votes.
- Nine other groups/candidates receive between 2000 and 15 000 first-preference votes each.

Answer the following:

1. What number of votes would constitute a quota in this state?
2. How many Labor candidates would achieve a quota?
3. How many Liberal-National coalition candidates would achieve a quota?
4. Explain whether or not the Greens candidate would be elected and why.
5. Which candidate, from which party, would be the most likely to be elected to fill the sixth place?
6. Explain what might have to happen for that candidate to be successful.

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Try out this interactivity: Crossword (int-5435)

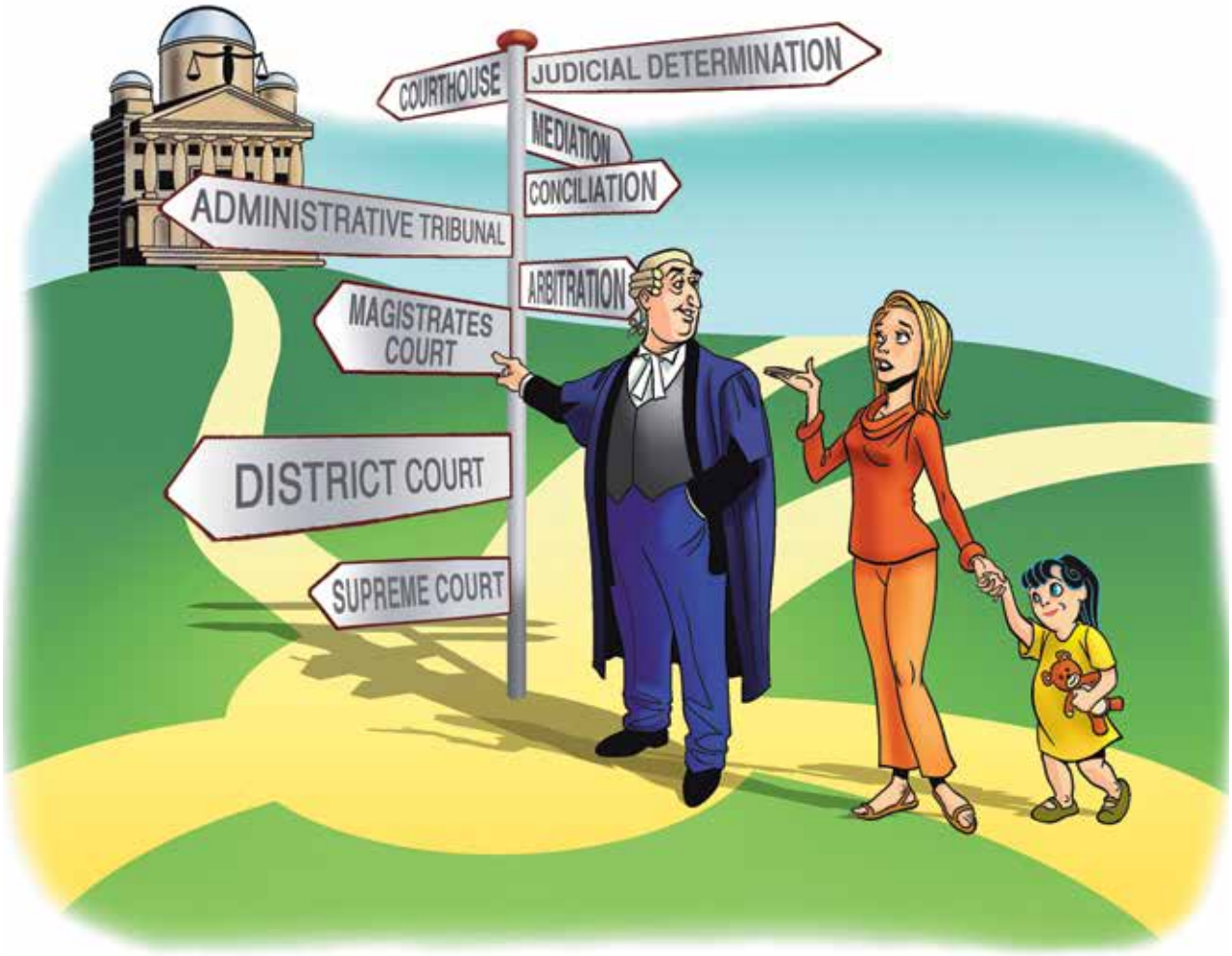
TOPIC 2
Australia's court system

2.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

Every day in the media we hear about people being involved in cases before the courts. The evening TV news regularly carries reports of high-profile murder cases, with stories of drama in the courtroom and damaging testimony by witnesses and the anguished relatives of victims. Courtroom dramas have been a staple of television entertainment for many years, although many of these are American in origin and so do not reflect Australian courtroom practices. How does our court system work? Why do we have so many different courts? What different purposes does this variety of courts serve?

FIGURE 1 Let's take the mystery out of the court system.



Even if we never commit an offence, we could still find ourselves coming into contact with the court system. You never know when you might witness something that might become evidence in a court case. Even witnessing a motor accident may be relevant to a legal dispute over who was to blame for any damage caused. Anyone over 18 can be called to do jury duty and, because selection is entirely random, you could find yourself in this situation as an adult. Our court system is an important element of our democratic society, and we should all have a basic understanding of how it works.

Starter questions

1. Think of a high-profile case that you have heard about on the news or read about in the newspapers. In which court was the case heard? Why do you think the case received so much media coverage?
2. A man was recently fined for researching a case online while he was serving as a member of the jury hearing that case. Why do you think this happened? Is it possible to isolate a jury from information coming from outside the courtroom?
3. The legal system attempts to encourage parties to a dispute to sort out their differences without going to court. Apart from the obvious savings in cost, can you think of two other reasons why the system takes this approach?
4. Where is the local courthouse nearest to your home? Compile a list of other community services that are located near the courthouse. Why do you think this is the case?

INQUIRY SEQUENCE

2.1 Overview 35
2.2 The court hierarchy 36
2.3 The roles of particular courts 41
2.4 Different courts, different jurisdictions 45
2.5 How the courts make laws 51
2.6 **SkillBuilder:** Problem solving and decision making 55
2.7 **Review** 57

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Watch this eLesson: Going to court (eles-2362)

2.2 The court hierarchy

2.2.1 Levels of courts within the legal system

Our legal system is made up of many different courts, each with different powers and responsibilities. These courts are arranged in different levels, in order of their power and importance. This arrangement is known as a hierarchy. The higher courts, which hear the most serious matters, are at the top of the hierarchy; and the lower courts, which hear less serious matters, are at the bottom of the hierarchy.

2.2.2 Criminal cases and civil cases

Criminal law protects the community from the harmful actions of others. When a person commits a crime, the state **prosecutes** that person by having them taken before a court. Our courts operate under an **adversary system**. This means that two opposing sides present their arguments to an independent umpire — a **judge** or **magistrate**. The prosecuting side (the prosecution) is required to prove the guilt of the person accused of the crime. The accused person has a right to present his or her side of the argument (known as the defence). In criminal cases a person found to be guilty will be sentenced to receive a punishment, such as imprisonment or a fine.

FIGURE 1 What happens in criminal cases

Civil law deals with non-criminal disputes between individuals or groups. These can arise in matters related to business dealings, or when a person is harmed by the careless actions of another. Civil cases also operate under the adversarial system, with each side presenting their arguments before an independent judge or magistrate. The person making the complaint is known as the **plaintiff** and the person accused of doing the harm is known as the **defendant**. If the plaintiff is successful, the defendant can be required to provide compensation for the harm done.

FIGURE 2 What happens in civil cases

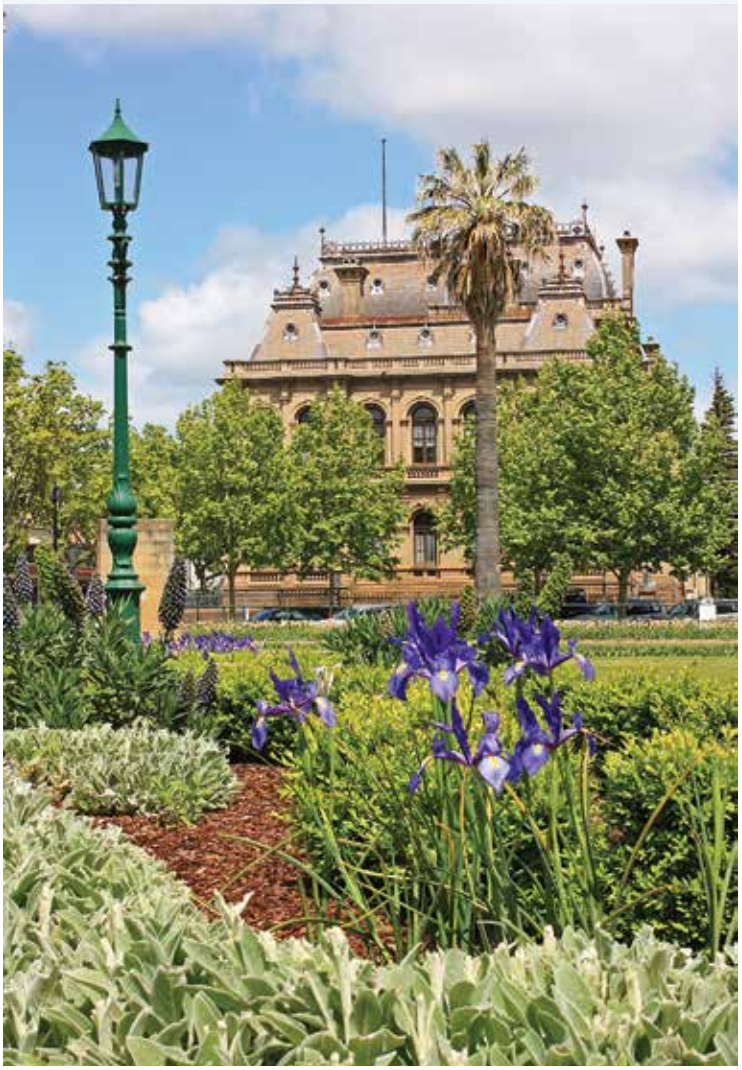
An area of law for which a court has responsibility is known as its **jurisdiction**. In criminal cases the higher courts have jurisdiction over the most serious crimes. In civil cases the higher courts have jurisdiction over matters that will affect many people, involve complex legal issues or large sums of money. Cases heard in higher courts will be much more expensive for the community as well as those bringing the action. If an individual is unhappy with the ruling in a lower court, he or she can apply to have the case heard in a higher court. This process is referred to as 'making an appeal against a court decision'.

FIGURE 3 The higher the court in the hierarchy, the more expensive it will be to bring the case.

2.2.3 The lower courts

Each state has its lower courts, known as the Local Court in New South Wales, the Magistrates' Court in Victoria and the Magistrates Court elsewhere. These magistrates courts are at the bottom of the hierarchy. There are usually a relatively large number of these courts in each state or territory because they hear more than 90 per cent of all cases that go to court. In New South Wales the Local Courts sit in over 20 different locations in Sydney, and close to 100 locations in country and regional centres. In Victoria there are ten magistrates courts in metropolitan Melbourne, and over 40 in regional towns and cities. Other states and territories have smaller numbers, relative to their population and the area of land they cover. The Federal Circuit Court of Australia is a lower court that deals with matters relating to laws passed by the federal parliament. It sits in all capital cities, as well as some major regional centres such as Townsville and Cairns in Queensland, Newcastle in New South Wales and Launceston in Tasmania.

FIGURE 4 The historic courthouse in Bendigo is one of over 40 courthouses used for magistrates court hearings throughout rural areas of Victoria.



2.2.4 Intermediate courts

Intermediate courts are usually known as District Courts, although in Victoria the courts operating at this level are called County Courts. In most states these courts hear more serious criminal cases such as armed robbery, serious drug-related offences and serious assaults, including sexual assaults. Murder-related cases are heard in the highest state court, the Supreme Court.

In criminal cases a case will be heard by a judge and a **jury** of 12 people. The jury is required to consider all the facts presented by the prosecution and the defence, and to decide whether the accused is guilty or not guilty. The judge will help the jury if there are complex legal issues to be decided. If the jury decides that the accused is guilty, the judge will determine the appropriate punishment.

Intermediate courts usually have jurisdiction over a wide range of civil disputes, including claims made for workplace and motor vehicle injury, and disputes involving business dealings. A jury is usually not required in a civil case unless either the plaintiff or the defendant requests one. When juries are used they usually consist of between four and seven jurors, depending on the individual state requirements. In some states there is an upper limit on the amount of money involved in cases that can be heard in an intermediate court. Cases involving larger amounts than this limit need to go to the highest state court (the Supreme Court) to be heard.

Tasmania and the two mainland territories do not have an intermediate court as part of their court hierarchy.

A court with a judge and jury such as used in intermediate courts

- **A** The judge's associate is a trained lawyer who manages much of the paperwork.
- **B** Anyone whose name is on the electoral roll can be called as a juror. In a criminal case, the jury consists of 12 people. The jury must decide beyond reasonable doubt whether a person is guilty. All the jurors have to agree.
- **C** The prosecutor has to convince the jury that the accused person is guilty. This is done by asking questions of witnesses to draw out relevant information.
- **D** The judge is addressed as 'Your Honour'. They listen to arguments presented by the prosecutor and the counsel for the defence, and is not allowed to ask a witness questions (except to clarify a point). The judge has to make sure jury members understand the proceedings and evidence presented. If a jury announces a guilty verdict, the judge decides the sentence.
- **E** The counsel for the defence represents the accused. If the accused pleads guilty, the counsel for the defence presents arguments to try to lessen the punishment. If the client pleads not guilty, defence counsel must convince the judge or jury that the client is innocent.
- **F** The tipstaff helps the judge keep order in the court.
- **G** Witness box, from which people give evidence
- **H** Members of the public, who listen to and observe the court proceedings
- **I** A prison officer from the prison where the accused has been held
- **J** The accused
- **K** Members of the media, who observe proceedings so they can report what happens.

2.2.5 Higher courts

The highest court in each state and territory is the Supreme Court. It hears the most serious criminal matters, as well as civil matters involving very large sums of money. In all states except South Australia, Supreme Courts are divided into a trial division and an appeal division. (See section 2.3 for more detail on the role of the various state Supreme Courts.)

On a similar level to state Supreme Courts in the Australian court hierarchy are the Federal Court and the Family Court. (The role of the Family Court is discussed in section 2.3.) The Federal Court of Australia has a largely civil jurisdiction, although it can hear criminal matters if they are part of Commonwealth law. As most criminal law is determined by state governments, most criminal cases are heard in state courts. The Federal Court can hear civil disputes involving large businesses that operate in a number of different states, disputes relating to federal consumer protection laws, disputes over customs or taxation issues, or **industrial relations** matters.

TABLE 1 Australian court hierarchies

Jurisdiction	Highest court in the hierarchy	Highest state or territory court	Intermediate state or territory court	Lowest court
Commonwealth	High Court of Australia	Federal Court Family Court		Federal Circuit Court
NSW		Supreme Court	District Court	Local Court
Victoria		Supreme Court	County Court	Magistrates' Court
Queensland		Supreme Court	District Court	Magistrates Court
South Australia		Supreme Court	District Court	Magistrates Court
Western Australia		Supreme Court	District Court	Magistrates Court
Tasmania		Supreme Court		Magistrates Court
ACT		Supreme Court		Magistrates Court
Northern Territory		Supreme Court		Magistrates Court

2.2.6 High Court of Australia

The High Court of Australia is our highest court. It performs the following roles:

- It is the highest court of appeal from the state court system.
- It has the power to interpret the Australian Constitution. The court reads, interprets and applies the words of the Constitution in disputes when they arise.
- It resolves disputes between state governments, and between state governments and the Commonwealth Government.

FIGURE 5 The High Court of Australia in Canberra is at the peak of the court hierarchy.

2.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Define the following terms in your own words:
   (a) plaintiff
   (b) defendant
   (c) prosecution
   (d) adversary system
   (e) jurisdiction.

2. What is a court hierarchy?
3. What is the name of the intermediate court in your state or territory?
4. What are the three main functions of the High Court of Australia?

Explain

5. What is the difference between a judge and a magistrate?
6. Explain the difference between civil law and criminal law.

Discover

7. Using internet resources, investigate the operation of the Federal Circuit Court and the Federal Court of Australia. For each court:
   (a) Identify and explain two areas of law where the court has jurisdiction.
   (b) Describe one recent case in each court, including:
   - Who was involved?
   - What were the main facts of the case?
   - What area of law was involved?
   - What was the result of the case?

Think

8. Do the following cases involve criminal or civil law? Explain your answers.
   (a) You are disturbed by neighbours loudly renovating their property at 2 am.
   (b) Your aunty is convicted of driving with a blood alcohol content of 0.09.
   (c) Your smartphone is stolen when you are mugged by a robber armed with a baseball bat.
   (d) Your Hindu friend, a strict vegetarian, finds a half-eaten prawn in a salad sandwich bought from a café and realises that she has just eaten the other half.
   (e) Your leg has to be set in a plaster cast when you slip on some detergent that has been spilled on the supermarket floor.
9. Do you think that a court hierarchy is necessary? Explain your answer

2.3 The roles of particular courts

2.3.1 Jurisdiction

The efficiency of our legal system is helped by having different courts with different jurisdictions. This allows the judges and magistrates to specialise in particular areas of law, and to apply the law consistently across all cases. It also allows for serious matters to be given the time they need for a fair trial in the higher courts, while less serious cases can be dealt with more quickly and cheaply in lower courts. To illustrate these principles, we examine state Supreme Courts, state magistrates courts, and the federal Family Court.

2.3.2 Supreme Courts

Each of the six states and two mainland territories of Australia has a Supreme Court as its highest court. Each Supreme Court has two main types of jurisdiction: an **original jurisdiction** and an **appellate jurisdiction**. The way each Supreme Court is structured varies from state to state, but in each case the structure reflects these two roles.

Some state differences

Differences in Supreme Court structures between states can be summarised as follows:

- In Victoria, New South Wales, Queensland and Western Australia there is a clear separation between the original jurisdiction and the appellate jurisdiction. Some judges specialise in only hearing appeals, and other judges only hear original trials.
- In South Australia, Tasmania and the two mainland territories there is no such specialisation. Instead, all judges hear both original cases and appeal cases.

Original jurisdiction

The original jurisdiction of each state's Supreme Court is usually carried out by the trial division. It includes both criminal and civil law cases, and the court sits with only one judge. In criminal matters, there will also be a jury of 12 citizens who have to weigh up the facts and decide on the guilt or innocence of the accused. No jury is required if the accused pleads guilty to the charges, and the main role of the judge then is to listen to arguments from the prosecution and the defence relating to the severity of the punishment. Based on these arguments, the judge decides on the length of a prison term or other appropriate penalty.

FIGURE 1 Jury members in criminal trials have to carefully weigh up the evidence to decide whether or not the accused is guilty.

Usually the Supreme Court will deal with only the most serious crimes such as murder, attempted murder or **manslaughter**. In Tasmania and the two territories, where there is no intermediate court, the Supreme Court will also hear a broad range of criminal matters such as armed robbery, serious drug-related offences and serious assaults, including sexual assaults.

FIGURE 2 Only civil disputes involving large sums of money are likely to be heard in the Supreme Court.

The Supreme Court in each state also hears only the most serious civil cases. This usually means cases involving disputes over very large sums of money. The actual amount will vary from state to state. For example, in New South Wales, Queensland and Western Australia all civil cases involving amounts greater than $750 000 will generally be heard in the Supreme Court, with cases involving lesser amounts held in lower courts. Other states have different monetary levels for the civil jurisdiction of the Supreme Court, depending on how they divide up the jurisdiction with intermediate and lower courts.

Appellate jurisdiction

As mentioned earlier, if either party is unhappy with a decision in a lower court, that party can make an appeal to a higher court. When there is a separation between the original and the appellate jurisdictions of the Supreme Court, these appeals are usually heard by the appeal division, or Court of Appeal. The Court of Appeal hears appeals from intermediate courts and from the trial division of the Supreme Court. When hearing an appeal the court usually sits with either three or five judges, depending on the seriousness of the case. In South Australia, Tasmania and the territories, where there is no separation between a trial division and an appeal division, appeals are heard by any three Supreme Court judges. Of course, the appeal judges must not include the judge who heard the case originally.

FIGURE 3 When the Supreme Court acts as the Court of Appeal, it usually sits with three or five judges.

2.3.3 Magistrates courts

In most states, up to 90 per cent of all cases are heard in a magistrates court (known in New South Wales as Local Courts). These courts have both criminal and civil jurisdiction.

Criminal jurisdiction

The criminal jurisdiction usually covers relatively minor offences, sometimes known as summary offences. These include driving offences; many cases of theft, such as shoplifting; assault cases where the victim has received relatively minor injuries; and public order cases, such as being drunk and disorderly in a public place.

Use the **Magistrates court procedures** weblink in the Resources tab to watch a video of typical proceedings in a magistrates court.

Magistrates courts also perform some important roles in more serious criminal cases.

- Most cases heard before an intermediate court or the Supreme Court take time to prepare, and are expensive to run. Both the prosecution and the defence can take months to organise witnesses and other evidence in readiness for a fair trial. Before resources are dedicated to preparing all this material, it is useful to test whether or not the prosecution case is strong enough to be likely to convince a jury of the guilt of the accused.
- It is also important to find out in advance whether or not the accused is planning to plead guilty or not guilty.
- In our legal system an accused is presumed innocent until proven guilty. In many cases it would be inappropriate to hold an accused in custody for months awaiting a trial.

Magistrates courts carry out significant functions in relation to all these issues.

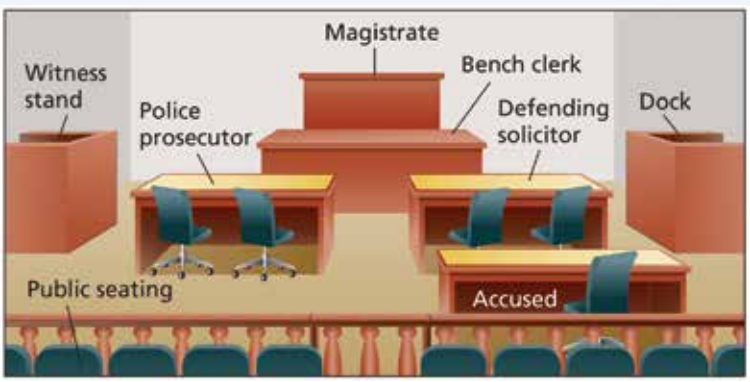
FIGURE 4 A person who is remanded in custody will be held in prison until his or her case comes to court.

Bail and remand

When a person is charged with an offence that is serious enough to be heard by an intermediate court or the Supreme Court, a decision has to be made as to whether that person will be detained in custody or released into the community awaiting trial. Releasing an accused into the community is known as granting **bail**.

If the arresting police officers believe that releasing an accused on bail would create a danger to the community, a bail hearing will be held if the accused wishes to be released. This hearing will often be held in a magistrates court. Both sides will present their arguments to the magistrate, who will then decide whether or not to grant bail. If bail is granted, the magistrate may require that a **surety** be lodged with the court, and may also impose conditions on the accused. These can include a requirement that the accused regularly report to his or her local police station. If bail is not granted, the accused will be **remanded in custody** until the case goes to trial.

FIGURE 5 Magistrates courts deal with minor offences and committal hearings.



Committal hearings

A committal hearing is a preliminary hearing held to determine whether or not the prosecution case is strong enough to justify a full jury trial in the Supreme

Court or in the District or County Court. It also provides an opportunity for an accused to indicate whether he or she intends to plead guilty or not guilty. If the accused pleads guilty, he or she will be committed to stand trial in the Supreme Court or in the District or County Court.

If the accused pleads not guilty, the prosecution is required to present its evidence to a magistrate, and that evidence can be challenged by the defence. The magistrate does not have to decide whether or not the accused is guilty. Instead, the magistrate assesses whether the accused should be committed to stand trial before a judge and jury, or whether the charges should be dismissed because the evidence is insufficient for a trial. The committal hearing also gives the accused a chance to hear details of the prosecution case, possibly encouraging the accused to plead guilty to some or all of the charges. This can ultimately save time and resources when the case eventually goes to trial.

Civil jurisdiction

Magistrates courts can hear a variety of civil matters. These are usually of a less serious nature than those matters heard by intermediate courts or the Supreme Court. The jurisdiction of the magistrates courts is limited to hearing cases where the amount of money involved does not exceed a prescribed amount, which varies by state and territory. For example, in New South Wales and Victoria these courts can only hear civil matters where there is less than $100 000 involved. In Queensland the maximum amount is $150 000, while in Tasmania it is $50 000. Civil cases involving sums of money that exceed these maximums will be held in higher courts in the hierarchy such as the District or County Court, or the Supreme Court.

2.3.4 Family Court of Australia

The Family Court is a federal court that handles disputes over divorce, parenting arrangements, child support, and property disputes following a relationship breakdown. This court was established in 1975 as a result of laws passed by the Commonwealth Parliament. It is on the same level in the court hierarchy as the state Supreme Courts.

The Family Court sits regularly in all capital cities, as well as major regional cities in each state. The exception is Western Australia, which has its own state-based Family Court. Relationship breakdown can be a very emotional experience for those involved, and particularly for children of the relationship. For this reason, the Family Court operates under a number of principles, including the following:

- The interests and welfare of children are always at the centre of any decisions made by the court, and they are given higher priority than the wishes or preferences of parents.
- The court is required to assume that it is in the child's best interests for both parents to have equally shared parenting responsibility for the child. This does not mean that the child must spend equal time with both parents, but there must be consultation between the parents on issues related to the child's welfare.
- The court encourages separating couples to reach agreement over as many issues as possible. This can include parenting plans and agreed division of property. Reaching agreement in this way can reduce the cost of going to court.
- If a couple is unable to reach agreement, the court will provide support and assistance in this process. The court can order the couple to attend **mediation** in an attempt to resolve some of the issues in dispute. At all stages the court attempts to solve issues without the need for an expensive court hearing.
- If the parties have reached agreement over some issues, they can apply to have this agreement approved by the court. This approval by the court is known as a **consent order**, and it means that the agreement can be legally enforced by both parties.

FIGURE 6 The Family Court encourages divorcing couples to engage in mediation in the hope of reaching agreement over as many issues as possible.

2.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Define each of the following in your own words:
   (a) bail
   (b) remand
   (c) surety
   (d) committal hearing
   (e) mediation
   (f) consent order.

Explain

2. Explain the difference between original jurisdiction and appellate jurisdiction.
3. What is the purpose of a bail hearing?
4. Why does the Family Court encourage parties before it to reach agreement on as many issues as possible?

Discover

5. Use internet resources to find the civil jurisdictions of the lower, intermediate and Supreme Courts in your home state in terms of the amount of money involved in the case. Present your information in a table similar to this one:

Name of court	Maximum financial amount of civil jurisdiction

Predict

6. In which court are the following likely to be heard?
   (a) A murder trial
   (b) An appeal from the Supreme Court
   (c) A minor traffic offence
   (d) A dispute over the division of property in a divorce
   (e) An armed robbery trial
   (f) The preliminary hearing of a rape case
   (g) A civil dispute between business partners involving $100 million
   (h) A case dealing with an aspect of the Australian Constitution

Think

7. Explain the purpose of committal hearings in a Magistrates' or Local Court.
8. How do committal hearings contribute to the fairness and efficiency of our court system?

learnON RESOURCES — ONLINE ONLY

Explore more with this weblink: Magistrates court procedures

2.4 Different courts, different jurisdictions

2.4.1 Alternate methods

Going to court can be a very expensive experience, particularly if the legal matter has to be dealt with in a higher court. On many occasions, legal disputes can be solved through alternate methods. We have already seen how the Family Court makes use of mediation as a means of resolving issues before the parties attend a court hearing. There are many other ways in which the legal system makes use of special courts and

tribunals, as well as specialised procedures, to deal with particular types of disputes. These can include disputes between consumers and businesses, disputes over human rights and issues of discrimination, and disputes over environmental issues.

2.4.2 Consumer law disputes

Consumers throughout Australia are protected from being exploited by unscrupulous or dishonest businesses by Australian consumer law. This law is enshrined in the *Competition and Consumer Act 2010*. It was passed by the Commonwealth Parliament and applies in all states and territories.

FIGURE 1 It is illegal to make claims that the seller knows to be untrue.

How does consumer law protect us?

Australian consumer law gives consumers the right to take legal action if they are the victims of certain types of behaviour by businesses selling them goods or services. In particular, consumers are protected from the following activities:

- false and misleading representations in relation to goods or services, including making claims about a product that the seller knows to be untrue
- bait advertising — when products are advertised at a certain price but only a small number are actually sold at that price — as a means of falsely luring customers to the seller's business
- businesses offering gifts or prizes to customers, and then not actually providing them
- referral selling — when a seller offers a special deal to a customer in return for that customer referring other customers to the business.

FIGURE 2 Manufacturers must ensure that spare parts are available for a reasonable time after the goods are supplied.

In addition, consumers have particular rights that are guaranteed in relation to the goods or products they buy. These include the following:

- A guarantee must be given in relation to the ownership of the goods. This means that a seller must have the legal right to sell the goods so that the buyer knows that he or she will become the legal owner once the goods have been paid for.
- Goods must be of an acceptable quality, free from defects, safe and durable.
- Goods must be fit for the purpose for which they would be expected to be used.
- Manufacturers must ensure that repairs and spare parts are available for a reasonable time after the goods are supplied.

What action can we take?

Enforcement of consumer rights is carried out in each state and territory by the Office of Fair Trading or the Consumer Affairs Office. If a consumer has a complaint against a supplier, the following process is generally recommended:

FIGURE 3 The buyer should always attempt to sort out the problem directly with the seller before taking legal action.

1. The consumer should attempt to sort out the problem directly with the seller, making it clear what the problem is and requesting that it be fixed. Receipts or other documents should be kept to support the claim.
2. If this fails, the consumer should write a formal letter of complaint to the business and keep a copy.
3. If direct contact with the business does not produce a result, the consumer can take his or her complaint to the relevant state or territory Office of Fair Trading or Consumer Affairs Office. These organisations will contact the business on the consumer's behalf and attempt to resolve the matter.
4. If the business still refuses to fix the problem, the consumer can take the matter to the state's Civil and Administrative Tribunal. Most states have these bodies, which operate like a court but are generally less formal and cheaper. A small fee usually has to be paid to lodge a claim with one of these tribunals, but there is no need to have legal representation. Tribunals will usually try to resolve the dispute through mediation, by bringing the parties together to reach agreement.
5. If the parties cannot resolve their differences, the tribunal can hold a hearing to decide the issue. This is less formal than a court hearing, but it has the power to make a decision that is legally binding on both parties.
6. If either party is dissatisfied with the decision of a tribunal, he or she can appeal to the state Supreme Court. Of course, this is much more expensive.
7. In some cases a supplier who breaches Australian consumer law may be guilty of a criminal offence, and can be prosecuted in a magistrates court. Each state's Office of Fair Trading or Consumer Affairs Office has the power to bring a criminal prosecution against a business or other supplier that has acted illegally under the provisions of the consumer law. On a number of occasions, retailers selling dangerous children's toys had the toys seized and were prosecuted. In South Australia a company claiming its plastic bags were biodegradable was fined when the bags were found to contain heavy metals.

2.4.3 Human rights disputes

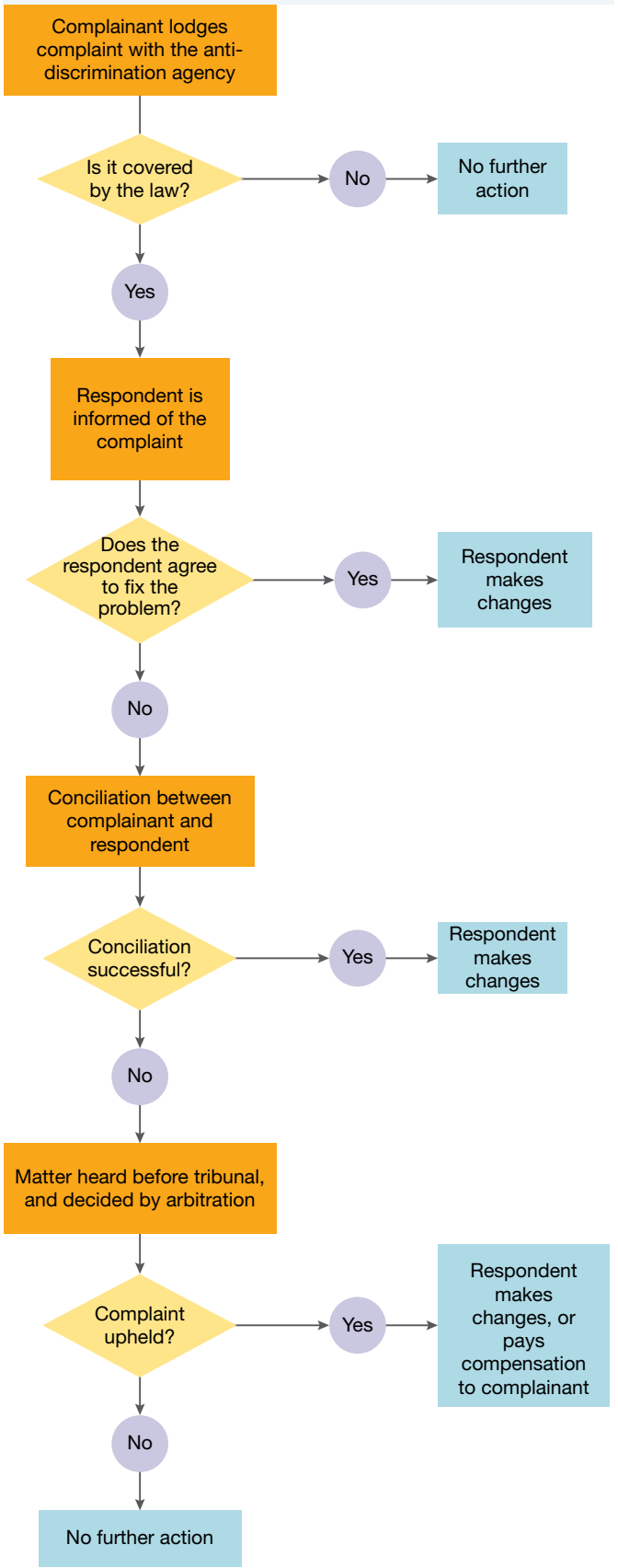
The federal and state governments in Australia have passed laws to protect our human rights. These include equal opportunity and anti-discrimination laws which make it illegal to discriminate against anyone based on characteristics such as their gender, racial or ethnic background, age, religion, marital status or sexual orientation. Each state and territory has its own anti-discrimination agency. These include organisations such as the Anti-Discrimination Board of New South Wales, the Victorian Equal Opportunity and Human Rights Commission, and the Equal Opportunity Commission of Western Australia. Each of these bodies has the dual role of educating the public about human rights and anti-discrimination issues, as well as dealing with complaints.

Dealing with complaints

Most states and territories have similar procedures for dealing with complaints of discrimination or other infringements of human rights. The following is typical of the processes followed:

1. A person who believes their rights have been infringed can lodge a complaint with their state anti-discrimination agency. This complaint must be in writing and can usually be lodged online, but it may also be necessary to provide evidence of the alleged discrimination. The person lodging the complaint is known as the complainant, and the individual or organisation complained about is known as the respondent.
2. Once a complaint has been lodged, representatives of the agency examine it to see whether it comes within the areas of discrimination covered by the relevant legislation. If it does not, they will contact the complainant to inform him or her that no further action will be taken.
3. If the agency believes that the complainant has been discriminated against, it will contact the respondent and provide a copy of the complaint. The respondent then has the opportunity to fix the problem and the issue is resolved.
4. If the respondent refuses to accept that the alleged discrimination has taken place, the anti-discrimination agency sets up a **conciliation** process. This process brings the two parties together with a conciliator in an attempt to resolve the matter. (Use the **Conciliation procedures** weblink in the Resources tab to see how conciliation works in this typical Queensland example.)
5. If the matter cannot be resolved through conciliation, it may then be taken to the relevant state tribunal. This could be a broad civil and administrative tribunal such as NCAT (NSW), VCAT (Victoria), or QCAT (Queensland), or a specialised body such as the Tasmanian Anti-Discrimination Tribunal.
6. Tribunals are similar to courts, but are less formal and less expensive. They have the power of **arbitration** over the dispute. This means that both sides can present their arguments to the tribunal, and the tribunal can make a legally binding order to resolve the issue.

FIGURE 4 The dispute-resolution process in discrimination complaints or other infringements of human rights



7. If the complaint is successful, a tribunal can order the respondent to change its behaviour and refrain from continuing the discriminatory behaviour. It can also order the respondent to pay a sum of money in compensation to the complainant. If the discrimination was employment related, the tribunal can order a respondent to reinstate the complainant to a position from which he or she may have been dismissed. (Follow the **Tribunal procedures** weblink in the Resources tab to watch a Queensland video explaining QCAT procedures.)

2.4.4 Environmental law disputes

The Commonwealth, state and territory governments all have laws in place to protect the environment. These laws need to be enforced when an individual or organisation has carried out actions that could cause pollution or other damage to the environment. Action taken to enforce environmental laws will usually involve administrative action, civil action or criminal action.

Administrative action

Each state and territory government has an organisation set up to educate the public on environmental issues, to assist businesses in complying with environmental laws, and to investigate possible breaches of those laws. In all states and territories except Queensland this organisation is known as the Environment Protection Authority (EPA). In Queensland, the Department of Environment and Heritage Protection (EHP) carries out similar functions. Each organisation has the power to issue infringement notices or penalty notices to any individual, business or other organisation that it believes is doing something which could harm the environment. This type of notice usually requires the polluter to stop the action causing the pollution, and to clean up the land or waterway that has been affected. Failure to do so can then result in legal action being taken.

FIGURE 5 State environmental authorities can order businesses to stop any action that causes pollution.

Civil action

If an individual or organisation accused of causing pollution fails to take **remedial action** to fix an environmental problem, the EPA or EHP can begin legal action. In New South Wales, South Australia and Tasmania there are special courts or tribunals to deal with environmental disputes. For example, the Land and Environment Court of New South Wales is on the same level in

FIGURE 6 Some states have specialist courts to hear disputes over environmental issues.

the court hierarchy as the Supreme Court of that state. Other states deal with environmental disputes through their standard court system.

Civil action against a polluter can be taken if the actions causing the pollution are a result of **negligence** or **recklessness**, rather than deliberate or intentional actions. A court can order an individual or organisation to clean up the pollution, or impose a financial penalty to pay for the appropriate authorities to carry out the clean-up. If the pollution results from the normal activities of a business, a court can stop the business from operating until it changes those activities.

Criminal action

Criminal action can be taken through the courts if there is evidence that an individual or business deliberately or intentionally caused the pollution. A successful criminal prosecution for intentionally causing environmental damage can lead to heavy fines or even imprisonment for the person responsible, whether as an individual or as a business owner.

2.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Outline two examples of behaviour that is illegal under Australian consumer law.
2. Describe two ways in which consumers are protected by consumer law.
3. Identify three examples of illegal discrimination against a person or group of people.
4. Define these terms in your own words and provide an example of each:
   (a) conciliation
   (b) arbitration
   (c) negligence
   (d) recklessness.
5. In which circumstances could a person or organisation have criminal action brought against them for breaking environmental laws?

Explain

6. What is the difference between a complainant and a respondent?
7. Explain the powers of state environmental authorities in dealing with individuals or organisations they believe are doing something that could harm the environment.

Discover

8. Use internet resources to investigate the anti-discrimination organisation in your state.
   (a) What is the name of the organisation?
   (b) What are its three most important goals or aims?
   (c) What is the structure of the organisation?
   (d) Give two examples of the way in which the organisation attempts to educate the community on anti-discrimination issues.

Think

9. In disputes involving consumer, human rights and environmental laws, every effort is made to resolve the matter without having to engage in an expensive court case. Explain how this is achieved in the dispute-resolution processes of each of these three areas of the law.

learnON RESOURCES — ONLINE ONLY

Explore more with these weblinks: Conciliation procedures, Tribunal procedures

2.5 How the courts make laws

2.5.1 Common law

We know that laws are made by parliaments at both the state and federal level, but did you know that the courts can also make laws? Australia's court system was adapted from the British legal system. One of the unique features of that system is the **common law**. The term 'common law' originally meant that the law was common to everyone. Whenever a dispute came before a court, the judge would look at the previous decisions that other judges had made in similar cases. Whenever possible, a judge would try to decide the dispute in the same way as the previous decision. If there was no previous decision, and no parliamentary law that was relevant, the judge could effectively create new law to apply to the case.

FIGURE 1 Judges can create new law if there is no existing law that applies to the case before them.

2.5.2 The doctrine of precedent

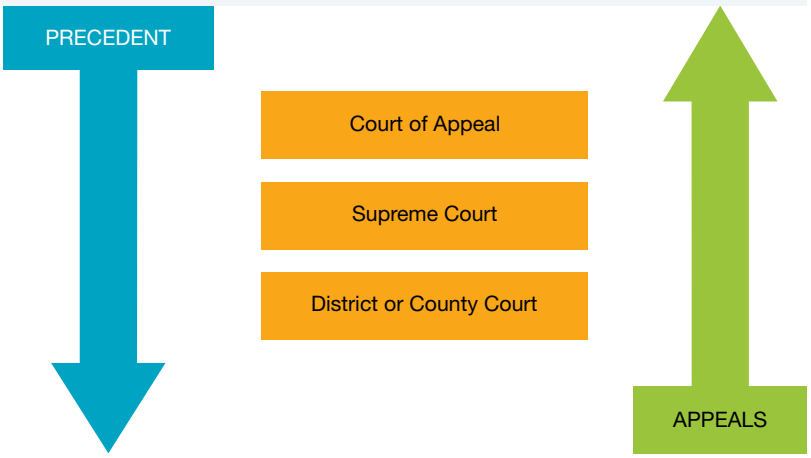
The key feature of our legal system that allows the courts to make laws is the doctrine of **precedent**. This means that when a judge is deciding a case, he or she will look at the legal principles applied in similar cases and be guided by the decision in those cases. The doctrine of precedent relies on the following set of principles:

- Cases that are similar in facts are decided in a similar manner to provide consistency within the legal system. The previous case provides a precedent for later cases.

FIGURE 2 If there is no existing relevant law, judges can create a new legal rule to settle a dispute.

- There is a hierarchy of courts, with higher courts having greater authority than lower courts in that hierarchy.
- Lower courts have to make decisions that are consistent with precedents set by higher courts in the same hierarchy. By doing so, they are said to follow the decisions of those higher courts.
- A higher court in the hierarchy has the power to overrule a decision made in a lower court. This may happen because one of the parties to the original case has decided to appeal to the higher court.

FIGURE 3 The court hierarchy allows for appeals to be taken to higher courts, and precedent to be followed by lower courts.

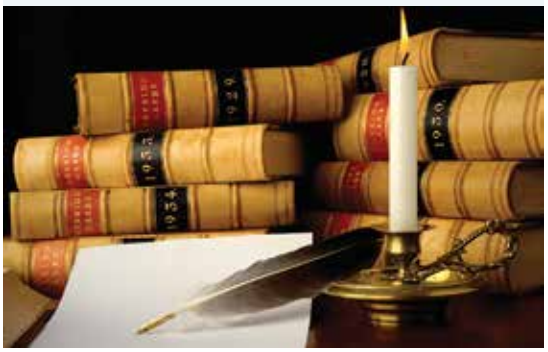


- Details of decisions made by higher courts are written down and kept in law reports, which are readily available to all legal practitioners.
- Because parliament is the supreme law-making body, it has the power to overrule any law made by judges in the courts.
- When a new issue comes before a court, the judge has the power to create new law provided that it is not inconsistent with an existing precedent or with relevant legislation.

2.5.3 What makes a precedent?

Law reports contain details of cases that have been decided previously. Each case report contains the actual words written and spoken by the judge in delivering his or her decision. The judge will usually include a summary of the facts of the case, and the law that has been applied in reaching a decision. The outline of the law that has been applied is known as the *ratio decidendi*, which is a Latin term meaning 'the reason for the decision'. Sometimes this will be a precedent from a previous case that the judge has found applies to the facts of the case being considered. Sometimes it will simply be the application of a relevant law passed by parliament.

FIGURE 4 Law reports contain details of cases that have been decided previously.



On some occasions there will be no relevant precedent and no other law that applies to the facts before the judge. In these cases, the reason the judge gives for his or her decision becomes new law and creates a new precedent. It is this reason for the decision, or *ratio decidendi*, that becomes the binding precedent which must then be followed in later cases with the same or similar facts.

Sometimes a judge will make other comments about the case. For example, a judge might suggest ways in which his or her decision could have been different if some of the facts had been different. These comments are known as *obiter dictum*, a Latin term that means 'things said by the way'. Unlike the *ratio decidendi*, statements recognised as *obiter dictum* are not binding on judges in later cases. Nevertheless, if the *obiter dictum* has been delivered by a prominent judge in a higher court, judges in lower courts may gain some guidance from these statements if they can be applied to the facts before them.

2.5.4 Duty of care — case studies in the application of precedent

We can illustrate how the doctrine of precedent works by examining a series of cases decided in English courts during the late nineteenth and early twentieth centuries. These cases all dealt with questions of people supplying products to other people, and the degree to which the supplier was responsible for the safety of the products supplied. Before these cases, it was generally accepted that a supplier was responsible only to the person with whom he or she had a direct contractual relationship. This meant that the seller owed a **duty of care** only to the person who actually bought the products.

George v. Skivington (1869)

In this case a husband bought some hair shampoo from a chemist, who had made the mixture himself. When he bought the shampoo, the husband made it clear that he was buying it for his wife. When she used it, the woman suffered skin irritation and hair loss, so the husband sued the chemist. Lawyers for the chemist argued that because his contractual relationship was with the husband who had bought the shampoo, and not with the wife, the chemist had no duty of care towards the wife. The judge did not accept this argument, and stated that the chemist owed a duty of care to the ultimate user of the shampoo. Because the husband made it clear that the shampoo was for his wife, the legal relationship that existed between the chemist and the husband should be extended to include the wife, and the chemist owed her a duty of care.

FIGURE 5 When you use shampoo today you are protected by the law — even if someone else bought the shampoo for you.

Heaven v. Pender (1883)

In this case Gray had a contract to paint a ship. The ship was moored in Pender's dock, and Pender provided a platform to be hung over the side of the ship to assist with this task. The plaintiff, Heaven, was employed by Gray to carry out the painting, but while he was doing so the ropes holding the platform broke, leading to Heaven being injured. The court found similarities with *George v. Skivington* in that while no direct contract existed between Pender and Heaven, Pender had a duty to any person who might be required to use the platform. The court held that whenever one person supplies goods or machinery to be used by another person, and there is the likelihood of injury to the person to whom the thing is supplied, there is a duty of care to use ordinary skill and care in relation to the condition or manner of supply. One judge, Brett, went further in *obiter dictum* by suggesting that:

> whenever one person is by circumstances placed in such a position in regard to another … that if he did not use ordinary care and skill in his own conduct with regard to those circumstances, he would cause danger or injury to the person or property of the other, a duty arises to use ordinary care and skill to avoid such danger.

FIGURE 6 The dock owner who supplied the platform was found to have a duty of care to the workman painting the ship.

Donoghue v. Stevenson (1932)

A friend bought May Donoghue a bottle of ginger beer. The drink was in an opaque bottle, so it was not possible to see the contents. Donoghue drank some of the ginger beer, but when the last of the bottle was poured into a glass, the remains of a decomposed snail came out into the glass. Donoghue suffered from illness and shock as a result of drinking the ginger beer, and sued the manufacturer of the ginger beer, Stevenson. There was no direct contractual relationship in this case because it was Donoghue's friend who had actually bought the drink, and had bought it not directly from Stevenson but from a café supplied by Stevenson. The case was eventually decided in favour of Donoghue. The leading judgement was delivered by Lord Atkin, and it is the following words within his judgement that are accepted as the *ratio decidendi* of the case and therefore constitute the precedent that has become law:

FIGURE 7 When May Donoghue found a decomposed snail in her bottle of ginger beer, she sued the manufacturer.

> a manufacturer of products, which he sells in such a form as to show that he intends them to reach the ultimate consumer in the form in which they left him with no reasonable possibility of intermediate examination, and with knowledge that the absence of reasonable care in the preparation or putting up of products will result in an injury to the consumer's life or property, owes a duty to the consumer to take that reasonable care.

These words are very similar to the *obiter dictum* in *Heaven v. Pender*. Lord Atkin made it clear that he believed the comments by Brett in that case were a good basis for future law, so he adopted the same principle as his *ratio decidendi* in the case before him. This effectively created new law.

Grant v. Australian Knitting Mills (1936)

Dr Grant purchased a pair of underpants manufactured by Australian Knitting Mills. During the manufacturing process a chemical was left in the fabric, and Grant suffered from severe dermatitis as a result of wearing the underpants. He sued the company, and the court found in his favour. The principles of the case of *Donoghue v. Stevenson* were applied, even though the snail in the bottle case was an English case and Grant's case was heard in the Australian court hierarchy. Judges in the Australian court system felt the English precedent was a fair and just law, so it became part of Australian common law.

The law of negligence

The area of law created by the cases just discussed is known as the law of negligence. Negligence is said to occur when a person owes a duty of care to another, but does not act in such a way as to ensure the safety of that person. It is now accepted that suppliers of all goods owe a duty of care to anyone who uses those goods, whether they were the actual buyer or not.

2.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What is common law?
2. Identify the key principles of the doctrine of precedent.
3. Define the following in your own words:
   (a) duty of care
   (b) negligence.

Explain

4. What is the difference between the *ratio decidendi* and *obiter dictum*?
5. Why are law reports important in helping judges make and apply common law?
6. Explain why the court hierarchy is important in the operation of the doctrine of precedent.

Predict

7. How do you think a judge might decide the following cases?
   (a) A woman buys a new car from a dealer. While preparing the car, a mechanic accidentally damages the brakes and the buyer has an accident. She sues the manufacturer and the dealer.
   (b) A man has a lot to drink at a club. When he goes to leave, the club manager offers to order the man a taxi but he refuses it. While walking home the man staggers onto the road and is injured when a car hits him. He sues the club for negligence.
   (c) A couple buy a house but discover that it is riddled with termites and will need to be demolished. They sue the previous owner although she claims she knew nothing about the termites.

Think

8. 'Judges have used common law processes to bring greater fairness to the law by adapting previous decisions to suit the new facts before them.' Do you agree or disagree with this statement? Use examples from the cases discussed in this section to support your opinion.

learnON RESOURCES — ONLINE ONLY

Watch this eLesson: The ability of the courts to make law (eles-2380)

2.6 SkillBuilder: Problem solving and decision making

2.6.1 Tell me

Problem solving and decision making involve working collaboratively in groups, negotiating and using teamwork to solve an issue and develop a plan for action. In order to do this successfully, you will need to do the following:

- Listen actively to the views of every member of the group.
- Display empathy for the views of others. This means that you have an appreciation for the feelings of others and respect their right to an opinion, even if it is different from your own.
- Negotiate to resolve differences of opinion.

- Arrive at a conclusion in a democratic manner. This can mean having a vote among members of the group, or arriving at a consensus where everyone agrees to change their views slightly until reaching a conclusion that everyone agrees with.

2.6.2 Show me

So how does this work in practice? Consider this issue: As we have seen, many types of disputes are resolved without going to court. Mediation and conciliation are recommended in Family Court disputes, anti-discrimination cases and consumer law cases. Is this a fair way of dealing with legal issues? What happens if one party feels intimidated in the mediation process? Might they give away more than they had intended? On the other hand, these processes are much cheaper and can save parties thousands of dollars in legal fees.

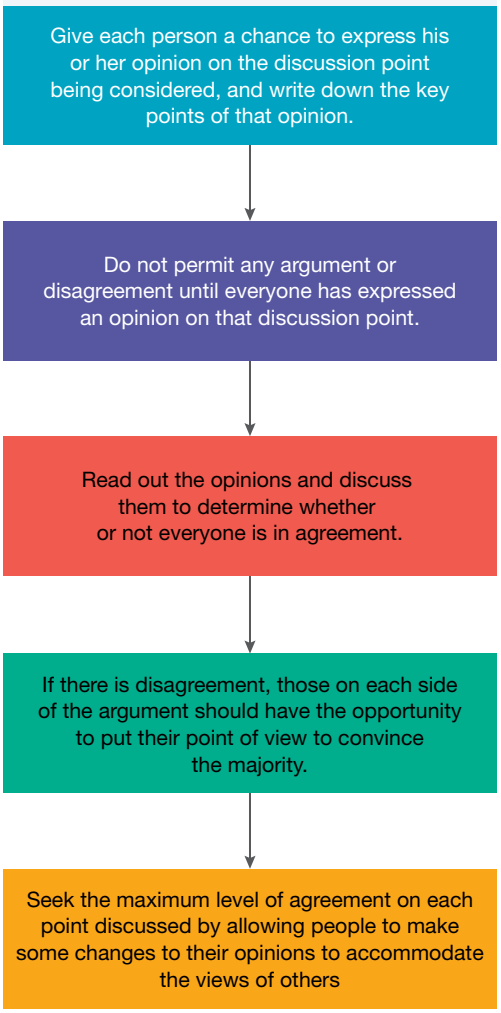
If you had to decide as a group whether or not these alternative measures are fair, or if it would be fairer to have these matters decided by an independent umpire such as a judge or magistrate, how might you reach a conclusion that was agreeable to all?

Form into discussion groups to consider the following key points:

1. What are the benefits and disadvantages of going through a process of mediation?
2. What are the benefits and disadvantages of conciliation?
3. What are the benefits and disadvantages of taking the matter to court?
4. Does the more active role of a conciliator make this process less open to manipulation by one of the parties than mediation?
5. Would it be fairer to have an independent person arbitrate on the matter?
6. Does the lower cost of the mediation or conciliation make up for the lack of an independent umpire?

These discussion points should be tackled within each group one at a time. Members of the group can take it in turns to keep notes. For each discussion point you should use the procedure illustrated in figure 1.

FIGURE 1 The procedure for problem solving and decision making



2.6.3 Let me do it

Use the procedure in figure 1 to consider the following issue: Law-making by the courts has provided the flexibility that allows new law to be made when there is no other law available to cover the issue at hand. Nevertheless, judges are not democratically elected in the way members of parliament are. Would it not be better to have all laws made by democratically elected members of parliament who are accountable to the voters?

Discussion points could include:

1. What are the advantages and disadvantages of law-making by the courts, both for individuals before the courts and for our society as a whole? (You may need to further research aspects of law-making by the courts to be able to provide useful examples. There is plenty of material available online.)

2. What are the advantages and disadvantages of law-making by parliament, particularly in a democratic society?
3. Are there changes you believe could improve the system, such as closer cooperation between parliament and the court system? How might this work?
4. If you do not see a need to change, how do you convince others to support the current system?
5. What ideas can you propose that would take advantage of the best features of law-making through the courts and law-making by a democratically elected parliament?

2.7 Review

2.7.1 Summary

The court system provides us with a means of resolving disputes, as well as a means of bringing to justice those who commit crimes against society.

- Courts have both civil and criminal jurisdiction.
- All courts fit within a court hierarchy. The lower courts deal with less serious matters, and intermediate and higher courts have jurisdiction over more serious matters.
- A court hierarchy allows for a person to appeal to a higher court if he or she is unhappy with the ruling in a lower court.
- The Supreme Court in each state has both original and appellate jurisdiction.
- Magistrates courts (called Local Courts in New South Wales) hear around 90 per cent of all cases in each state.
- As well as hearing less serious cases, magistrates courts conduct committal hearings on more serious criminal matters to test whether the prosecution has a strong case against the accused.
- Magistrates courts also make decisions in relation to the granting of bail to those accused of crimes.
- The Family Court of Australia has jurisdiction over all matters relating to divorce and relationship breakdown.
- Disputes relating to consumer law can be heard by an administrative tribunal, which will usually attempt to resolve the matter through mediation before conducting a formal hearing.
- Anti-discrimination bodies in each state assist with cases involving discrimination. They attempt to use a process of conciliation to resolve these disputes.
- State environmental protection authorities have the power to order individuals or organisations to stop polluting and to clean up, but can also initiate civil or criminal proceedings if the polluter does not comply with any orders.
- Judges will follow precedents set in previous cases, particularly those precedents set in a higher court.
- When there is no relevant legislation and no existing precedent, judges can make new law when they decide a case brought before them.

2.7.2 Reflect

1. Discuss the following problems with a partner. For each problem determine how the problem would be resolved and which courts or tribunals might be involved.
   (a) Mietta applied for an apprenticeship as a chef. At the interview she was told they were only interested in employing males. She believes this is a case of discrimination.
   (b) A chemical factory operates a waste management process that cleans and filters its waste products before discharging clean water into a local creek. The system breaks down and toxic chemical waste is discharged into the creek.
   (c) The police charged Jason with assault and theft after he bashed a boy and took his mobile phone.

(d) Thomas bought a new folding ladder at his local hardware store. When he tried to use it to paint his loungeroom walls, the hinges snapped and the ladder collapsed, injuring Thomas and spilling paint over the floor.
(e) Lily is allergic to peanuts. She became seriously ill after eating a health bar. The label stated that the bar did not contain peanuts. The manufacturer apologised and said it had made a mistake with the labelling.

2. Imagine you are a member of a jury. The accused has been charged with armed robbery.
   (a) What court would you be in?
   (b) How many people in total are on the jury?
   (c) Draw a floor plan of the courtroom and indicate where the following are located: the judge, the jury, the prosecutor, the counsel for the defence, the judge's associate, the tipstaff and the witness box.

learnon RESOURCES — ONLINE ONLY

Try out these interactivities: Multiple choice (int-5436), True/false (int-5437), Crossword (int-5438)

TOPIC 3
Australia's justice system

3.1 Overview

3.1.1 The principles of a democratic society

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

You might recognise the statue in figure 1. It is Lady Justice, a figure that is commonly associated with our legal system as well as many other legal systems around the world. A version of Lady Justice stands outside the Supreme Court of Queensland. She is armed with a sword, representing the power of reason and justice which may be wielded either for or against any party, and she holds a set of scales, which symbolise fairness and balance in judgements.

Australia's justice system values these principles: fair treatment by the courts for everyone, independent judges who are free to make fair decisions, and the right to appeal a decision made by a court. These principles contribute to a democratic and just society.

FIGURE 1 Lady Justice represents justice, an essential belief of our society.

Starter questions

1. Looking at the picture of Lady Justice in figure 1, do you think that courts use scales to balance the merits of each problem that comes before them? Do courts use a sword to make a just and reasonable decision for either side?
2. What does justice mean to you? Define it and list some factors that should be present for justice to occur.
3. Why do we need justice?
4. Imagine that you have been accused of something you did not do. What would you expect to happen for justice to occur?

INQUIRY SEQUENCE

3.1 Overview 59
3.2 Is everyone equal before the law? 60
3.3 What makes our courts independent? 63
3.4 Who has the right of appeal? 66
3.5 What happens when the system fails? 68
3.6 **SkillBuilder:** Creating and analysing a survey 73
3.7 **Review** 76

learnON RESOURCES — ONLINE ONLY

Watch this eLesson: Australia's justice system (eles-2363)

3.2 Is everyone equal before the law?

3.2.1 Fair treatment

Equality before the law is an important and central principle of our legal system. In Australia we believe that all parties are entitled to be treated fairly by a court — regardless of whether they are a victim of crime, an offender or any other participant in the justice system. This does not mean that everyone should be treated in the same way, but that anyone who comes into contact with the courts should believe that they are being treated fairly and without **discrimination**.

3.2.2 Discrimination and the courts

Equality before the law is a basic **human right**. Article 7 of the **Universal Declaration of Human Rights** states that, 'all are equal before the law and are entitled without any discrimination to equal protection of the law.' Australia signed the International Covenant on Civil and Political Rights in 1991, which includes 'the right to equality before the law and non-discrimination.'

Australia has several laws relating to human rights, discrimination and the need to treat people fairly. Some of the laws made by the Commonwealth Parliament include the *Racial Discrimination Act 1975*, the *Sex Discrimination Act 1984*, the *Disability*

FIGURE 1 It is against the law to discriminate against someone on the basis of their personal characteristics, status or beliefs. This applies to the way that people are treated by the law and by the courts.

Discrimination Act 1992, the *Age Discrimination Act 2004*, and the *Australian Human Rights Commission Act 1986*. Various statutes across the states also define discrimination and protect human rights.

It is against the law to discriminate against someone on the basis of their gender, ethnicity, disability, sexual orientation, age, religious affiliation, socioeconomic background, size or nature of family, literacy level or any other prescribed characteristic. The law and the courts must treat everyone fairly regardless of their personal characteristics.

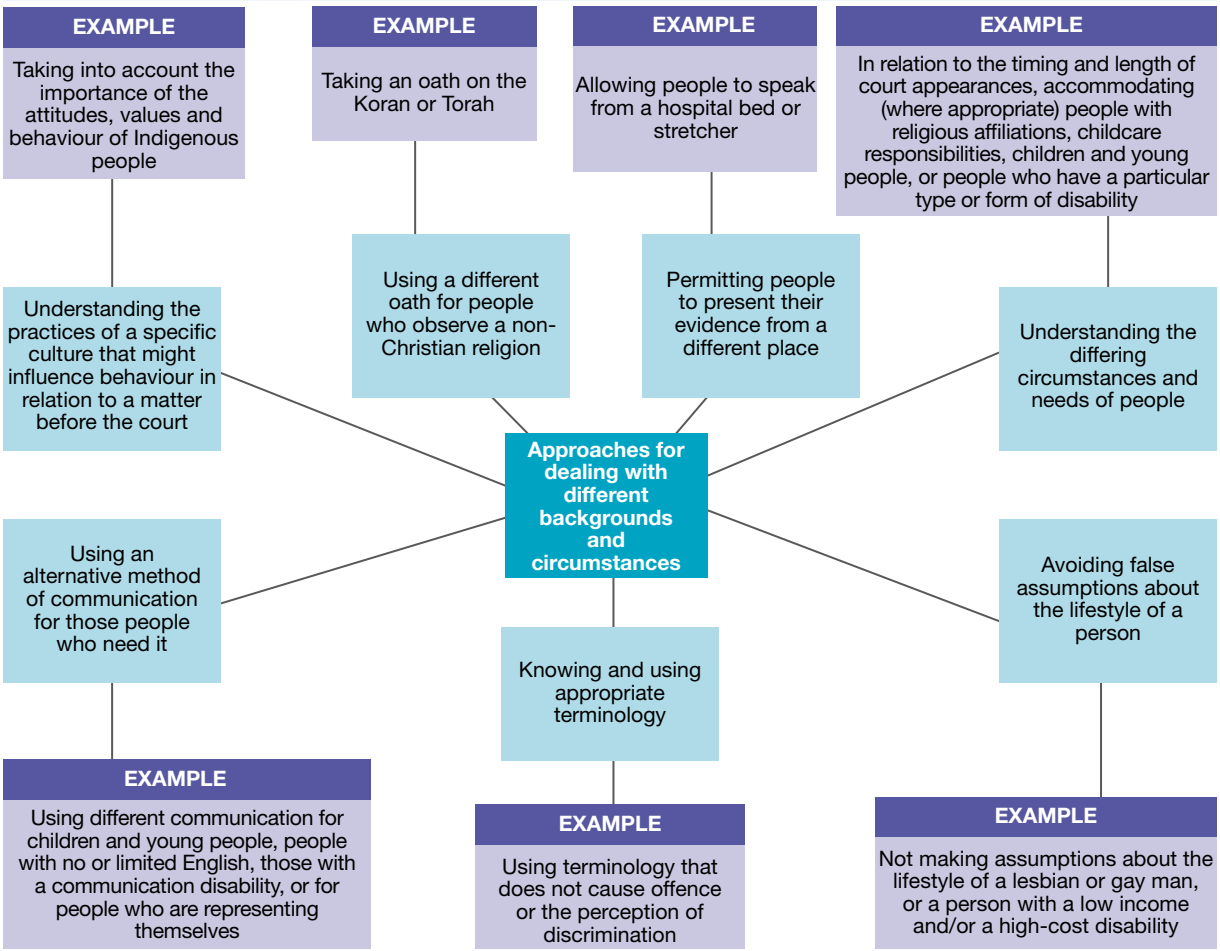
No-one in our country is exempt from our laws. This means that everyone is entitled to have a case heard by an independent and impartial court, and everyone must obey the laws of Australia.

3.2.3 Equality before the law

It is very important that people who come into contact with the justice system believe they are being treated equally and fairly so that confidence in the system is maintained. Judges and courts must be aware of any personal bias or prejudice against any person from a particular background and make sure that this is nullified. This may mean that not everyone is treated in the same way. Some different approaches for dealing with an individual's specific background or circumstances can be seen in figure 2.

Respect and courtesy should be shown to anyone who comes into contact with the justice system. Discriminatory attitudes have no place in a courtroom. Everyone is entitled to be treated fairly under the law in Australia so that we are all protected from injustice.

FIGURE 2 Different approaches taken by the courts and judges to help ensure that everyone is treated fairly — not necessarily the same — by the justice system



CASE STUDY

In jail, no fair trial

In March 2014, ABC TV's *Lateline* aired a story about a 23-year-old Aboriginal woman who spent 18 months in a Kalgoorlie jail in Western Australia.

Rosie Anne Fulton was charged with driving offences. She had crashed a stolen car in Western Australia after consuming a large amount of alcohol. Her case was heard in a Kalgoorlie court, where the magistrate declared her unfit to plead as a result of her disability. Ms Fulton was born with foetal alcohol syndrome and has the mental capacity of a small child. She was placed on a prison-based supervision order.

Ms Fulton and her legal guardian, Ian McKinlay, appealed to Northern Territory authorities to house Ms Fulton in a secure care facility near the prison in Alice Springs. This would allow her to stay close to her Alice Springs family and remain in specialist accommodation, built for people with intellectual disabilities and challenging behaviours. However, the application was rejected.

'They're leaving Roseanne in prison, neglected, forgotten and ignored,' Mr McKinlay said.

Aboriginal and Torres Strait Islander Social Justice Commissioner Mick Gooda noted that Aboriginal and Torres Strait Islander people are over-represented in the justice system. 'It is a breach of Ms Fulton's human rights which must be urgently addressed,' he said.

FIGURE 3 Rosie Anne Fulton grew up living in the riverbeds around Alice Springs.

Disability Discrimination Commissioner Graeme Innes agreed that it was unacceptable to put people in prison for indefinite periods when they have not been found guilty of a crime. 'Prison is simply not an alternative accommodation option for people with disabilities,' he said. 'We launched a report in February which demonstrated the lack of equal access to justice for Australians with disabilities, and this is just one example of a bigger problem.'

3.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. Identify the ways in which it is against the law to discriminate against someone.
2. List two approaches that the justice system could take to treat participants equally and fairly.

Explain

3. Outline what is meant by the principle of equality before the law.
4. Read the case study 'In jail, no fair trial' in this section. In what ways has the justice system discriminated against Rosie Anne Fulton?

Discover

5. Choose one of the courts in your state or territory. Use internet resources (such as the court's website, or an annual review or strategic plan) to find out what the court has done to ensure that everyone is treated fairly. (You might need to find the goal or purpose of the court.) Write down some of the things you see related to equality before the law.
6. Use internet resources (including brochures or videos) to identify the services offered by the courts, or offered to those attending court, that ensure everyone is treated fairly. (Look for support and assistance or legal help.) List three of the services you discover.

Predict

7. Describe what could happen if the courts did not treat everyone fairly.

Think

8. Do you think that everyone who comes into contact with our courts is equal before the law? Justify your answer and compare it to the opinions of other students in your class.
9. Debate the topic: 'Everyone is equal before the law.'

3.3 What makes our courts independent?

3.3.1 An independent judiciary

Independence of the **judiciary** is an important feature of Australia's legal system. This is the principle that our judges and courts need to be kept separate from the other two branches of Australia's government. An independent judiciary ensures that we continue to live in a democratic and just society. Judges and courts should not be subject to political influence from government, or from the political interests of any other person or organisation.

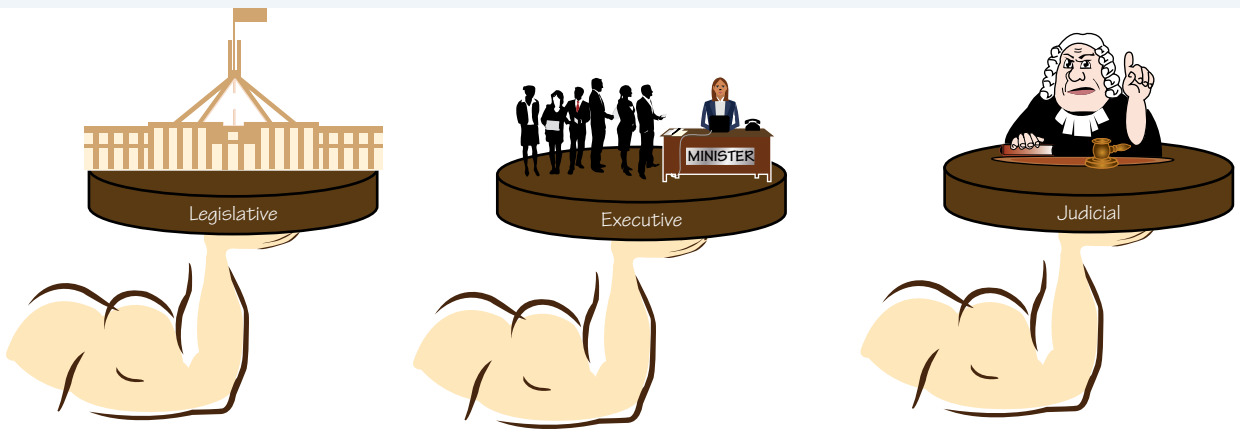
3.3.2 Separation of powers

The Australian Constitution supports the idea of the **separation of powers** to allow for three arms of government: a legislative arm, an executive arm and a judicial arm.

- *Legislative arm.* This is the parliament. Its function is to make new laws or to change or remove existing ones. Under the Constitution, parliament is the supreme law-maker. The courts are bound by legislation passed by parliament and by precedent.
- *Executive arm.* This arm of government administers the legislation passed by parliament. Executive power officially lies with the Governor-General or the Governor, who represents the Crown. It is government ministers and the public service who actually exercise this power. For example, the department of health is an Australian public service department which administers the running of Australia's health system. The head of this department reports to the minister for health.
- *Judicial arm.* This is the judiciary and the courts. They make judgements about the law, and are responsible for settling disputes and enforcing the law. The High Court of Australia is responsible for interpreting and applying the Constitution. It makes sure that the other arms of government do not act in a way that is outside the powers granted by the Constitution. The judiciary can for example declare that laws passed by parliament are unconstitutional, or require particular actions if they believe that a branch of government is not performing a constitutional duty.

The rationale behind the separation of powers is that it allows each arm of government to check and balance the powers of the others. This prevents any arm from becoming too powerful and in this way helps maintain a fair and just society.

FIGURE 1 The separation of powers



3.3.3 How do we ensure that our judiciary remains independent?

Two safeguards in the Constitution protect judicial independence: **security of tenure**, and the way in which judges are appointed.

Security of tenure

By appointing a judge for a long period of time, we expect that he or she will be free to act independently. Judges who are secure in their position are more likely to decide cases and make rulings objectively even when they know that those decisions might be politically unpopular. Judges are commonly appointed until the age of 70, unless they choose to retire earlier. This makes it less likely that governments will be able to influence the decisions of judges.

The way in which judges are appointed

Judges are appointed by the Governor-General (or Governor in each state) acting on the advice of the government. They cannot be removed from office except by the Governor-General (or Governor), following an address from both houses of parliament. Judges cannot be removed from office just because a government disagrees with their decisions in court. Because a judge cannot be easily removed by the executive or legislative arm, it is assumed that he or she can work independently and make decisions without fear of interference.

FIGURE 2 Judges are appointed for an extended period of time and in a manner which promotes their independence from the other branches of government.

3.3.4 Do we really have an independent judiciary?

Judges and courts which only exist to do what a government wants them to do provide no guarantee of a fair and just society. Australia's judiciary is independent — to an extent. Even though judges and courts have the responsibility of interpreting the law, courts also make laws by establishing legal principles. This encroaches on the responsibility of parliament. Judges can make law through the use of common law but these law-making powers are limited.

Judges are formally appointed by the Governor-General (or Governor), who is part of the executive branch of government. Because this appointment is based on the recommendation of the government, there is a small conflict between the executive and judicial arms. However, this is considered to be a minor conflict and Australia's judiciary is generally thought to be independent. As seen in the case study 'The importance of judicial independence', judges strive to protect this principle.

FIGURE 3 The judiciary is considered to be independent of the government in Australia.

CASE STUDY

The importance of judicial independence

The legislature enacts the law, the executive implements it and the judiciary independently interprets and applies it; that is, impartially, honestly and justly, without interference.

No branch of government can rightly impede or impair the actions of the other. Put more simply, all three arms must keep their hands to themselves and off each other.

Together the judicial independence principle and the separation of powers doctrine ensure that, in the discharge of their adjudicative powers and responsibilities, judges are not pressured or improperly influenced by anyone else either from outside or inside the court, including me, to reach a result other than one based on merit alone. Good judges faithfully adhere to this golden rule.

However, the separation of powers doctrine is a two-way street. In return for the unfettered independence to make decisions, judges must not meddle in the administration of enacted laws by the executive and departments of state.

Source: The Hon. Tim Carmody, QC (Queensland's former Chief Magistrate). Extract from 'Opinion: Separation of powers and judicial independence are cornerstones of a free society and must be preserved', *Courier-Mail*, 30 January 2014.

3.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. Define judiciary.
2. What is the role of the judiciary?

Explain

3. Outline what security of tenure is and why it is significant in guarding judicial independence.
4. Explain how the way in which judges are appointed protects their independence.
5. Read the case study 'The importance of judicial independence'. Why does Chief Magistrate Tim Carmody think that judicial independence is important?
6. Look at figure 3. What the judge is saying conflicts with the principle of judicial independence. Explain why this is the case.

Discover

7. Judges often comment on the principle of the independence of the judiciary. Using the internet or newspapers, find an article or commentary written by a judge or magistrate that refers to judicial independence. What opinion does the judge or magistrate hold?
8. People in the community (including members of the public, journalists and politicians) often criticise the judiciary. Using the internet or newspapers, find an article or commentary referring to judicial independence that was written by (or quotes) a member of the public, a journalist or a politician. What opinion does this person hold?
9. In 2011 the High Court declared that the Gillard government's 'Malaysian solution' was illegal, leaving the government's refugee policy in disarray. This situation demonstrates the importance of judicial independence. In this case the judiciary (the High Court) showed its independence by declaring invalid a decision made by the executive (the minister for immigration). Follow the **Malaysian solution ruling** weblink in the Resources tab to access the ABC News report on the issue. Write down the reason for the High Court's decision.

Predict

10. Outline all the possible consequences if Australia's courts lost their independence.

Think

11. Why is our judiciary independent?

learnON RESOURCES — ONLINE ONLY

Explore more with these weblinks: Independent judiciary, Malaysian solution ruling

3.4 Who has the right of appeal?

3.4.1 Appeals

Any person involved in a court case who is not happy with the outcome of that case has the right to **appeal** the decision. This means they can ask a higher court to review a decision. However, there are some restrictions on who can appeal and under what conditions a person can appeal.

3.4.2 What is the right of appeal?

No legal system is perfect. When a case is heard for the first time, it is possible that a mistake can be made by the magistrate, judge or jury. As a result, the law often allows people to contest a court decision. This is known as the right of appeal. Our court hierarchy (discussed in topic 2, 'Our court system') allows the decision of a lower court to be reviewed on appeal by a higher court.

FIGURE 1 The right to appeal is necessary because our legal system sometimes makes mistakes and someone can be wrongly sent to jail as a result.

All the courts have the ability to hear cases for the first time. This is called **original jurisdiction**. Some courts have the power to hear appeals from cases that were first held in lower courts. They might completely rehear a case or examine points of law. These courts are known as appeal courts. They have **appellate jurisdiction**.

An appeal court has the power to decide if the court hearing the case for the first time was correct or mistaken in its decision. The appeal court may agree with the result of the lower court's ruling. If it finds that the lower court's decision was mistaken, it will usually overturn the decision and replace it with its own.

There are several reasons why a party may appeal. These include:

- dissatisfaction with the decision of a court on the grounds of a question of fact
- disagreement with the court on a point of law
- contention over whether the remedy imposed by the lower court reflects the nature of the evidence presented at the trial.

3.4.3 Who can appeal?

The person appealing to the court is known as the **appellant** and the person defending the appeal is referred to as the **respondent**. Who can appeal depends on whether a case involves criminal or civil law.

In a civil case, any party can appeal a decision. Some appeals can only be heard if the court gives permission to the person wanting to appeal. This is called **leave to appeal**.

In a criminal case, only the people who are directly involved in the case can appeal — the accused and the prosecution. Members of the community do not have the right of appeal. (This includes victims.) Note that:

- The prosecution can only appeal against a sentence. It cannot appeal against a verdict of not guilty.
- A defendant can appeal against a guilty verdict and a sentence, or apply for leave to appeal against a sentence.

3.4.4 How do appeals work?

The court hierarchies in each state and territory deal with appeals differently. Consider New South Wales:

- Appeals from the Local Court are heard by the District Court.
- The Supreme Court of New South Wales has two appellate courts: the Court of Appeal and the Court of Criminal Appeal. These hear appeals from the other courts in New South Wales.

Contrast this with the situation in Victoria:

- In criminal matters, the County Court hears most appeals from the Magistrates' Court. The Court of Appeal, a division of Victoria's Supreme Court, hears and determines appeals from the County Court and the trial division of the Supreme Court.
- In civil matters, there is no right of appeal from the Magistrates' Court to the County Court. Instead, an appeal from the Magistrates' Court proceeds directly to a single judge of the Supreme Court. Appeals from the County and Supreme Courts are referred to the Court of Appeal.

Appeals from the highest appeal court in each state and territory are heard by the High Court. There is no right of appeal to the High Court. Usually the applicant must obtain special leave from the High Court in order to have the case heard. The High Court normally agrees to hear only a small proportion of the appeals brought to it. It is the final court of appeal.

FIGURE 2 The High Court is the final court of appeal in Australia.

FIGURE 3 Appeals can be heard before a single judge or a group of judges (usually two to five), depending on the court and the type of matter being heard. A jury is not used in an appeal.

3.4.5 What happens in an appeal?

An appeal will usually only hear legal argument about a specific point, and the court will only consider the evidence that was given at the original trial or sentence. If an appeal against a verdict is successful, the court will either find the appellant not guilty or will order a new trial with a different judge and jury. If an appeal against a sentence is successful, it may be reduced or changed to a different type of sentence.

FIGURE 4 A person who is considering an appeal should speak to a lawyer before proceeding.

3.4.6 Why do we have the right of appeal?

The appeal process promotes a fair society and protects us all from unjust decisions. If citizens did not have the right of appeal, there could be an increase in cases involving injustice.

Parties not satisfied with the outcome of their case would have no opportunity to ask a higher authority to review a decision made by a lower court. The appeal process is therefore important for correcting any mistakes made by lower courts. This supports a democratic and just society.

3.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What is the right of appeal?
2. Why might a party appeal a court's decision?
3. Who can appeal a decision and under what circumstances?
4. Briefly outline what happens in an appeal.

Explain

5. Describe the difference between original and appellate jurisdiction.
6. Explain the process for appealing a court's decision.

Discover

7. Using the internet or newspapers, look up a case that has gone to appeal. Summarise in writing what the appeal was about and what result was achieved.
8. Find the website of a court in your state or territory's court hierarchy. Research the process for appealing a court's decision. Present this process in the form of a diagram.

Think

9. 'The right of appeal is an important principle of Australia's justice system.' Do you agree or disagree with this statement? Give reasons for your answer.

Predict

10. Imagine you have been found guilty of a crime that you did not commit. What would happen to you if there was no right of appeal?

3.5 What happens when the system fails?

3.5.1 Factors that can undermine the system

Our legal system is based on a number of principles which exist to make sure that anyone who makes contact with a court is treated fairly and receives justice. However, the system does not always work perfectly. Several factors can undermine the application of these principles. These include bribery, coercion of witnesses, trial by media and court delays.

3.5.2 Bribery

Bribery might occur in the justice system if someone tries to offer money, a gift or any other item of value to a judicial officer (such as a judge) or any other public official (such as a police officer) in the expectation that the person receiving the bribe will alter his or her behaviour and act in the briber's interests. A person might bribe a juror to make a certain decision, or bribe a witness to present a false testimony or withhold the truth. Note that it is illegal to give or receive a bribe.

Bribery is an offence under common law in many of the states and territories in Australia. Some states also have legislation referring to bribery. Under the Commonwealth *Criminal Code Act 1995*, the offence of bribing a public official is punishable by ten years in prison or a fine of up to $1 million.

Bribery can undermine the principles of our system of justice. Judges who accept a bribe are no longer independent. They have agreed to alter their behaviour and act in someone else's interests. Witnesses who have been bribed may not present the truth or the full truth, which means that a fair trial will not occur. A jury that reaches a decision after receiving a bribe may reach the incorrect decision.

CASE STUDY

The bribe's in the mail

Police investigated a possible attempt to bribe judges in Victoria after several cheques were received in the mail in July 2012. The mail was addressed to judges and court officials at the Victorian Supreme Court. The cheques were discovered through the court's mail-handling security protocols. A court spokeswoman said, 'All envelopes were similar in appearance. Court staff opened one envelope, revealing a cheque made out to the addressee.' It is believed that all the suspicious envelopes opened were found to contain cheques.

FIGURE 1 Bribery can involve money, a gift or any other item of value. It undermines the principles of justice because it prevents the truth or interferes with a correct decision being made.

3.5.3 Coercion of witnesses

Coercion of witnesses is against the law. A person must not coerce or attempt to influence a witness in a court case to provide a false testimony, withhold the truth, or avoid turning up to court at all. Witnesses could be intimidated or bullied while attending court; or at their home or place of work by an offender, a family member of the accused or an accomplice of the offender who knows or discovers where the witness lives or works. A court might make an order to stop the threatening or intimidating behaviour, or to stop the person attempting the coercion from coming near the witness again. The justice system can also offer protection programs if necessary, including protecting the identity of a witness and even relocating a witness.

Coercion of witnesses is covered by different legislation in each state and by the federal *Crimes Act 1914*, where it is referred to as 'corruption of witnesses'. Depending on the state, the charge of threatening, corrupting or influencing a witness can result in sanctions including a fine, good behaviour bond, suspended sentence or prison sentence.

Influencing or coercing a witness can undermine the principles of our justice system. Evidence presented in court will become misleading and an incorrect verdict could result. An accused person who should be found guilty may instead be found not guilty. Conversely, an innocent person may be found guilty. A court trial would not hear the truth and therefore the trial would not be fair. Justice would not be served.

CASE STUDY

Please don't go to court

An 18-year-old Woollamia man was committed for sentence in the District Court in February 2014 for influencing a witness to not give evidence in court. He was also charged with perverting the course of justice. Recordings produced by the police revealed that the accused was contacted by an inmate at the South Coast Correctional Facility. The police alleged that the prisoner asked the accused to go to another man's house and tell him not to appear in court to provide evidence relating to another inmate's matter before a court. The man who was the subject of the coercion was ordered to appear in the District Court in March.

FIGURE 2 It is illegal to contact witnesses in order to influence them to change what they say in court or even to not appear in court.

3.5.4 Trial by media

The media, including television and newspapers, will cover court cases. At times, this coverage can have an impact on the accused's reputation by creating widespread opinion regarding the person's guilt or innocence before the trial has occurred or before a verdict has been delivered. This is referred to as **trial by media**. A high-publicity case, where the reporting of events can create a frenzy, can make a fair trial nearly impossible.

In Australia, strict laws regarding contempt of court restrain the media from what it can report after a person is formally arrested or charged. These laws are designed to make sure that a defendant receives a fair trial in front of a judge or jury that has not formed an opinion biased by prior media coverage.

Courts take contempt laws very seriously. This is because justice can only occur when courts are able to operate independently, unhindered by outside interference, and are free to make a fair judgement. If the media publishes information about the accused's prior convictions before the end of a trial, disobeys a court order or interviews witnesses, the judge or jury may be prejudiced against the defendant. The opportunity to have a fair trial would therefore be lost.

CASE STUDY

Trial by media

3AW radio broadcaster Derryn Hinch was found guilty of contempt of court in 2013 for breaching a suppression order made by a Victorian Supreme Court Justice. Hinch published tweets and blog entries about Melbourne woman Jill Meagher's murderer during court proceedings, referring to the accused's parole status. Melbourne newspapers then published front-page stories outlining the defendant's past, claiming that he was going to plead guilty. Hinch was ordered to pay a $100 000 fine, but he refused to pay the fine and spent 50 days in prison instead.

FIGURE 3 Radio broadcaster, Derryn Hinch

3.5.5 Court delays

There is an old saying in law: 'Justice delayed is justice denied'. It suggests that if a person is wronged in some way and a dispute needs to go to court but does not do so in a timely fashion, then there might as well have been no court case at all. Justice has not taken place. A **court delay** can undermine the application of the principles of justice. Yet there is no right in Australia, either under common law or in legislation, to have a court case conducted within a reasonable amount of time.

However, the International Covenant on Civil and Political Rights, to which Australia is a signatory, states that anyone charged with a criminal offence is entitled 'to be tried without undue delay.' Numerous reviews and inquiries into court delays have been undertaken to explore why they happen and what can be done about the problem. Some of the problems caused by court delays are illustrated in figure 4.

Unnecessary delays can occur before the trial starts (between the date the case is committed to go to trial and the actual commencement date), or during the trial itself, making the court case drag on longer than necessary.

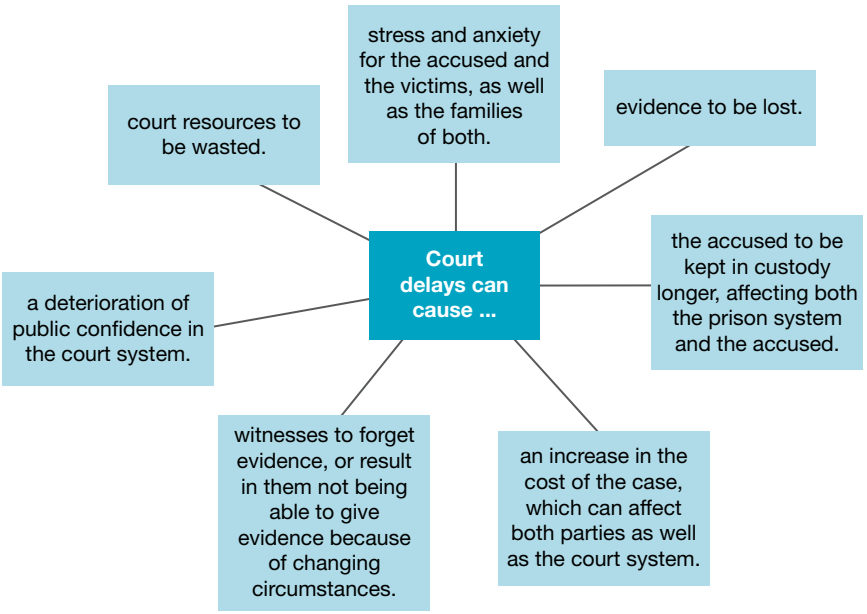
There are many reasons for delays that can cause a trial to last longer than necessary. These include:

- either side insufficiently or inadequately preparing its case
- lack of legal representation
- complex evidence and complex cases
- witnesses facing difficulties in getting to court
- either party using delaying tactics when in court.

Delays can also occur simply because the courts have more cases to deal with. This can happen for many reasons, including:

- a rise in the crime rate
- an increase in police numbers
- changes in population
- availability of legal aid
- changes in government policy
- changes in the law.

FIGURE 4 Problems caused by court delays



CASE STUDY

Can't find an interpreter when you need one

At Sydney's Central Local Court in March 2014, a man was accused of setting his former partner, a 34-year-old woman, on fire. He was charged with causing grievous bodily harm with intent to murder and breaching an apprehended violence order. Police alleged that he poured flammable liquid over the woman and then set her alight. The hearing was adjourned until later in the week because a court interpreter was not available. The man's lawyer did not apply for bail and it was formally refused.

3.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. Identify the factors in the following diagrams that can undermine the principles of justice.

(a)

(b)

(c)

(d)

2. For each factor you identified in question 1, briefly outline how it undermines the justice system.

Explain

3. Construct a concept map or diagram that explains the impact that bribery, coercion of witnesses, trial by media, and court delays have on the justice system.
4. Choose one of the case studies in this section and write a letter to an editor of a newspaper expressing your opinion on the issue in the case study. Clearly identify the issue and explain its key features. Outline what you think should be done to solve the problem.

Discover

5. Using the internet, newspapers or magazines, find pictures related to one factor that undermines the justice system. Attach the pictures to a page in your notes. Label each picture with one effect the factor has on justice and what can be done to lesson that effect.
6. Using the internet or newspapers, find a case involving bribery, coercion of witnesses, trial by media or a court delay. Write down the main facts of the case.

Predict

7. Copy and complete the following table to predict some of the likely outcomes of the situations shown. Suggest what should happen. (The first situation has been completed for you.)

Situation	Likely outcomes	What should happen
Vince tells a witness in a murder trial that $100 000 will be transferred to her bank account if she changes what she will say when she is questioned in court.	• If the witness accepts the bribe, the truth of the case may never be heard. • If the witness accepts the bribe and the bribe is discovered, she could be charged with accepting the bribe as well as lying in court (perjury). • If the bribe is discovered, Vince could be charged with bribing a witness or influencing a witness.	• The witness should not accept the bribe. • Vince should not make the offer to pay the witness.
Eve offers a judge $250 000 to reduce the sentence for her boyfriend, who has been found guilty of manslaughter.		
Sevilla tells a witness in a court case that her cousin will kill her if she turns up at the trial.		
Michael is a journalist who decides that he will write a story proclaiming that Kirby is guilty the day after she has been arrested and charged by the police.		
Chan is representing Hugh in his court case and decides to delay proceedings whenever he can.		

Think

8. Working in groups of three or four, plan a video presentation explaining one of the factors undermining the justice system. Your plan should make the video engaging so that it will help viewers fully understand the factor, how it undermines the justice system and what the possible solutions are. Use internet resources and be creative in how you present your plan.

3.6 SkillBuilder: Creating and analysing a survey

3.6.1 Tell me

What is a survey?

A survey is the process of collecting data for the purpose of analysing an issue. It consists of putting a set of questions to a sample group of people. For example, a political party may conduct a survey to find out whether citizens are satisfied with their policies.

Why is a survey useful in civics and citizenship?

Surveys are an efficient way of collecting information from a large number of respondents. The questions can range widely to find out people's attitudes, values, opinions and beliefs on political or legal issues.

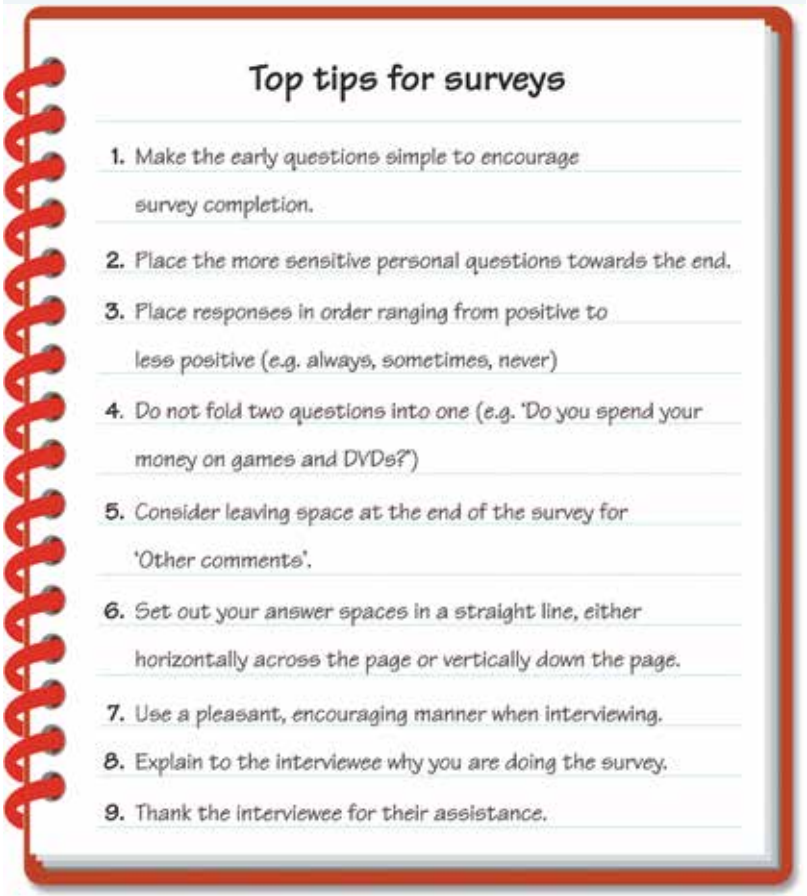
Model

A good survey:

- has a clear written introduction to the survey
- has simple questions early on
- places more sensitive personal questions towards the end
- leaves enough room to answer all the questions
- is of reasonable length
- is clearly analysed once responses are collected
- is well presented.

Refer to figure 1 for more tips on creating a good survey.

FIGURE 1 Survey tips



3.6.2 Show me

How to design a survey

You will need:

- a sheet of lined paper
- a pen
- questions that you would like to investigate.

Procedure:

Step 1

Decide what you want to learn. You need to be very clear about your goals or your survey results will be unclear.

Step 2

Decide whom you want to survey. Will your target group include both young people and adults, or just young people? How many people will you survey? Generally, the more people you survey the more reliable your results will be.

Step 3

Decide what method you will use to collect the data. Consider factors such as cost, speed and whether sensitive information is involved. Survey methods include:

- personal interviews
- telephone survey
- mail survey
- email survey
- internet/intranet webpage survey.

FIGURE 2 Personal interviews may be conducted at shopping centres or outside theatres. Personal interviews usually cost more to conduct than other survey methods.

Step 4

Design your survey. Start with a friendly introduction to encourage people to complete the survey. Work out your questions. There are two main types of survey questions:

- Closed questions ask the respondent to select an answer from a range of options.
- Open questions allow the respondent to record their thoughts about an issue. Look at the examples provided in figure 3 for ideas.

Try to keep your survey short and your questions simple. Make sure the layout is attractive and easy to follow.

FIGURE 3 A sample survey form

RATING SCALE

How would you rate the performance of our courts? Please circle one response.

Excellent Good Fair Poor

AGREEMENT SCALES

How much do you agree with the following statements? Please tick one response.

	Strongly agree	Agree	Disagree	Strongly disagree
The courts treat everyone fairly.				
Australia's judges are independent.				

MULTIPLE CHOICE

Please circle one response.

Age: 12–14 15–16 17–18 over 18

Gender: Male Female

OPEN-ENDED

Why do we allow people to appeal court decisions?

Step 5

Conduct a small trial of your survey to make sure the questions are clear and achieve your goals. Make any necessary changes.

Step 6

Conduct your survey and collate the results. These can then be analysed for patterns or anything unusual. When you analyse the results, consider working out percentages. For example: the females aged 12–16 surveyed spend 10 per cent of their money on computer games, while the males aged 12–16 spend 25 per cent.

3.6.3 Let me do it

Developing my skills

Task

1. In a small group, design and conduct a survey. It is to be a paper-based survey carried out by personal interview. Note that paper surveys should allow enough room for interviewees to write their answers.
2. In your group, select one of the following topics for your survey:
   - equality before the law
   - independent judiciary
   - right of appeal.
3. Follow the steps outlined earlier in this SkillBuilder to prepare for and conduct your survey. Read the list of tips for survey preparation in figure 1 to help ensure your survey is effective.
4. Practise your interview skills in your group. Work out how to introduce yourself to the interviewee and explain the purpose of the interview. Decide whether you will give the interviewees the survey and a pen to write down their answers, or whether you will read out the questions and record the responses yourself.

Analyse and present your survey results

1. After you have collected responses to your survey, collate the completed surveys. In your group, complete the following tasks.
   (a) Graph the responses to the closed questions.
   (b) Read through the responses to the open questions to get a feel for what people are saying.
   (c) Categorise the comments into different groups. The categories you develop are up to you. There may be some comments that do not fit a category.
   (d) Look carefully at the comments in each category. Can you see any patterns?
   (e) Compare the comments in each category to your closed questions data. Can you see any patterns here?
2. Use a software program such as PowerPoint or Keynote to prepare a slide show of your results.
3. Arrange a time with your teacher to present your slide show to your class. Give each class member a copy of your survey at the start of your presentation.

Questions

1. How did you develop questions for your survey?
2. Was it easy to sort out the information you collected? What was easy and what was hard?
3. What did you discover about people's views on your topic?
4. Can you make any conclusions about what you discovered about your topic?

Checklist

I have:

- written a clear introduction to the survey
- included simple questions early on
- placed more sensitive personal questions towards the end
- left enough room to answer all the questions
- produced a survey of reasonable length
- clearly analysed the survey
- presented the survey well.

3.7 Review

3.7.1 Summary

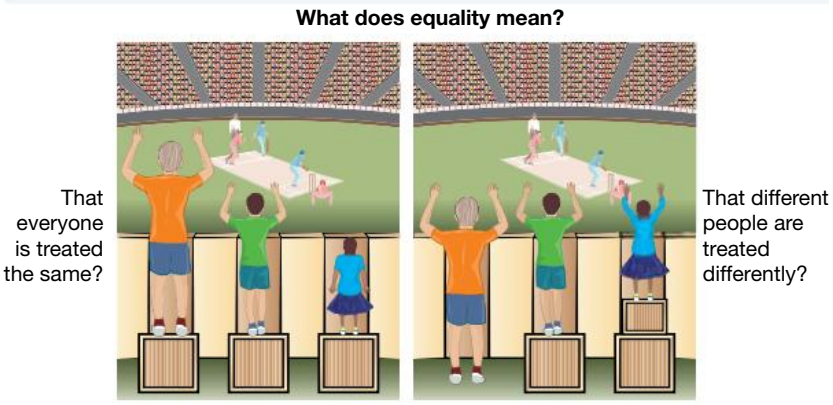
Australia's justice system values several principles that work to protect citizens and contribute to a fair society. Equality before the law means that all parties and participants in the justice system are entitled to be treated fairly by a court, regardless of whether they are a victim of crime or an offender. Independence of the judiciary is the principle that judges and courts need to be kept separate from the other two branches of government. Right of appeal means that a person involved in a court case who is not satisfied with the court's decision can appeal — they can ask a higher court to review a decision. Some restrictions are placed on who can appeal and under what conditions a person can appeal. Our system does not always work perfectly because of factors that undermine the application of these principles.

- Equality before the law means that people who come into contact with the justice system should believe that they are being treated equally and fairly.
- There are several approaches that courts can take to deal with people from different backgrounds and circumstances to ensure they are treated fairly.
- Separation of powers ensures that judges (the judicial arm) are not subject to political influence from the legislative arm or the executive arm of government.
- A party may appeal a court's decision when they are dissatisfied with the decision on the grounds of a question of fact or if they disagree with the court on a point of law.
- In a civil case, any party can appeal a decision but some appeals can only be heard if the court gives permission to the person wanting to appeal.
- In a criminal case, only the people who are directly involved in the case can appeal (the accused and the prosecution), and the prosecution can only appeal against a sentence.
- Factors undermining the application of the principles of justice include bribery, coercion of witnesses, trial by media, and court delays.

3.7.2 Reflect

1. What is your understanding of equality?
2. Looking at figure 1, what is equality about?
3. Apply your understanding of equality to the law. What does equality before the law mean?
4. Read the following case study and then answer these questions:
   (a) What crime was Mr Baker originally found guilty of?
   (b) What court did the appeal go to and how many judges heard the appeal?
   (c) Why did the defence team appeal the original court's decision?
   (d) Explain why the court decided that the case would go to a retrial.
   (e) Do you think that everyone — even murderers — should have the right to appeal a decision made by a court?

FIGURE 1 Equality means that people are treated fairly.



David Allan Baker was found guilty of the attempted murder of his former girlfriend in June 2012. Following a trial that was as memorable for Baker's foul and hateful abuse of the judge and dismissal of two teams of lawyers as much as it was for the facts presented to the court, the court sentenced him to 15 years' imprisonment.

Mr Baker, aged in his 50s, admitted to seriously harming Margaret Revesz after he went to her Bray Park home on 2 November 2009 and stabbed her directly in the heart with a knife. Baker was about to move to Gladstone to work when the incident occurred. The Queensland Supreme Court was told that Baker plunged a knife into Ms Revesz several times after telling her that if he could not have her 'then no-one else can'.

When giving evidence to the court, Ms Revesz explained that when she was stabbed she asked Mr Baker 'Are you going to kill me?' According to Ms Revesz, his reply was 'Yes'.

The prosecution and the defence disagreed on when this conversation had occurred. The defence argued that if the exchange happened after Ms Revesz was stabbed for the final time, it could prove that it was not Baker's intention to kill her, and therefore the charge of attempted murder was not appropriate.

Nevertheless, the jury found Baker guilty and he was sentenced to jail the next day.

Mr Baker later appealed the court's decision. The Court of Appeal heard the appeal in 2014.

The appeal was made on the grounds that the trial judge had not complied with section 620 of the Queensland Criminal Code. Under this section, a judge is obliged to provide an overview of the accused person's charges and summarise evidence to the jury after both sides have presented their case. The jury then considers this information in delivering its verdict.

The lawyers for Mr Baker convinced two of the three presiding appeal justices that the 2012 trial judge had made an error when he had not clearly asked the jury to consider the brief conversation that occurred between Mr Baker and his alleged victim. They argued that the conversation could have raised doubts over whether or not he intended to kill her.

'The failure to independently identify the evidence that might be relevant to the consideration of the intent to kill as opposed to the intent to cause grievous bodily harm deprived the jury of judicial guidance upon important matters,' said David North, one of the Supreme Court appeal justices.

The omission of the conversation in the judge's final remarks to the jury 'was an oversight which occasioned a miscarriage of justice,' he said.

After the appeal was allowed, the conviction was set aside and a retrial was ordered.

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UNIT 2
AUSTRALIA AND THE GLOBAL ECONOMY

4 The Australian economy 81

5 The global economy 108

6 Managing financial risk 127

7 Innovation and competition in the marketplace 144

8 Australia's changing work environment 169

TOPIC 4
The Australian economy

4.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

4.1.1 Our needs and wants

The **economy** is often spoken about as if it were something separate with a life of its own, when in fact the economy is comprised of all of us. The Australian economy can be defined as the total of all activities undertaken for the purpose of producing, distributing and consuming the goods and services we require to satisfy our needs and wants. Because we all participate in one or more of these activities, we are all part of Australia's **economic system**.

Let us look at this definition in more detail. As human beings we all have needs and wants. Needs can be described as those things that are essential for survival. They include food, clothing and shelter. Wants include those things we desire but which are not necessary for survival or to meet the basic standard of living in a community. They can include everything from TV sets, to motor vehicles, to mobile phones.

FIGURE 1 Consumers have to make choices in order to satisfy their needs and wants.

We satisfy our needs and wants by acquiring goods and services. Goods are physical, tangible items that can be seen and touched. They include all those products we buy from shops. Services are the actions which are done for us by others, and are designed to satisfy needs and wants. They include the services provided by doctors, dentists, banks, telephone companies, entertainers, mechanics and teachers. Whenever we make use of goods and services we are said to consume those goods and services, and so are regarded as **consumers**. As we all consume goods and services, we are all participants in the Australian economy.

Goods and services have to be provided by someone, and we usually expect businesses or other organisations to do this. All individuals, organisations and businesses that provide goods and services are known as **producers**. This term does not just refer to the manufacture of goods in a factory but extends to all those who provide goods and services. To the economist, a producer can be a dentist filling teeth, a band performing at a venue, a supermarket selling groceries or a teacher in a classroom.

As individuals and as a society, our needs and wants will always be greater than our means of satisfying all those needs and wants. This is the fundamental problem facing any economy, no matter how wealthy it is. Economists refer to this as the problem of **relative scarcity**. The main aim of an economic system is to satisfy as many needs and wants as possible within the constraints imposed by relative scarcity. Inevitably, choices have to be made by both consumers and producers. We cannot have everything and so must choose what is most important to us.

The economic problem of relative scarcity

You are hungry and thirsty on your way home from school, and have only $6 to spend. A burger is going to cost $4, a drink $3 and a small serving of fries $3. If you buy the burger, you will have $2 change but won't be able to afford a drink. You could afford a drink if you buy the fries, but the fries won't satisfy your hunger as much as a burger would. You are facing the fundamental economic problem of relative scarcity, and you have to make a choice. Consumers and producers have to make choices all the time. It is through the totality of these choices that the economic system attempts to satisfy as many needs and wants as possible.

Starter questions

1. List fifteen items that you or your family have bought during the last week. Beside each item, state whether it was to satisfy a need or a want.
2. Food, clothing and shelter are usually considered to be basic needs for all human beings. Identify two types of food, two types of clothing and a type of shelter that could be classified as wants rather than needs.
3. Think of the last time you went to see a movie and caught public transport there and back. Make a list of all the goods and services you would have purchased, consumed or used during this outing.
4. In small groups, draw or find a map of your local shopping centre showing the businesses that operate at that centre.
   (a) Identify which of these businesses supply goods, which supply services, and which supply both.
   (b) Some businesses that compete against similar businesses are close together, while other types of competing businesses are spread throughout the centre. Discuss which types of competing businesses are likely to be close together and why.
5. Make a list of ten goods or services that are not supplied by businesses at your local shopping centre. Why do you think each of these goods or services are not available locally?
6. Make a list of five goods costing less than $100 each that you would like to buy right now.
   (a) If you had exactly $100 to spend, how would you rank these five goods in order of preference?
   (b) Which goods could you buy right now? Would you have any change left from $100?
   (c) Explain why this activity is an example of the economic problem of relative scarcity.

INQUIRY SEQUENCE

4.1 Overview 81
4.2 Participants in the Australian economy 83
4.3 Objectives of the Australian economy 89
4.4 Indicators of economic performance 93
4.5 Trade with other economies 99
4.6 Global events and the Australian economy 102
4.7 **SkillBuilder:** Questioning and research 105
4.8 **Review** 106

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4.2 Participants in the Australian economy

4.2.1 Who and what is part of our economy?

We know that the Australian economy is the total of all activities undertaken for the purpose of the production, distribution and consumption of goods and services in our country. This leads us to two questions:

1. *Who or what carries out all these activities to achieve this purpose?* We need to examine exactly who participates in the economy to achieve the production, distribution and consumption of goods and services. The major participants in the Australian economy include the household sector, the business sector, the financial sector and the government sector.
2. *What activities are undertaken in achieving this purpose?* We need to examine what each of those participants does to achieve this purpose, or what roles each of them performs in our economic system. We will now examine each participant and the roles they play in the economy.

4.2.2 Household sector

The household sector is a term used by economists to refer to the total of all consumers in the economy. Of course, every person in the economy is a consumer — we all acquire goods and services to satisfy our needs and wants. As well as acquiring goods and services, the household sector provides the **labour** required by the business sector to produce those goods and services. Whether we consider ourselves part of the household sector or part of the business sector depends on the economic role we are performing at the time. When buying goods and services, we are part of the household sector. When at work, we are part of the business sector.

FIGURE 1 Members of the household sector receive wages for their labour, and use the money they receive to buy goods and services to satisfy their needs and wants.

Members of the household sector make decisions about the particular goods and services they desire to satisfy their needs and wants. The amount of goods or services that consumers are willing and able to purchase at a particular point in time is known as consumer or household *demand*. If businesses wish to be successful, they need to respond to this demand. A business producing goods or services that do not meet consumer demand is likely to fail. While we can all identify food, clothing and shelter as basic needs that households demand, it is not always so easy to identify the *types* of food, clothing and shelter that will most successfully satisfy those needs.

4.2.3 Business sector

The business sector is made up of a large number of producers, all seeking to provide goods and services to satisfy the needs and wants of households. In order to do so, businesses make use of **resources**. Economists classify resources into four categories:

- land
- labour
- capital
- enterprise.

These are sometimes also called *factors of production*.

Land

'Land' is the word used by economists to refer to all the raw materials and other natural resources that go into the production of goods and services. It is a broad concept that includes minerals dug up from the earth, food crops ready for processing, timber harvested from forests, and raw fibres such as wool or cotton that are available for processing into clothing. Australia's diverse and abundant resource base has been an important source of export earnings for the Australian economy. Some of the most important export commodities for Australia include: iron ore, coal, natural gas, gold, beef and wheat.

FIGURE 2 In economics, 'land' refers to all the raw materials and other natural resources that go into the production process, including minerals that have been dug up from the earth.

Labour

Labour, as we have seen, is the human skills and effort required in the production process. It includes the physical effort contributed by a builder or process worker in a factory, and the intellectual skills applied by a computer programmer. Businesses usually rely on the household sector to provide them with labour. In return, businesses pay wages which are used by consumers to purchase goods and services from the business sector.

FIGURE 3 In economics, 'capital' refers to all equipment used in a production process.

Capital

Capital is defined as all the equipment (machinery, buildings, tools) used by human labour in the process of production. For example, an accountant uses a computer, a bricklayer uses a trowel and a farmer uses a plough. In a supermarket, capital includes the actual building; shelving for storing goods for sale; refrigerators and freezers; trolleys and baskets for collecting goods; and the cash registers, scales, barcode readers and EFTPOS facilities used at the checkouts.

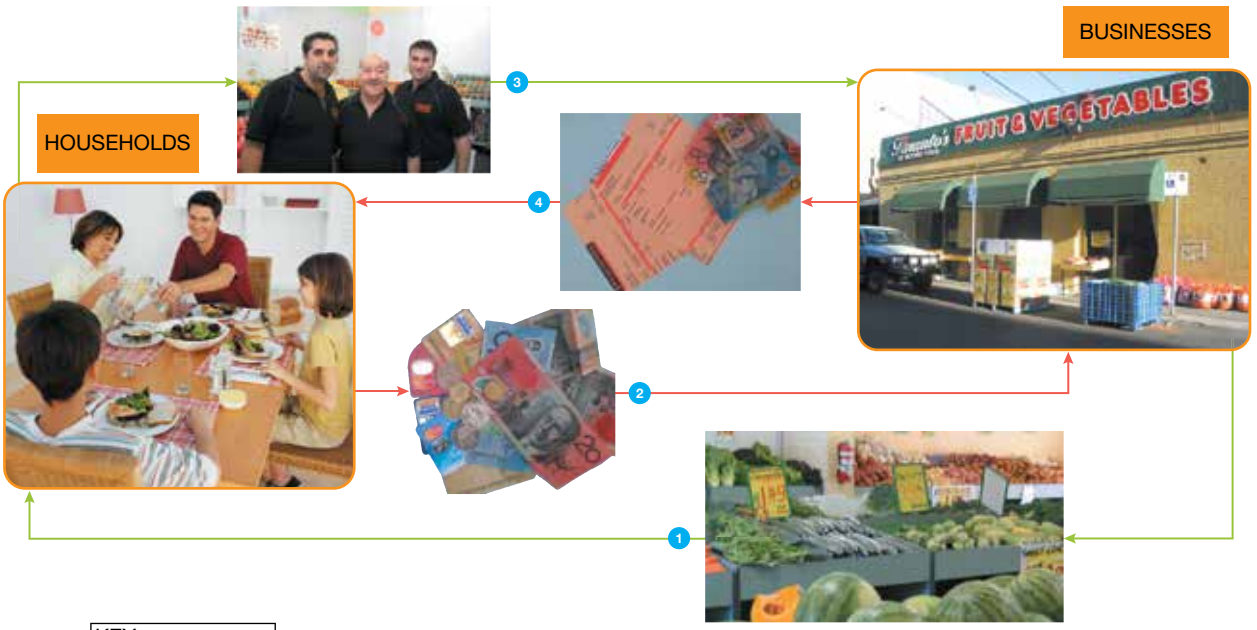
Enterprise

Enterprise is the ability to recognise the demand for new goods or services, and to start up a new business or expand an existing business to attempt to satisfy that demand. It also includes the ability to organise the resources necessary to produce the goods and services required, and a willingness to take the risks that can accompany these decisions. A person who demonstrates these abilities is sometimes known as an entrepreneur. People such as Google founder Larry Page and Facebook founder Mark Zuckerberg are regarded as entrepreneurs.

4.2.4 The relationship between households and business

As we have seen, the household sector and business sector depend heavily on each other. The household sector depends on the business sector to provide employment and wages, as well as the goods and services needed to satisfy demand. The business sector depends on the household sector to provide it with labour, as well as the consumers to purchase the goods and services produced. We can examine the relationship between the business sector and the household sector by looking at the model shown here. It demonstrates how labour is exchanged for money, and how that money is used to purchase goods and services.

The interrelationship between consumers and business

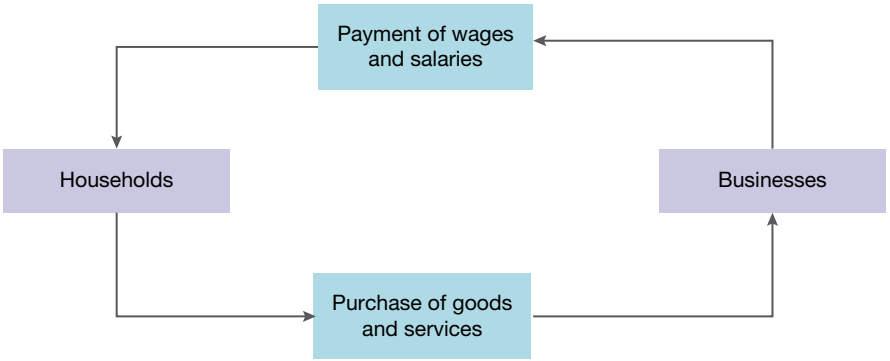


KEY
→ Flow of money
→ Flow of goods and services

1 Businesses are producers that make or supply goods and services that are distributed to households.
2 Consumers use money, cards and cheques to purchase goods and services.
3 Consumers are usually also employees, who provide businesses with their labour in the production of goods and services.
4 Employees receive money in the form of wages for their labour.

We can simplify this model by removing the flow of goods and services, and simply showing the flow of money between households and businesses (see figure 4). This focuses on the financial relationship between consumers and producers in our economic system. Economists sometimes refer to this as a circular flow diagram because it illustrates how money circulates in the economy.

FIGURE 4 The circular flow of money between households and businesses in the Australian economy



4.2.5 The financial sector

Both the household and business sectors rely on a functioning financial sector. As the name suggests, the financial sector is concerned with money. In order to understand the role of the financial sector, we first need to examine the functions of money in our economy.

Money performs the following four very important functions in our economic system:

1. *Medium of exchange* — money allows us to pay for goods and services because it is accepted by everyone in our economy in exchange for goods and services. Hence employees exchange their labour for money, and businesses accept money in exchange for the goods and services they supply.
2. *Measure of value* — money allows us to put a price on the goods and services we exchange. The price is a measure of what we believe the goods or services to be worth when compared to other goods and services.
3. *Store of value* — money allows us to save our income or wealth for spending at a later date because it holds its value.
4. *Standard of deferred payment* — money allows us to purchase goods and services on credit, with both buyer and seller knowing exactly how much has to be paid at a later date.

The financial sector is made up of a number of **financial intermediaries**. These include banks and other similar organisations, such as **superannuation funds**. Financial intermediaries receive deposits and then use this money to lend out to others who need to borrow money. Most businesses will borrow money, particularly when they need to expand the business. This may involve buying new equipment or moving to larger premises. Money spent in this way is known as **investment** in capital. This is how financial intermediaries enable accumulated savings, collected from thousands of depositors, to be directed towards business growth. As businesses grow they can employ more people, and the people they employ in turn have more money to spend on goods and services.

FIGURE 5 Money performs four important economic functions.

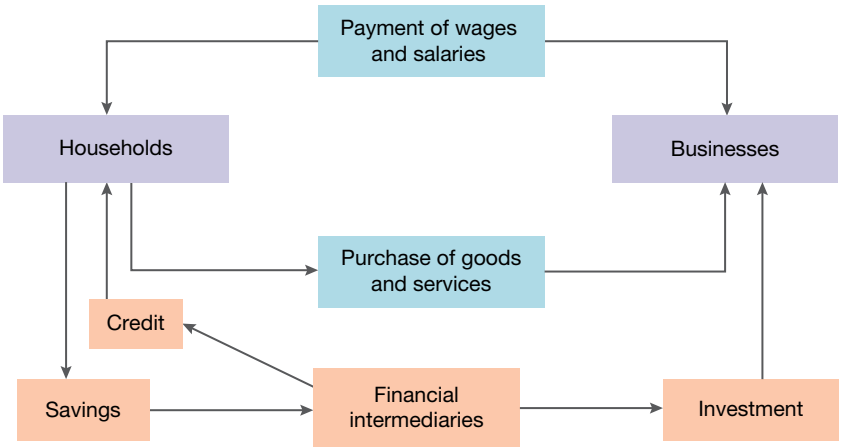
In addition to providing the business sector with funds for investing in

business growth, banks and other financial intermediaries provide credit to households. When consumers make a large purchase such as a house or car, it is usually easier to borrow the money to buy the item immediately (known as buying on credit) than to save up for years to pay cash for it. When purchasing a house or land, most people take out a **mortgage loan**. This enables the house purchaser to borrow to pay for the property now, and pay back the loan in instalments over a relatively long period of time (often 25 years). The size of the housing market depends on the amount of money available for mortgage loans. If more people can buy houses, more new houses can be built and therefore more jobs created in the construction industry.

By adding financial intermediaries to the circular flow diagram, we can see how the financial sector participates in the economy. As shown in figure 7, banks and other financial intermediaries receive savings from households. They use this money to lend to businesses for investment, and also lend the money back to households in the form of credit.

FIGURE 6 Financial intermediaries can direct savings into investment, which funds the growth of businesses.

FIGURE 7 The circular flow of money between households, businesses and financial intermediaries in the Australian economy



4.2.6 The government sector

Another significant participant in our economic system is government. In Australia that refers to the federal government based in Canberra, the state and territory governments based in capital cities, and local councils across the country. In addition to using money to spend on consumption or accumulate in savings, households and businesses pay money to government in the form of taxes and receive certain goods and services from the government. The government plays an important role in the economy for a number of reasons:

1. The amount of money taken by the government in taxes can affect the amount of money consumers have available to spend on goods and services. High levels of taxation can leave consumers with less to spend, and businesses cannot grow as quickly and therefore employ as many people as they might if taxation was lower.

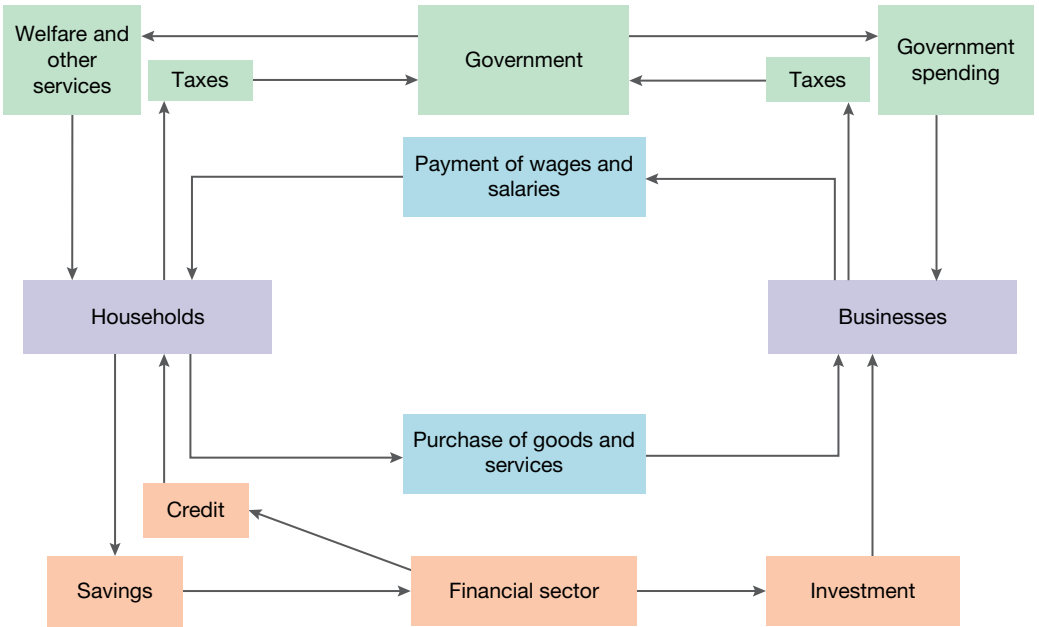
2. Money collected in taxes can be used to provide welfare payments in the form of pensions and unemployment benefits. Such payments allow many people to purchase more goods and services as consumers, thereby providing more income to businesses and creating more jobs as businesses grow.
3. Money collected in taxes from households and businesses can be used to provide essential services. By spending money on building roads, schools and hospitals, the government is providing money for the businesses that do the actual building and thereby helping those businesses to grow and employ more people.

A high level of taxation gives the government more money to provide welfare payments and essential services - such as schools, hospitals and roads – whereas a low level of taxation gives individuals more money to spend as they would like.

By adding government to the circular flow diagram, we can see how the government sector participates in the economy. As shown in figure 9, households and businesses pay taxes to the government. Some of this money comes back to households in the form of welfare payments such as pensions, or as services such as education and healthcare. Some of it comes back to businesses when the government buys goods and services from them, or pays them to build roads, schools and hospitals.

FIGURE 8 When a government pays businesses to build facilities such as hospitals, it helps those businesses to grow and employ more people.

FIGURE 9 The circular flow of money between households, businesses, financial intermediaries and government in the Australian economy



4.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. Define the following and provide an example of each:
   (a) labour
   (b) resources
   (c) consumer demand
   (d) financial intermediary
   (e) investment.

Explain

2. What do economists mean when they use the following words?
   (a) Land
   (b) Capital
3. Why are the household sector and the business sector dependent on each other?
4. Explain each of the four functions of money, and provide an example of each.
5. How do financial intermediaries help markets to operate?
6. Explain one way in which a government can influence the economy.

Discover

7. Use online resources to locate information on the Australian taxation system, and identify and explain three different types of taxes that are collected by the federal government.

Predict

8. Examine the circular flow diagram in figure 9 and predict what impact each of the following might have on the level of goods and services sold by Australian businesses:
   (a) Households decide to save a larger proportion of their income.
   (b) Financial intermediaries make it easier for consumers to acquire credit cards.
   (c) Governments decide to increase the level of taxation for households.
   (d) Governments increase the level of welfare payments

4.3 Objectives of the Australian economy

4.3.1 Satisfying needs and wants efficiently

The major issue facing any economy is the problem of relative scarcity. This problem cannot be completely solved or eliminated, but its impact can be minimised by ensuring the most efficient use of resources. The objectives of the Australian economy are to satisfy the greatest range of needs and wants by efficiently producing as many goods and services as possible. This is accomplished by addressing three key economic questions.

4.3.2 Key economic questions

All the participants in the Australian economy — consumers, producers, financial intermediaries and government — make choices to minimise the impact of the relative scarcity of resources and to maximise the range of needs and wants that can be satisfied. When put together, these choices provide answers to the following questions:

- *What to produce?* What goods and services should be produced, and in what quantities?
- *How to produce?* What methods should be used to produce those goods and services?
- *For whom to produce?* To whom should those goods and services be distributed?

What to produce?

How does our economic system help producers decide what goods and services to supply, and in what quantities to supply them? This is determined largely by trial and error. A producer may make certain goods or services available to consumers in the expectation that these will satisfy the needs and wants of those consumers. If the goods or services fail to sell, the producer will probably go out of business. When a business is successful in selling goods or services to consumers, other businesses will attempt to enter the same **market** and start making or selling those goods or services that consumers have shown they wish to buy.

In our economy, markets largely determine which businesses are likely to be successful. Factors that can influence markets include:

- *Established habits and experience*. Producers know from people's existing behaviour that there will always be a demand for certain types of goods or services. Families need to buy food on a regular basis, so a supermarket in a new suburb may well be successful. Most communities will need services such as medical and dental surgeries, schools, hairdressers and trades such as plumbers and electricians.
- *Changing tastes and preferences*. Changing consumer tastes and preferences influence what is produced, and in what quantities. An example of this is the market for Australian-made cars. For many years, family sedans and wagons such as the Holden and Falcon were Australia's best selling cars. Car manufacturing was so successful that Toyota and other car manufacturers also set up factories in Australia. Over time, consumers' preferences changed and smaller imported cars became more popular. As a result, car manufacturing in Australia has declined and will cease altogether by 2017.
- *Marketing and advertising*. Any business introducing a new product or service into the market needs to ensure that consumers are aware of its availability. Advertising is designed to inform consumers of new

FIGURE 1 Changes in the market for cars will see the closure of the three remaining car manufacturers in Australia by 2017.

products and to convince them to buy a particular product instead of an alternative. Online advertising through search engines such as Google has increased dramatically, and an online presence is essential for most businesses these days.

- *Technological change*. As a society, we have become very enthusiastic about new technology over the last 20 years. Whenever a new model iPhone is released into the marketplace, consumers queue outside their nearest Apple store to be the first to buy it. Consumers monitor new developments in technology, and many will quickly replace outdated products with newer models. Producers can be quite confident that improvements in technology will quickly attract buyers to new goods and services.

FIGURE 2 Improvements in technology often persuade consumers to update their existing gadgets.

Technology companies, such as Apple and Samsung, encourage users to buy the latest models of their products every year, even if the improvements over last year's model are small. This can have a negative effect on the environment, as thousands of unwanted or broken products end up going to waste.

How to produce?

The production of goods and services involves a combination of resources — land (raw materials), labour and capital (equipment). A factory producing frozen vegetables will be set up with different types of capital equipment. These include machines that cook the vegetables, and others that pack and seal them in plastic packaging before freezing them. The same factory will employ workers to control those machines and perhaps carry out other tasks such as managing the process. The raw materials are the vegetables that are processed during production, as well as the materials used in packaging.

Competition from rival producers encourages businesses to keep their costs as low as possible. If new equipment becomes available that works more efficiently, it may be worthwhile for a business to change its methods of production to take advantage of the new equipment. Over the last 50 years or so, the use of robotics-based equipment has increased dramatically in factory production. In most cases it enables the factory to employ fewer workers, reducing wage costs and allowing the prices of products to be kept at a level where they can compete in the marketplace. The use of self-service checkouts in supermarkets is designed to have a similar effect.

FIGURE 3 The use of self-service checkouts is aimed at keeping costs down.

For whom to produce?

Our economic system has to determine how to distribute goods and services to consumers. It makes use of markets and prices as a means of doing this. As we have seen, the basic model of the circular flow of income involves the household sector exchanging labour with the business sector for money in the form of wages. Those wages are then used to purchase goods and services from the business sector. So goods and services are distributed to those who are willing and able to pay the prices asked for them, although governments can intervene in these markets to ensure that the most disadvantaged in our society are able to have some of their needs and wants satisfied.

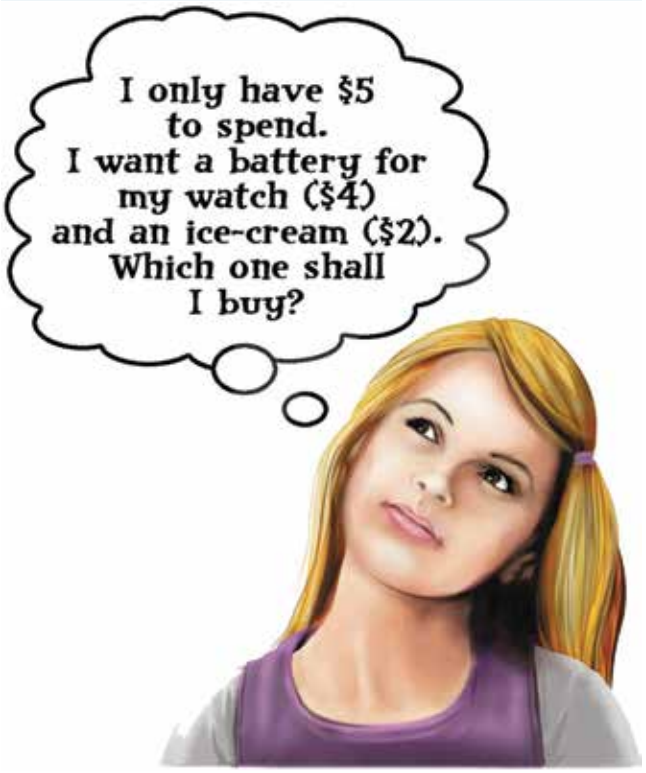
The quantities of goods and services that can be purchased by any household will depend on the levels of wages received. If wages across the economy are relatively low compared to prices, relatively large numbers of people may be living in poverty because they cannot afford to buy necessities. If prices are relatively low compared to wages, households will be able to buy more goods and services and fewer people may be living in poverty. The choices and decisions made by businesses about the wages they pay and the prices they charge affect the whole economy and determine to whom goods are distributed.

FIGURE 4 Prices can have a strong influence on which goods and services consumers will be able to buy.

Opportunity cost

Whenever we make a choice between two or more alternatives, we may gain the benefits of the alternative we choose but we lose any benefits that may have come from choosing differently. Think back to the example of relative scarcity discussed in section 4.1.1: with only $6 in your pocket, you have to choose between a burger for $4 or a drink and fries for $3 each. If you choose the burger, you will have to give up the fries and drink. If you choose the fries and drink, you miss out on the burger. To an economist, the real cost of choosing the burger is not the $4 you spend, but missing out on the opportunity of enjoying the fries and drink. In the same way, the real cost of choosing the drink and fries is the opportunity to enjoy the burger. This is known as **opportunity cost**. When choices are made in the economy — regardless of whether they relate to what goods and services to produce, how to produce them, or to whom to distribute these goods and services — it is important to weigh up the opportunities that are lost before making a final choice.

FIGURE 5 There is an opportunity cost associated with all economic choices.



4.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. Outline the three key questions that have to be answered as a result of the choices made by all participants in the economy.
2. What is a market?
3. Identify three ways in which markets can help determine what to produce within the economy.

Explain

4. How can competition influence decisions made by a business about how to produce the goods or services it supplies?
5. Explain how wages and prices work together to determine to whom goods and services are distributed in the economy.
6. What do economists mean by the term 'opportunity cost'? Explain why opportunity cost is a natural result of relative scarcity.

Think

7. For each of the following businesses, explain how land, labour and capital are combined to produce goods and services:
   (a) motor vehicle manufacturer
   (b) fruit and vegetable shop
   (c) house construction business
   (d) pizza shop
   (e) electricity supplier.

4.4 Indicators of economic performance

4.4.1 Indicators of economic performance

Have you ever tried to measure your own performance at school? If so, what indicators did you use? Perhaps you considered some of the following: your attendance rate, your homework completion rate, the marks you received for tests and assignments, comments on your report, and any awards you may have received. Each of these indicators provide an insight into how well you are performing at school. You may have performed very well in regards to some of the indicators and not so well for others.

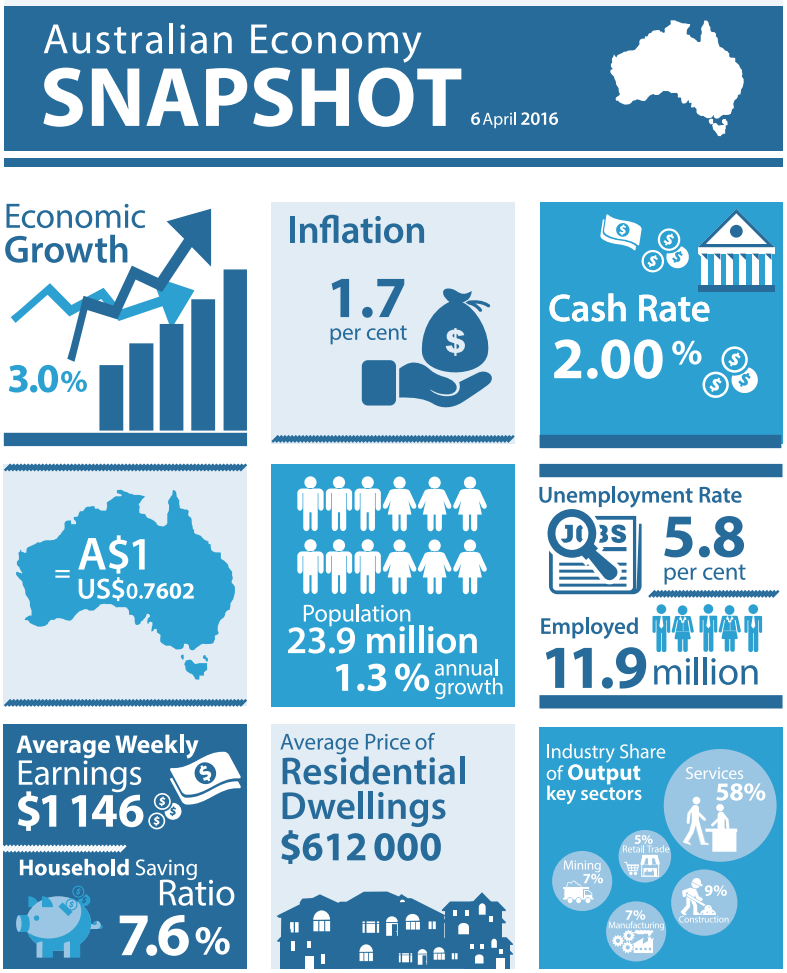
Similarly, if you play a sport, you could measure the performance of your team. What kinds of indicators would give you information about how well your team is performing?

The performance of Australia's economy can also be measured by considering a range of economic indicators. Each indicator provides a snapshot of the economy at a particular point in time and helps identify strengths and weaknesses within it. Figure 1 at top of the next page provides a snapshot of the Australian economy at one point in time (6 April 2016).

While there are numerous indicators of economic performance, some of the key indicators that will be examined below include:

- economic growth
- unemployment
- inflation
- alternative indicators (e.g. sustainability, development, happiness).

FIGURE 1 A range of indicators can provide information about the performance of the economy.



Source: Reserve Bank of Australia

4.4.2 Economic growth

Each day we consume a range of goods and services. This consumption ranges from the food we eat, to the transport we use to get to school, to the electricity required to charge our devices. Businesses within the Australian economy attempt to meet the demands of consumers. As the demands of customers change, businesses must offer new or modified products and services to ensure that they continue to meet the needs of customers. In addition, population increases mean that production levels must increase to satisfy demand.

Economic growth is defined as the real growth in the volume (value) of goods and services produced by an economy over a period of time.

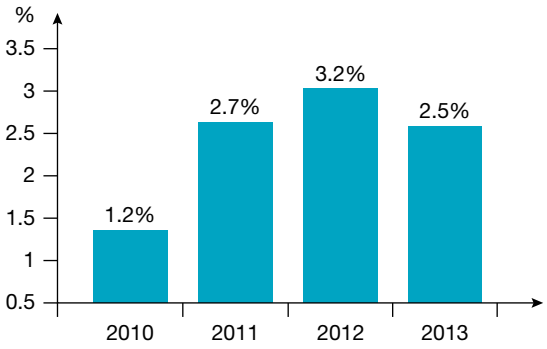
FIGURE 2 Economic growth occurs when an economy increases the volume of goods and services produced.

The most common method used to measure economic growth is by calculating the rate of growth of gross domestic product (GDP). GDP is the total value of goods and services produced in an economy over a certain period of time – for example a quarter or a year. This figure can be determined by comparing the GDP of one year with that of the previous year. The change in GDP from year to year is expressed as a percentage.

Generally, an acceptable rate of increase in GDP is 3–4% per year. If the level of growth is less than 3% this indicates slow growth. If the level of growth is higher than 4% it may mean that the economy is growing too quickly and the growth may not be sustainable. Figure 4 shows Australia's annual GDP growth rate from 2010–2013.

FIGURE 3 The change in GDP per year indicates the level of growth in the economy.

FIGURE 4 Australia's annual GDP growth rate, 2010–2013



4.4.3 Unemployment

As a student you may have already thought about the type of job you would like to have as an adult. You may even have a part-time job now. Employment is important because it allows us to earn an income so that we can buy goods and services to improve our quality of life. Most people are able to secure employment. However, for a variety of reasons, others may not. Those people who are not employed but are actively looking for work are called 'unemployed'.

FIGURE 5 Unemployed people are those who don't have a job but are actively looking for work.

The unemployment rate is an important indicator that provides an insight into the performance of the Australian economy. It tells us what percentage of the total labour force is without a job but actively looking for work.

Before trying to calculate the unemployment rate, it is important to understand the following key terms:

- Employed people – any person who works more than one hour per week
- Unemployed people – a person without a job who is actively looking for work
- Total labour force – the total of all employed people plus all unemployed people.

The unemployment rate is calculated using the formula below:

$$\text{Unemployment rate (\%)} = \frac{\text{Number of unemployed}}{\text{Total labour force}} \times \frac{100}{1}$$

Consider the following ABS employment data for March 2016:

Number of people employed	Number of people unemployed	Total labour force (employed + unemployed)
11 910 000	729 600	12 639 600

Using the above information, we can calculate the unemployment rate. Once calculated, the unemployment rate is expressed as a percentage:

$$\text{Unemployment rate (\%)} = \frac{\text{Number of unemployed}}{\text{Total labour force}} \times \frac{100}{1}$$
$$= \frac{729\,600}{12\,639\,600} \times \frac{100}{1}$$
$$= 5.8\%$$

As you can see from the example above, the unemployment rate is 5.8%. This is slightly higher than the 5% target that the Australian government sets for the unemployment rate. While the government recognises that there will always be some level of unemployment, it implements a range of policies and programs in an attempt to reduce the unemployment rate.

FIGURE 6 The government implements a range of programs to help people find jobs.

4.4.4 Inflation

The price of products and services is one of the most important considerations for us as consumers. All consumers wish to purchase good quality products for a reasonable price. When the price of a product rises, we may ask questions such as: why has the price increased? Should I still buy this product? Are there alternative products that I could purchase? Increases in the prices of goods and services mean we are not able to buy as much with our money. This may impact on our quality of life.

When there is a general increase in prices across the economy, this is known as **inflation**. Of course, inflation is considered a negative thing for both the government and for consumers, as it results in consumers being able to purchase less with their money.

FIGURE 7 Price rises lead consumers to question whether or not they really need a product or service.

To measure inflation, the Australian Bureau of Statistics (ABS) calculates the Consumer Price Index (CPI). This is done by gathering data on the prices of goods and services in the economy. The CPI measures the average change in retail price of a 'basket of goods and services' over a certain period of time.

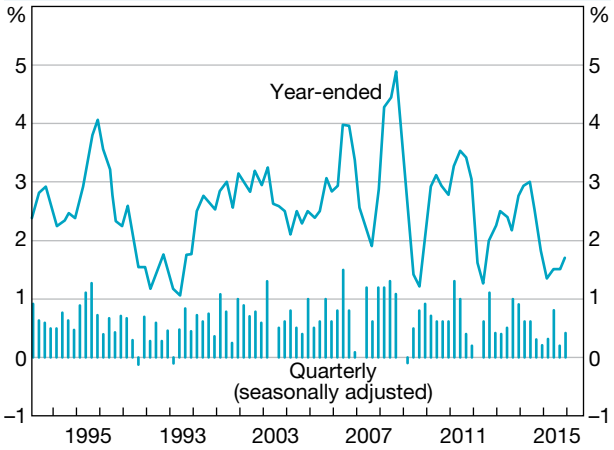
The 'basket of goods and services' contains over 80 000 items. All of the items fit into one of the following categories:

- food and non-alcoholic drinks
- alcohol and tobacco
- clothing and footwear

- housing
- furnishings, household equipment and services
- health
- transport
- communication
- recreation and culture
- education
- insurance and financial services.

The inflation rate tells us about the change in the price of goods and services in the economy. For example, the inflation rate for the period from the December Quarter 2014 to the December Quarter 2015 was 1.7%. This means that over that time period, the average prices of goods and services increased by 1.7%. The government tries to manage inflation carefully and sets a target of between 2–3% for the inflation rate. Figure 8 provides information about Australia's inflation performance between 1995 and 2015.

FIGURE 8 Australia's inflation performance (yearly and quarterly) between 1995 and 2015.



Source: *Reserve Bank of Australia website*

4.4.5 Alternative indicators (e.g. development, liveability and happiness)

So far, we have considered a number of quantitative indicators which tell us about the performance of the Australian economy. These include economic growth, unemployment and inflation. As well as these indicators, there are a range of alternative indicators that attempt to provide a more complete picture of the performance of the economy. They measure a variety of things such as: the level of wellbeing of people in a country, how liveable a particular city or country is, and the level of happiness of people in different countries throughout the world.

Table 1 identifies three of these alternative indicators and provides a brief overview of each of them.

TABLE 1 Alternative indicators which attempt to provide a more complete picture of the performance of the Australian economy.

Alternative indicator	Overview
Human Development Index (HDI)	The United Nations Human Development Index (HDI) is a global indicator that compares the wellbeing of people in different countries. It considers positive and negative things about each country and generates a statistical index number. When a country's index number rises, it means there has been an improvement in the living standards of the country.
Global Liveability Ranking	This indicator attempts to rank cities throughout the world in terms of their 'liveability'. In order to rank the cities, a number of factors are considered, such as: safety, healthcare, population density, infrastructure and the state of the environment. Australian cities such as Melbourne, Adelaide and Sydney have consistently been ranked in the Top 10 most liveable cities.
The World Happiness Report	The World Happiness Report was first published in 2012 and ranks 156 countries by their happiness level. It considers a range of factors such as Gross Domestic Product (GDP), people's freedom to make decisions about their own lives, the level of social support, and life expectancy. Figure 9 shows the countries that were ranked in the Top 10 by the World Happiness Report 2015.

FIGURE 9 The world's 10 happiest countries according the World Happiness Report, 2015.

Rank	Country
1	Switzerland
2	Iceland
3	Denmark
4	Norway
5	Canada
6	Finland
7	Netherlands
8	Sweden
9	New Zealand
10	Australia

Source: *World Happiness Report, 2015*

4.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. Define the term gross domestic product (GDP).
2. Who is icluded as part of the labour force?
3. Define *inflation*

Explain

4. Explain why GDP is a useful measure to determine the level of economic growth.
5. Explain how the Consumer Price Index (CPI) is used to measure inflation.
6. Explain why alternative indicators such as the Human Development Index (HDI) are important.

Think

7. Use the information and the formula in the section on unemployment to calculate the unemployment rates in the table below:

	Number of people unemployed	Number of people unemployed	Total labour force	Unemployment rate
A	3 500 000	200 000	3 700 000	
B	15 750 000	1 500 000	17 250 000	

DISCOVER

8. Undertake research in order to describe each of the following types of unemployment:.
   (a) Cyclical unemployment
   (b) Seasonal unemployment
   (c) Structural unemployment
   (d) Frictional unemployment
   (e) Hidden unemployment

4.5 Trade with other economies

4.5.1 Changing trading partners

Australia has been involved in trade since European settlement. During the nineteenth century, the Australian colonies were a major source of agricultural products such as wool, and minerals such as gold, for Britain and its empire. In recent years Australia has developed strong trading links with our Asian neighbours: four of our five most important trading partners are now in Asia.

4.5.2 Trade and the Australian economy

Australia is an open economy, meaning that we trade in goods and services with other countries. Australian businesses sell **exports** to both consumers and producers in other countries. Australian consumers buy **imports** that have been manufactured in other parts of the world and brought into this country.

International trade can affect our economic system in a number of ways:

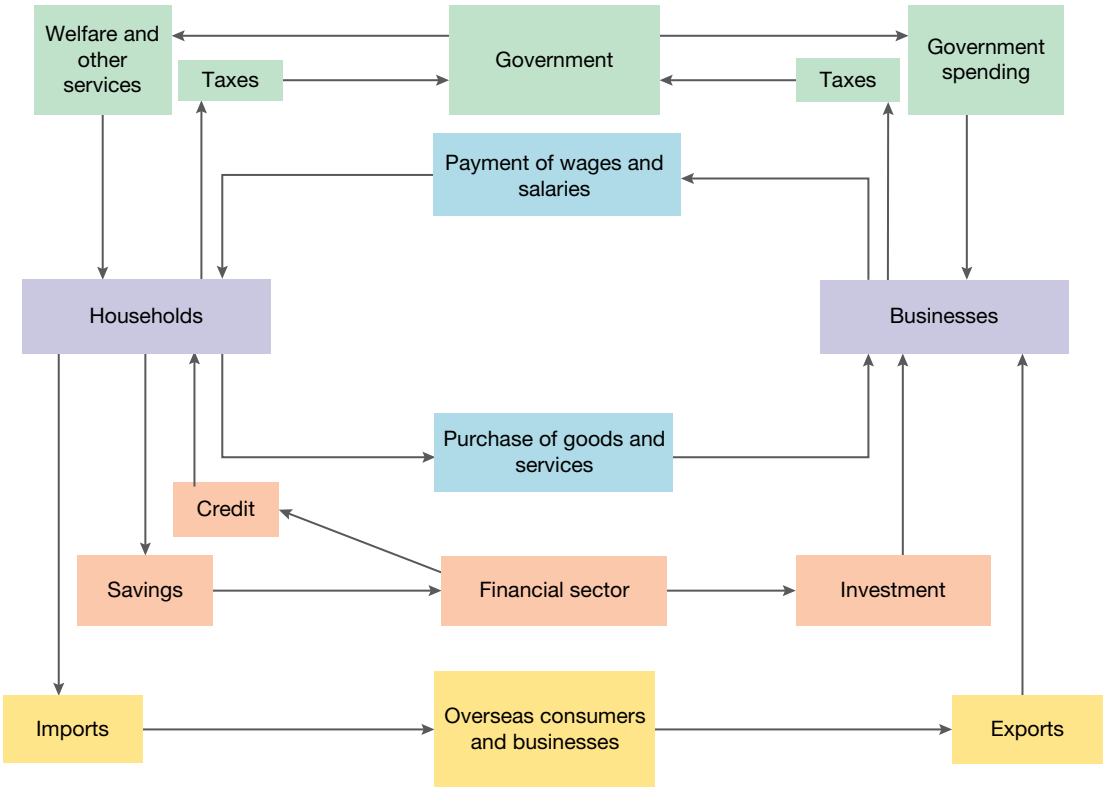
- Australia has a relatively small population, so if overseas consumers are willing to buy the goods and services we produce, this can help our local businesses to grow and employ more people. Today over 1.7 million jobs in Australia are directly or indirectly connected with the production of exports.
- Some products cannot be made here as efficiently as in other countries. A lot of the highly sophisticated machinery used in factories here is imported. However, such machinery can help local factories remain competitive by producing goods more cheaply.
- Imported goods are sometimes cheaper than locally produced goods, so local producers can find it difficult to compete with imported products. Some local producers may even be forced to close down. Australian clothing and footwear manufacturing has declined over the last 30 years as cheaper imports from Asian countries have increased dramatically. While this may not be good for those Australian manufacturers, it is a positive trend for consumers because they have access to cheaper clothing.

By adding overseas trade to the circular flow diagram, we can see how overseas consumers and producers participate in the Australian economy. As shown in figure 2, we can see that households spend money buying imports from overseas businesses, while businesses can earn money from exporting goods and services to overseas consumers. Exports are good for the Australian economy because they bring money into our market system, while imports take money out of the country and pay it to overseas businesses.

If we consistently spend more on imports than we earn from exports, money will continue to flow out of the country. Ultimately this will leave us poorer as a nation. Ideally we want to sell enough exports to provide us with the extra money needed to pay for the goods and services we need to import. If we have more money flowing into Australia from exports than we have flowing out to pay for imports, this additional money can add to our wealth as a nation.

FIGURE 1 Australia imports many goods from overseas and exports to many other countries.

FIGURE 2 The circular flow of money between households, businesses, financial intermediaries, government, and overseas consumers and businesses in the Australian economy



4.5.3 Trade with the Asia region

As a relatively wealthy and advanced economy, Australia is an important trading nation for countries in the Asia region. As illustrated in figure 3, in 2013 over 73 per cent of Australia's trade with our top ten trading partners was with Asian countries. Six of our top ten trading partners were Asian countries, including four of the top five.

Let us examine the importance of China as our largest trading partner. As you can see from figure 3, the value of our exports to China is A$101 590 million. This represents just over 52 per cent of our exports to Asia, and is more than double the value of imports from that country. The largest proportion of our exports to China is made up of iron ore and coal, which China buys to fuel its industrial growth. Japan and South Korea are also large buyers of Australian mineral resources. The value of our exports to each of these countries is also much greater than the value of goods and services we import from them. This adds to Australia's wealth, allowing us to use the money we earn from selling our exports to pay for the goods and services we import from other countries.

More than 83 per cent of the value of our exports in 2013 was earned from selling to Asian countries. This money was particularly important because most of our non-Asian trade involved much higher levels of imports than exports. When we compare the value of exports with the value of imports, we can calculate Australia's **balance of trade**. If the value of exports is greater than the value of imports in a particular period of time, we are said to have a *trade surplus* for that period. If the value of imports is greater than the value of exports, we are said to have a *trade deficit*. We can see from figure 3 that in 2013 Australia had an overall trade surplus with our ten largest trading partners. When we look at trade with individual countries, we see that we had a trade surplus with some of them and a trade deficit with others.

FIGURE 3 Australia's trade with our top 10 trading partners in 2013

Trade with Asia

Position	Country	Exports A$ million	%	Imports A$ million	%	Total trade A$ million	%
1	China	101590	52.3	49329	39.8	150919	47.4
2	Japan	49532	25.5	21221	17.1	70753	22.2
4	South Korea	21274	11.0	10813	8.7	32087	10.1
5	Singapore	9209	4.7	17878	14.4	27087	8.5
8	Thailand	5714	2.9	13832	11.2	19546	6.1
9	Malaysia	6945	3.6	10944	8.8	17889	5.6
	Total	194264	100.0	124017	100.0	318281	100.0

Non-Asian trade

Position	Country	Exports A$ million	%	Imports A$ million	%	Total trade A$ million	%
3	United States	15533	41.5	39181	52.3	54714	48.7
6	New Zealand	11022	29.5	10532	14.1	21554	19.2
7	United Kingdom	7841	21.0	12044	16.1	19885	17.7
10	Germany	3023	8.1	13099	17.5	16122	14.4
	Total	37419	100.0	74856	100.0	112275	100.0

Asian and non-Asian trade

	Exports A$ million	%	Imports A$ million	%	Total trade A$ million	%
Trade with Asia	194264	83.8	124017	62.4	318281	73.9
Non-Asian trade	37419	16.2	74856	37.6	112275	26.1
Total	231683	100.0	198873	100.0	430556	100.0

Source: Data derived from *Australia's trade at a glance*, Department of Foreign Affairs and Trade.

4.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What is the difference between exports and imports?

Explain

2. Identify one benefit and one disadvantage of importing goods into Australia from other countries.
3. Explain the impact of international trade on the flow of money in the Australian economy.

Discover

4. Use the **Department of Foreign Affairs and Trade** weblink in the Resources tab to answer the following:
   (a) Which goods make up most of Australia's imports from Singapore, Thailand and Malaysia?
   (b) Which goods make up most of Australia's exports to the United States and New Zealand?
   (c) Which goods make up most of Australia's imports from the United Kingdom and Germany?

Think

5. Examine figure 3 and answer the following:
   (a) Why was Australia's trade with China in 2013 of greater benefit to our economy than our trade with the United States?
   (b) With which country did Australia have its greatest trade deficit in 2013? Justify your answer.
   (c) With which country did Australia have its greatest trade surplus in 2013? Justify your answer.
   (d) In 2013 Australia had a trade surplus with only four of our top ten trading partners and a trade deficit with the other six. Should we regard this is a serious problem? Explain your answer.

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Explore more with this weblink: Department of Foreign Affairs and Trade

4.6 Global events and the Australian economy

4.6.1 Positive and negative effects

Today all countries are connected to a greater extent than ever before in human history. International trade has contributed to economic growth and the generation of wealth in all nations that engage in the import and export of goods and services. Developments in travel and communications have made trade easier and broken down many traditional barriers between countries. While we have benefited in many ways from these connections with other countries, there have also been some detrimental effects. The ease of travel between countries has seen the rapid international spread of infectious diseases, while the widespread use of electronic communication has made internet fraud and identity theft much easier for criminal groups.

FIGURE 1 International flights have made travel between countries both quick and easy, but they come with risks such as the possibility of spreading contagious diseases across the globe.

4.6.2 Our interconnected world

The growth of trade between almost all countries has created greater economic interdependence between those countries. As a result of this interconnectedness, both positive and negative economic events can spread quickly between trading partners. The rapid economic growth of China over the last 30 years has had a beneficial effect on the many other countries that trade with it. On the other hand, problems with housing loans that began in the United States in 2006 eventually spread to many other countries, creating a global financial crisis.

The growth of the Chinese economy

Since the early 1980s, the Chinese government has pursued a number of policies designed to bring about rapid economic growth. Economic growth is measured by increases in a country's **gross domestic product (GDP)**.

As GDP is the total value of all goods and services produced in a country in any given year, the rate by which GDP increases each year is effectively the rate of economic growth of that country. China has averaged increases in GDP of more than 10 per cent a year for most of the last 30 years. One way in which the Chinese have been able to achieve this level of growth is through a rapid expansion in trade with other countries. As a result of this policy China has become the world's largest trading nation, with a total trade value of US$3.87 trillion in 2012.

FIGURE 2 China produces high-quality electronic products more cheaply than we can in Australia.

China has set out to increase its manufacturing capacity in order to provide all the goods and services required by its own huge population and also to export to other countries. It has had to import large quantities of raw materials from other countries, including the materials to build hundreds of new factories and the fuel to power them. Countries such as Australia have benefited enormously from this growth in the Chinese economy. As we have seen, China is Australia's largest export customer, buying large quantities of Australian iron ore and coal. This has generated a mining boom in Australia that has contributed significantly to our growth in GDP. Australia also imports large quantities of consumer goods from China, particularly clothing and other textiles products, as well as increasing quantities of electronic goods and other home appliances. Most of these are produced more cheaply than we can produce them ourselves, so Australian consumers benefit from paying lower prices for a wide variety of goods imported from China.

Global financial crisis (GFC)

During the early years of this century, many American banks lent money in mortgage loans to people who were ultimately unable to repay the amount they had borrowed. In 2006 and 2007 a fall in US house prices left many of these people with houses that were valued less than the money owing on their mortgage loans. When large numbers of them defaulted on their loans and had to abandon their houses, many of the banks and other financial intermediaries lost a lot of money, severely damaging the reputation of the American financial system. This led to a tightening of credit, with banks lending less money and a slowing in growth of the United States economy. In 2008 the American economy went into **recession**. Around 9 million people lost their jobs in the following two years.

FIGURE 3 Many US home owners had to abandon their mortgaged homes when house prices fell dramatically during 2006 and 2007.

In response to the problems in the American banking system, other banking systems throughout the world placed restrictions on lending. This led to a recession throughout much of the rest of the world. In many European countries GDP declined by as much as 10 per cent, with some countries experiencing even greater decreases in economic growth and high levels of unemployment. Recession was largely avoided in Australia

because the government rapidly increased spending, injecting more money into the circular flow and stimulating economic growth.

The global financial crisis (GFC) of 2008 and 2009 occurred because of the close connections between the economic and financial systems of most of the world's countries. International trade and the flow of money between nations means that events that occur in one country can have an influence on the economic conditions in other countries — for better or worse.

4.6.3 Natural disasters

A natural disaster can have a serious economic impact on a country. When houses and businesses are destroyed, money and resources are needed to repair and replace them. These resources cannot therefore be used for other purposes. In February 2009 the Black Saturday bushfires in Victoria caused damage to the Victorian economy valued at more than $5 billion. In January 2011 the Queensland floods that damaged many homes and businesses also devastated a great deal of valuable farming land. The resulting shortages forced up food prices all over Australia. Rail lines and coal mines were also damaged. Natural disasters in other countries can also affect the Australian economy, particularly if they occur in the Asia region to which we are so closely tied.

FIGURE 4 The Queensland floods affected food prices all over Australia, as well as some of our export industries.

The 2011 Japanese earthquake and tsunami

In March 2011 the largest earthquake ever to hit Japan occurred under the ocean to the country's east, causing a 40-metre tsunami. As many as 18 000 people are believed to have died. Tens of thousands of buildings were destroyed, and a meltdown at the Fukushima nuclear power station led to serious radioactive pollution. There was an immediate slowdown in the growth of the Japanese economy, but the international economy was also seriously affected. Japan is a major trading nation and the world's third largest economy. Japanese cars, computers and electronics products are assembled in many factories around the world, and they rely on parts imported from Japan. The slowdown in the Japanese economy had an impact on many Japanese-owned businesses globally.

Japan is Australia's second largest trading partner, so an event as dramatic as the 2011 tsunami had an impact on Australia's economy although the effects were largely short term. These effects were positive as well as negative:

- The slowdown in the Japanese economy resulted in a reduction in demand for Australian exports such as coal, iron ore and beef. However, the reconstruction effort in Japan eventually led to a rise in demand for steel, so many of these exports subsequently increased.

FIGURE 5 The destruction caused by the 2011 tsunami had an impact on Japan's trading partners as well as on its own economy.

- Pollution from the Fukushima nuclear power station raised concerns about the safety of the food supply in that area. This led to a rise in imports of food into Japan. As a significant supplier of food to Japan, Australia exported more food to that country in the period after the tsunami.
- The nuclear meltdown also caused Japan to reassess its reliance on nuclear power. As a result, it has been making greater use of coal- and gas-fired power stations. This is likely to result in a higher demand for coal and liquefied natural gas (LNG) from Australia. The 13 million tonnes of LNG exported from Australia to Japan in 2010 is expected to rise to 30 million tonnes by 2016.

4.6 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. Define each of the following:
   (a) recession
   (b) gross domestic product (GDP).
2. Identify one way in which the greater interconnectedness of countries can have a detrimental effect.

Explain

3. How has Chinese economic growth benefited the Australian economy?
4. Why did a fall in house prices in the United States lead to the global financial crisis of 2008–09?
5. Explain one effect the Japanese earthquake and tsunami of 2011 had on the Australian economy.

Predict

6. Northern Queensland has been subject to cyclones over the years. The same area has large numbers of sugar and banana plantations, as well as coal mines. The area provides sugar and bananas for the Australian domestic market, and refined sugar and coal for export. What impact do you think serious cyclone damage in this area would have on:
   (a) the price of bananas in Australian supermarkets?
   (b) Australia's export trade with our Asian neighbours?
   (c) the sugar plantation industry in India?
   (d) the Australian confectionary manufacturing industry?

4.7 SkillBuilder: Questioning and research

4.7.1 Tell me

When carrying out your own research, the steps in figure 1 can provide a useful guide.

4.7.2 Show me

Imagine you have been asked to investigate Australia's trade with China. You need to find out details of the major imports and exports between the two countries and any recent changes that have occurred in the trade relationship.

Your first step is to clearly identify the essential key task. This could be expressed as: 'Prepare a report on Australia's trade with China. Include the major exports and imports, recent trends in our trade relationship with that country, and the value of that trade to the Australian economy.'

Now break this down into a series of more specific questions. These could include:

1. What are Australia's major exports to China?
2. What are the values and/or percentages of these exports?
3. What are our major imports from China?

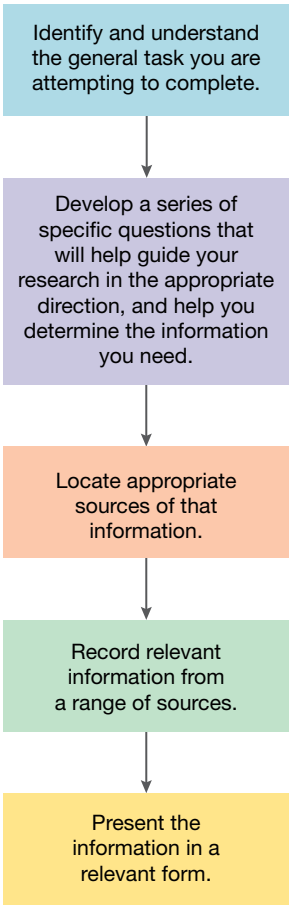
4. How are these imports broken down, from most important to least important?
5. Which areas of trade have been growing most rapidly over the last few years, and which have been in decline?
6. How does trade with China affect the Australian economy? What are the benefits, and what are the disadvantages?

The next step is to locate appropriate sources. By entering the search term 'Australian trade with China' in your favourite search engine, you will be presented with a number of sources. A Wikipedia entry is often found at or near the top of the list of sources, and many students will be familiar with this resource. There is no problem with using Wikipedia as one of your sources — so long as you remember that it is not always reliable, and any information gathered from Wikipedia should always be checked against another source to make sure it is accurate. To help ensure that your information is correct, it is a good idea to use at least two sources to answer each question.

Keep your questions beside you as you read each source, and note the location of material that provides answers. You can select and print some text, and then highlight those sentences or paragraphs that provide answers to your questions. Sometimes a complete answer to a question may be found in several places in a piece of text. Be sure to highlight all relevant text, and indicate with a number which question the information answers.

When you are satisfied that you have found the answers to all the questions, you need to write the answers in order, making sure to use your own words as much as possible. You can then use the answers to present your information in the required form. This may be a report to the rest of the class, an essay to be marked by your teacher, a PowerPoint or Keynote presentation, or any other format that is appropriate.

FIGURE 1 How to carry out your own research



4.7.3 Let me do it

Practise the skill

Using the above process as a model, your research task is to prepare a report on Australia's trade with one of these Asian countries: Japan, South Korea, Singapore, Thailand or Malaysia. Your report should include details of goods and services traded, recent trends or changes in that trade, and the importance of that trade to the Australian economy.

4.8 Review

4.8.1 Summary

The Australian economy is the total of all activities undertaken for the purpose of the production, distribution and consumption of goods and services in our country. Because Australia is a major trading nation, economic activities in this country can affect other countries, and activities in those countries can have an impact on our economy.

- The household sector makes decisions about which goods and services to purchase, as well as providing labour for businesses.
- The business sector is made up of a large number of producers, all seeking to provide goods and services to satisfy the needs and wants of households.
- Businesses make use of land, labour and capital to produce goods and services to sell to consumers.
- Financial intermediaries perform an important role because they enable accumulated savings to be directed towards business growth.

- Government plays an important role in the economy because households and businesses pay money to government in the form of taxes, and receive particular types of goods and services in return.
- The economic system aims to answer three key questions: what to produce, how to produce and for whom to produce.
- Indicators such as economic growth, unemployment and inflation provide us with information about the performance of the Australian economy.
- Whenever we make a choice between two or more alternatives, we may gain the benefits of the alternative we choose, but we lose any benefits that may have come from choosing the next best alternative. This is known as opportunity cost.
- Australia is a trading nation — it exports goods and services to other countries, and Australian businesses and consumers import goods and services from overseas.
- The circular flow diagram represents the flow of money between households, businesses, financial intermediaries, government, and overseas consumers and businesses.
- The balance of trade is the difference between the value of a country's exports and its imports over a specific period.
- Australia's largest trading partner is China, with other Asian countries making up four of our five top trading partners.
- Trade and other connections between countries mean that events in one part of the world can affect economies in other countries.

4.8.2 Your turn

Australia regularly suffers from drought. These events can sometimes last for years, having a serious impact on the production of food and other agricultural products.

1. What do you think the impact of drought would be on the price of fruit, vegetables and meat in Australia? Give reasons for your answer.
2. How do you think a drought might affect Australia's trade in food products with our Asian neighbours? Give reasons for your answer.
3. What impact would a drought have on the circular flow of money in the economy? Explain why.
4. Imagine you are a grazier who sells beef to local and overseas butchers. You have 100 specially bred animals that in good condition are worth $80 000 in total. The drought has left your pastures with nothing for the livestock to eat so, with no rain in sight, you believe your options are to:
   (a) pay $8 per head per week to relocate them to a better farm for three months to reach peak quality for sale.
   (b) sell some or all of the cattle now for an average of $500 per head, depending on their condition.
   (c) buy fodder and hand feed at a cost of $20 per head per week for three months before selling them in prime condition.
   (d) any combination of the above.

After identifying the costs and benefits involved in each option, make a decision and justify your selected option.

TOPIC 5
The global economy

5.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

5.1.1 What is globalisation?

Australia is engaged in trading relationships with countries all over the world, particularly with those in the Asia region. In fact, all advanced economies rely on trade as a means of generating economic growth. The less advanced economies of Africa and Asia are also trying to advance their trading interests to generate growth and prosperity in their own countries. This flow of goods and services between countries, and the money flows that accompany this trade, have increased global interdependence between the trading countries' household, business, financial and government sectors. As a result, what happens in one country affects the activities of similar sectors in many other countries. This process of growing interdependence between countries is known as globalisation.

FIGURE 1 This recently cleared and burnt rainforest area in the Brazilian Amazon has been turned into a cattle ranch for the export of beef.

Globalisation presents many issues for businesses, households, governments and financial intermediaries to consider:

- When overseas businesses take over local businesses, decisions that affect local employees and customers may no longer be made by local management. This may not be in the interests of either the employees or consumers.
- The power and reach of the United States entertainment industry has meant that music, language, fashion and culture have become increasingly standardised throughout the world. This may or may not be regarded as a positive trend.
- Some large international businesses are wealthier and possibly more powerful than the governments of some smaller and medium-sized countries. If one of these companies wants access to the resources in such a country, can the country's government guarantee the best deal for its people?
- How well do we balance the economic interests of increased trade and globalisation with the importance of environmental sustainability?

Starter questions

1. Identify five transnational corporations that operate in Australia. Do these companies manufacture their products in this country or simply import from overseas?
2. Of the goods and services your family buys regularly, which are locally produced and which are imported? Of those locally produced, what proportion are made by overseas-owned companies? What conclusions can you draw about the influence of globalisation on the Australian economy?
3. Examine the TV schedule for your local commercial stations between 7 pm and 11 pm over one week. Calculate and compare the number of hours dedicated to overseas programs and Australian-produced programs during this period. Calculate the percentage of each.
4. Carry out similar calculations for music and movies by examining the current popular music charts and cinema advertisements. What conclusions can you draw in relation to our main entertainment influences in Australia?

INQUIRY SEQUENCE

5.1 Overview 108
5.2 Globalisation and the international economy 109
5.3 Imported products in our local shops 113
5.4 Global supply chains 117
5.5 Transnational corporations 120
5.6 **SkillBuilder:** Developing graphs from tables 124
5.7 **Review** 125

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Explore more with this weblink: Globalisation

5.2 Globalisation and the international economy

5.2.1 The economic issues of globalisation

Globalisation provides the means for increased interaction between the consumers, producers, workers and governments in one country's economy with their counterparts in the economies of other countries. Many people use the term 'globalisation' to describe the strengthening economic ties between nations, and the resulting trade and investment opportunities. Some use it to refer to the increasing exchanges between nations at the social, political, cultural and technological levels. For others, globalisation refers to our ability

to rapidly communicate with and travel to other regions of the world. In this topic we focus on the economic issues associated with globalisation and the way they affect all participants in the global economy.

5.2.2 What are the benefits of globalisation?

Globalisation can be a driving force for economic growth (an increase in the size of the economy as measured by gross domestic product). As countries encourage free trade with other countries, new markets are created. Selling more products increases company profits, and this means companies can afford to hire more workers. As a result both companies and workers become wealthier, and the standard of living improves. As discussed in topic 4, a trade surplus with our trading partners will result in an increase in wealth coming into the country and contribute to the circular flow of money.

FIGURE 1 Greater choice and an increased variety of goods and services is a flow-on benefit of globalisation for consumers.

Trade helps to ensure that resources are used efficiently to produce goods and services. It enables nations to specialise in the products that they make efficiently or grow naturally. At the same time, producers competing on a global rather than a national level must operate efficiently to keep prices competitive. This increased focus on efficiency and cost savings provides flow-on benefits for both producers and consumers.

5.2.3 What is the downside of globalisation?

Globalisation can create unfair working conditions for many workers in poor countries. Large **transnational corporations (TNCs)**, for example, may shift their production factories to poorer countries where they can hire labour more cheaply. These workers may be forced to work long hours in unsafe and unhealthy factory environments for a very small wage. Workers in the home country of the TNC may lose their jobs altogether.

FIGURE 2 A downside of globalisation is the deplorable working conditions faced by many workers in poorer countries.

As well as choosing countries that have cheaper labour, TNCs may also choose to locate in countries where environmental regulation is less stringent. This may result in exploitation of natural resources and damage to the natural environment, often with little or no benefits flowing on to local communities.

Critics of TNCs who exploit labour laws by providing poor conditions and low wages for their workers often stage boycotts of the goods and services these companies provide.

TNCs also have the ability to undercut prices charged by competitors, often forcing smaller producers to close down. This results in job losses, less competition and less choice for consumers. Removal of competition can then allow TNCs to raise product prices.

5.2.4 Who oversees the global market?

A number of international organisations oversee the flow of goods, services and finance around the world. These include:

- *World Trade Organization (WTO)*. Established in 1995, the WTO administers the rules of international trade. It is an influential organisation that has the power to rule on international trade disputes.
- *International Monetary Fund (IMF)*. Established after World War II, its main function is to provide an orderly way of financially assisting developing countries.
- *Organisation for Economic Co-operation and Development (OECD)*. This organisation develops economic and social policy for its members. Its 30 member countries include Australia, Japan, Korea, New Zealand and countries in western Europe and North America.

5.2.5 What does globalisation mean for Australia?

Globalisation has affected our country in many ways:

- Many Australian companies now operate internationally, increasing their profits by selling their goods and services worldwide. Some have established their production centres in regions such as Asia to reduce labour costs.
- Globalisation has forced Australian farmers to compete at a global level to sell products such as wheat and wool. Previously they could rely on selling their crops and stock to established trading partners.
- Overseas investment by Australian companies helps to create employment and wealth in those overseas countries. Similarly, investment in Australia by overseas companies may create growth and employment opportunities that improve our standard of living.
- Importing a huge variety of goods and services allows consumers greater choice, usually at cheaper prices. Overseas-made products in almost every Australian home include electrical goods, CDs, food items, clothing and footwear, numerous television programs and, increasingly, the family car.

FIGURE 3 Globalisation in the form of shipping goods to or from other countries has advantages for Australian businesses and consumers.

FIGURE 4 Clear-felling forests helps to meet rising demands for timber. It also reduces the availability of tree hollows in old-growth forest needed by some Australian species as their habitat.

5.2.6 Is globalisation environmentally sustainable?

As the world population grows, demand for goods and services increases. Meeting this demand requires greater use of renewable and non-renewable natural resources. The manufacturing processes involved in producing the increased quantities of goods demanded results in increased pollution levels and many dangerous by-products. Other serious environmental problems associated with meeting increased demand include the hole in the ozone layer, destruction of old-growth forests, extinction of many plant and animal species, and climate change.

Both consumers and producers are becoming increasingly aware of the need for environmental sustainability.

5.2.7 How does the internet benefit globalisation?

The internet allows huge amounts of information to be accessed or shared very quickly, facilitating the exchange of information and ideas between individuals, businesses and governments around the world. As e-commerce (commercial transactions such as advertising, buying and selling on the internet) increases, isolated groups such as rural exporters will be able to operate more competitively. This will provide growth opportunities for many country towns and out-of-the-way remote businesses that might otherwise have difficulty in reaching a large market.

FIGURE 5 Greater access to the internet enables even small or isolated businesses to compete efficiently in a globalised market.

5.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. In your own words, define globalisation.
2. Identify one international organisation that oversees global markets and outline its main function.

Explain

3. List three advantages and three disadvantages of globalisation.
4. Identify and explain two impacts of globalisation on the Australian economy.
5. In what ways has globalisation placed additional pressures on the environment?

Discover

6. Identify one product that you or a family member has purchased online recently from an overseas supplier.
   (a) What was the name of the online retailer supplying the product?
   (b) Which country did the product come from?
   (c) Is the product available from shops locally?
   (d) Why did you or the family member decide to use the internet to purchase this product?

Think

7. 'Many countries are being too heavily influenced by external culture and language, particularly American culture, and are losing unique elements of their traditional culture.' Think of the number of products we buy that have originated in the United States, including fast food, films, music and TV programs that are now available worldwide. Do you agree or disagree with the view that globalisation risks damaging local cultures in smaller countries? Give reasons for your answer.

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Explore more with these weblinks: Global issues explained, What is globalisation?, Fashion factories, World Trade Organization

5.3 Imported products in our local shops

5.3.1 Imports — positive or negative?

You may not realise it, but you have been living with and consuming imported products all your life. In fact if your parents used disposable nappies, you would have come into contact with imports the day you were born. But have you ever stopped to think about what effects imports have on the Australian economy? It can be argued that money going out of Australia to pay for imports is likely to reduce our wealth. Yet many imported goods are cheaper than those locally produced, allowing us to buy more and make our money go further.

5.3.2 What is an import?

An import is a good or service that is produced overseas and brought into Australia. Businesses bring imports into the country and then sell them to other businesses or directly to the public. When we travel and spend money on an overseas holiday, this has the same effect on the economy as importing goods and services. In this case we are taking our money to other countries to spend on goods and services there rather than physically bringing the products to our country. The economic effect is that the money goes to overseas businesses, so the impact on the Australian economy is the same.

FIGURE 1 The spending of money by overseas tourists in Australia is called invisible exports.

Similarly when overseas tourists come to Australia and spend their money, this has the same impact on our economy as exporting goods and services. In this case, money from overseas consumers is coming into Australia and being paid to Australian businesses just as if those businesses had sent their products overseas. Economists sometimes refer to the spending of money by Australians overseas as 'invisible imports' while the spending of money here by overseas visitors is referred to as 'invisible exports'.

5.3.3 Where do you find imports?

You will find imported products in most shops. Check the shelves in your local supermarket, or go into any store selling electrical goods. Look at the labels on the clothes in your wardrobe or other products you have bought recently. Most businesses carry a range of products that are made both locally and overseas. Imported products can also be bought online, bypassing local business that import goods to sell to Australian consumers.

FIGURE 2 Consumers can find imported goods in almost every store.

5.3.4 From whom do we import?

Australian imports come from all over the world. Globalisation allows us to buy overseas products in local stores or in our own homes using the internet or telephone.

As we can see from table 1, over 50 per cent of our imports in the 2014–15 financial year came from six of our ten largest trading partners. Our top 30 sources of imports accounted for almost 90 per cent of the total value of all imported goods.

TABLE 1 Value of overseas imports of goods by top 30 countries of origin, Australia, 2014–15

Country of origin	Goods imported	
	$ million	%
China	56 994.2	22.2
United States of America	27 449.0	10.7
Japan	18 236.0	7.1
Korea, Republic of	13 546.5	5.3
Thailand	12 116.3	4.7
Germany	11 761.5	4.6
Singapore	10 676.7	4.2
Malaysia	10 143.4	4.0
New Zealand	7 627.5	3.0
United Kingdom	6 242.7	2.4
Italy	5 925.2	2.3
Indonesia	5 337.5	2.1
Vietnam	4 893.9	1.9
Taiwan	4 765.8	1.9
France	4 133.7	1.6
India	3 799.6	1.5
Papua New Guinea	3 401.9	1.3
United Arab Emirates	3 115.4	1.2
Switzerland	2 984.7	1.2
Mexico	2 254.7	0.9
Canada	2 219.5	0.9
Spain	1 984.1	0.8
Netherlands	1 974.7	0.8
Sweden	1 911.4	0.7
Ireland	1 822.9	0.7
Belgium	1 658.5	0.6
Hong Kong (SAR of China)	1 212.9	0.5
Denmark	1 090.6	0.4
South Africa	1 082.2	0.4
Austria	1 062.6	0.4
Total top 30	**231 425.5**	**90.3**
Other	24 996.6	9.7
Total	**256 422.0**	**100.0**

p = preliminary (as at June 2015 release)

5.3.5 What goods and services do we import?

Table 2 shows the top ten imports of goods and services into Australia in 2014. Although it only made up 7.3 per cent of total imports by value, the largest single import was the invisible import of Australians travelling and spending money overseas. While we are used to seeing imported clothing and electrical goods in our shops, neither of these types of imports were included in the top ten in 2014.

TABLE 2 Australia's top ten goods and services imports in 2014 (A$ million)

Rank	Commodity	Value	% share
	Total (b)	**336 957**	
1	Personal travel (excl. education) services	24 597	7.3
2	Crude petroleum	20 050	6.0
3	Refined petroleum	18 579	5.5
4	Passenger motor vehicles	17 566	5.2
5	Telecom equipment & parts	9 845	2.9
6	Freight transport services	9 686	2.9
7	Medicaments (incl. veterinary)	7 497	2.2
8	Computers	7 316	2.2
9	Passenger transport services (c)	6 141	1.8
10	Goods vehicles	6 008	1.8

a) Goods trade are on a recorded trade basis, Services trade are on a balance of payments basis.
b) Total is balance of payments basis.
c) Includes Related agency fees & commissions. Based on ABS trade data on DFAT STARS database and ABS catalogue 5 368.0.

FIGURE 3 Motor vehicles and petroleum are among the many imported products sold in Australia.

5.3.6 Why do we import goods and services?

Australia imports many products, and does so for many reasons. Australian producers may not make a product as efficiently as it is made in another country, or a particular raw material may not be produced in sufficient quantities to satisfy demand. Australia began mining its own reserves of petroleum in the 1960s, but production peaked in the year 2000 and has been in decline ever since. As a result the importation of both crude and refined petroleum has steadily increased since then, amounting to over 11 per cent of all imports in 2014. The importation of all motor vehicles amounted to

FIGURE 4 Most electrical goods sold in Australia, such as TV sets, are imported.

almost 10 per cent of imports in 2014 and, with the expected closure of Australia's motor manufacturing plants after 2017, this percentage is likely to increase.

5.3.7 How do imports affect the economy?

Spending on imports is higher in most years than spending on exports. Bringing imports into the country has both positive and negative effects for consumers and producers (see table 3).

TABLE 3 Economic effects of imports

Positive effects	Negative effects
• There is an enormous range of goods and services for consumers to buy. • Australian producers are forced to make goods and services using resources in the most efficient way because they have to compete against cheaper imported products. • Importing goods from other countries encourages those countries to buy our exports. • Australian workers may move overseas and learn other languages and cultures. • More trade between countries encourages peaceful relationships and cultural exchanges.	• Australian jobs may be lost to countries with cheaper labour costs. • Imported resources may lower employment opportunities for Australian workers. • Australian industries find it difficult to compete with the lower production costs of some overseas countries. This leads to a closure of industries and loss of skills. • Money leaves the country to circulate overseas, rather than in Australia, affecting the exchange rate of the Australian dollar. • Harmful animal species as well as diseases, such as bird flu, may be brought into the country in various ways.

5.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Which three countries were our top three sources of imports in 2014–15?
2. Which type of goods made up our largest percentage of imports by value in 2014?
3. Identify two reasons why Australia imports goods and services from overseas.

Explain

4. What is meant by the terms 'invisible imports' and 'invisible exports'?
5. Explain how purchasing imported goods can:
   (a) improve our standard of living
   (b) reduce our standard of living.

Discover

6. Provide ten examples of imports that you and your family purchase regularly. Identify their countries of origin.
7. Choose five stores in your local area, name them and list some of the imported products they stock.

Think

8. Design an advertisement (web page or poster) to encourage consumers to buy Australian products. In presenting your design to the class, explain why you believe it could work.

5.4 Global supply chains

5.4.1 Land, labour and capital

In the globalised economy, the manufacture of many goods that we purchase is not restricted to one country. All goods are manufactured using a combination of raw materials (known to economists as land), human skill and effort (labour), and factory buildings and equipment (capital). Manufacturing today can have different combinations of these three resources located in many different parts of the world, with the final product sold in a variety of different countries. The combination of different resources, businesses and information that moves a product or service from producer to consumer is known as the supply chain.

5.4.2 Supply chain management

A major concern of any transnational corporation is the management of the supply chain. Raw materials have to be sourced from various parts of the world, and these raw materials may then be processed in a number of different countries. The manufacturing steps may occur in several locations before the finished product is available for sale.

Supply chain management can be illustrated by examining the production of the mobile phone. One of the most successful mobile phone suppliers of the last 20 years has been the Nokia company. Nokia is a Finnish company that has not always produced phones. It has been in operation for over 140 years and produced a variety of goods including cables, toilet paper and rubber boots.

In the early 1990s, Nokia reinvented itself and started focusing on technology in the mobile phone industry. With this change in focus the company began operations as a transnational business, operating factories and selling its product worldwide.

This transformation did not come without its problems. The popularity of mobile phones and the Nokia brand meant that in 1996 the company did not have the factories capable of producing the number of phones demanded. In response to this it began the globalisation of the Nokia operation, with a particular emphasis on updating its supply chain management.

FIGURE 1 The popularity of Nokia phones has prompted the company to globalise its operations.

5.4.3 The Nokia supply chain

The manufacture of a mobile phone is a worldwide process, with countries from every continent involved.

Raw materials

The electronic and electromechanical components of a mobile phone require a variety of minerals, sourced from all over the world. Copper for internal wiring comes mainly from Chile, Australia and Peru, although this important metal is also supplied by other countries in South America, Asia and Africa. Other minerals such as cobalt and tantalum from central Africa, and zinc, mercury and nickel from Africa, Asia, South America and Australia are all required in

FIGURE 2 Many of the minerals used in mobile phones are mined in Africa.

phone manufacturing. Plastics for the phone cases have to be processed as a by-product of petroleum from the Middle East and other oil producers.

Production of components

Nokia originally made its mobile phones in Finland but, because it was unable to meet demand, opened factories in other locations around the world. For many years Nokia in Finland made a number of phone components itself, and purchased other components from around a hundred different specialist components manufacturers as well as a large number of software suppliers. Electronic circuits, liquid crystal displays, cases and batteries were all then shipped from different parts of the world to be assembled into mobile phones. Since 2011, Nokia has been forced by the competitive nature of the smartphone market to further restructure its operations. In 2012 it closed its last factory in Finland, and now only produces its phones in its remaining eight factories worldwide (see figure 3).

FIGURE 3 Nokia handset factories

Assembly

Assembly of Nokia handsets takes place at eight different factories worldwide — Asia, Europe, and North and South America (refer back to figure 3). This is in response to a demand by telecommunications companies in different countries for telephones that have key features under that particular brand. Nokia takes orders from the carriers (such as Vodafone) into its production system and transforms them into hundreds of thousands of specialised phones for each carrier. This can mean that a carrier can have a unique faceplate with its logo, or with specialised software installed. It costs on average $90 to produce a telephone, although this can vary from $20 to $130 depending on the features of the telephone. Nokia then sells its product for 33 per cent more than its production costs.

In 2013 Nokia announced that its phone devices and services division would be sold to Microsoft, to become Microsoft Mobile. This means that the division became part of the Microsoft transnational corporation, and its supply chain became integrated with that of Microsoft worldwide.

FIGURE 4 Assembly of Nokia mobile phones takes place in factories all around the world, including China.

Sustainability issues in supply chain management

Many of the materials used in mobile phones are toxic to both humans and wildlife. Minerals such as coltan, mercury and lead can cause serious problems if they are released into the environment. Plastics, solvents and chemicals such as bromine and chlorine can also be hazardous if they seep into the soil or into the water table. It is important for phone producers to ensure their manufacturing processes do not allow dangerous materials to be released into the environment. The recycling of old mobile phones is also a significant issue.

FIGURE 5 The disposal of old mobile phones has a significant impact on landfill waste.

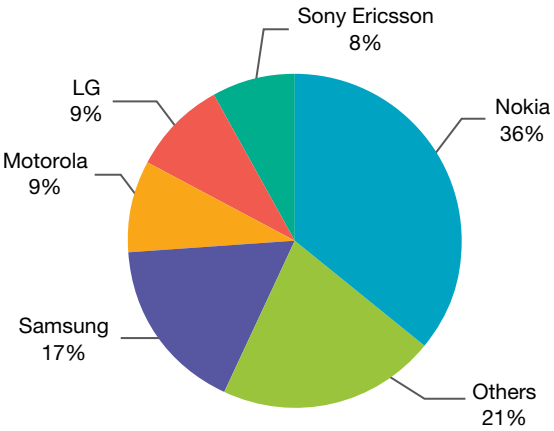
Nokia is aware of the impacts its products have on the environment. Environmental concerns are built into its operations throughout the product life cycle — including design, production and the minimal use of energy — but it has less control over environmental impacts associated with consumer use and the disposal of old models. Consumers are increasingly encouraged to recycle old phones, and this has helped to reduce the landfill waste associated with the level of technological progress that has taken place.

Changing market share

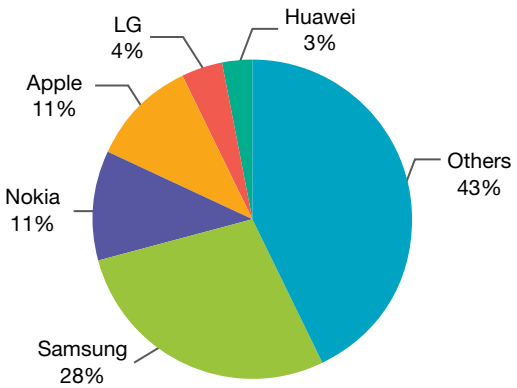
Mobile phone sales have continued to grow. More than 1.2 billion mobile phones were sold worldwide in 2007, rising to around 1.8 billion in 2014. The development of the smartphone and advancements in smartphone technology have changed the fortunes of the world's mobile phone producers since 2007. In that year the Apple iPhone introduced touch-screen technology into the market, radically changing the way users could interact with their mobile phones. In 2008 Nokia was still the largest producer of mobile phones with 36 per cent of the market. By 2014 its market share had fallen to 11 per cent and Samsung had moved to first place with 28 per cent of the market, due in part to its use of the increasingly popular Android operating system.

Global market share of the major mobile phone manufacturers, 2008 and 2014

Global mobile phone market share, 2008



Global mobile phone market share, 2014



5.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What is a supply chain?
2. Why did Nokia have to globalise its phone manufacturing business?
3. Identify three different raw materials that are used in the production of mobile phones and the countries where these materials are sourced.

Explain

4. Explain how Nokia can customise its phones to meet the needs of service providers in different countries.
5. Why has Nokia's market share fallen since 2008?

Discover

6. Follow the **Supply chain** weblink in the Resources tab to learn how Nokia and Microsoft manage their supply chain to ensure that it:
   (a) minimises environmental impacts
   (b) improves social conditions
   (c) responsibly sources raw materials.
7. The disposal of mobile phones has been a problem in the past, but the recycling of phones is strongly encouraged nowadays. Use library or internet resources to investigate how and where this recycling takes place. What happens to the various components when this recycling occurs?
8. Investigate another transnational corporation that operates throughout the world and identify the key elements of its supply chain. (You could use Nestlé or Ford, or use the internet to find examples of others.) Present your information in the form of a flowchart or map.

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Explore more with these weblinks: Smartphones and sustainability, Microsoft's supply chain

5.5 Transnational corporations

5.5.1 What is a TNC?

A transnational corporation (TNC) is a business that produces and sells its products in a number of countries throughout the world. TNCs have their headquarters in one country and they establish subsidiaries in other countries. The subsidiaries are located in countries that provide the resources and conditions necessary for them to operate. TNCs represent the highest level of involvement in global business, where national borders do not represent barriers to trade. TNCs conduct a large percentage of their business outside of their home country.

FIGURE 1 Neon signs in London showing examples of TNCs

5.5.2 Worldwide assets and sales

TNCs come in many different forms. Sanyo, McDonald's, Unilever, Ford, News Corporation and BHP Billiton are just a few of the well-known foreign and Australian transnational corporations.

The degree to which a business is a genuine transnational company can be measured by examining the proportion of its sales that occur outside its home country. Table 1 shows ten of the largest transnational corporations and the percentage of their sales that occur outside their home countries.

TABLE 1 Ten largest TNCs by percentage of sales that occur outside home countries.

Company	Home country	Overseas sales as a percentage of total sales
Nestlé	Switzerland	97.8
Vodafone	Britain	88.3
Siemens	Germany	85.3
British Petroleum (BP)	Britain	79.8
Volkswagen	Germany	78.3
Honda	Japan	77.7
Total (oil)	France	76.9
Exxon Mobil	USA	73.0
GDF Suez (electricity)	France	65.6
Toyota	Japan	60.8

Source: Table based on information from the UN Committee on Trade and Development (UNCTAD).

FIGURE 2 A Toyota dealership in Lithuania

Many of these corporations have factories and assembly plants spread around the world. For example, car manufacturer Toyota has manufacturing or assembly plants in 27 different countries spread across Europe, North and South America, Asia and Africa, in addition to its home base in Japan. Just under 40 per cent of Toyota's employees work in countries other than Japan, and in 2012 it became the first motor manufacturing company to produce more than 10 million cars in one year worldwide. Oil companies such as Exxon Mobil and BP drill for oil in different locations across the world and have oil refineries in many countries. French energy company GDF Suez owns electricity generation assets around the world, including a number of gas-fired power stations in Western Australia and South Australia, and the Hazelwood and Loy Yang B brown-coal power stations in Victoria.

5.5.3 The biggest and richest

Some of the largest transnational corporations have annual revenues that exceed the GDP of many countries. In 2011, only 25 countries (out of a possible 193 that are members of the United Nations) had a GDP that was larger than the revenue of any of the top three transnational corporations. The top six transnationals filled six of the next ten positions between the 25th and 35th largest **economic entities**. Each of these six TNCs had revenues larger than the GDP of countries including Thailand, Denmark, Greece, Finland, Malaysia, Israel, Ireland and New Zealand. The top 15 transnational corporations by revenue for 2014 are shown in table 2.

TABLE 2 Top 15 transnational corporations by revenue, 2014

	Company	Home country	Activity	Revenues ($US million)
1	Walmart	USA	Retail	485 651
2	Sinopec Group	China	Oil and gas	446 811
3	Royal Dutch Shell	Netherlands/Britain	Oil	431 344
4	China National Petroleum	China	Oil	428 620
5	Exxon Mobil	USA	Oil	382 597
6	BP	Britain	Oil	358 678
7	State Grid	China	Electricity supply	339 426
8	Volkswagen	Germany	Car manufacture	268 566
9	Toyota Motor	Japan	Car manufacture	247 702
10	Glencore	Switzerland	Mining	221 073
11	Total	France	Oil	212 018
12	Chevron	USA	Oil	203 784
13	Samsung Electronics	South Korea	Electronics	195 845
14	Berkshire Hathaway	USA	Finance/investment	194 673
15	Apple	USA	ICT	182 795

5.5.4 Some positives and negatives of TNCs

In recent years, over 60 per cent of the 175 largest economic entities in the world have been transnational corporations. If the wealthiest TNCs have revenue greater than many small to medium countries, they have enormous power. If a TNC uses this power in the best interests of the people of those countries in which it operates, those people can benefit enormously:

- Investment from TNCs brings money into the country, bringing economic growth to that country.
- Parent companies and their subsidiaries may share intellectual property such as design and technology concepts. This helps less developed economies become more advanced. The flow of ideas and talent is also supported by the movement of staff between countries even though they remain employed by the same TNC.
- The standard of living of people in less developed countries can be improved as jobs are created.
- Transnational corporations sometimes contribute towards the provision of new transport links to service their premises, and this can be of benefit to the local community.
- When a transnational company builds a new factory, this can stimulate other businesses in the surrounding area. Businesses supplying raw materials, equipment and components to the factory can benefit.

On the other hand, if the transnational company does not act ethically, there may be very little that the government of a host country can do simply because

FIGURE 3 This railway line in the Pilbara in Western Australia is an example of a transport link built by a transnational mining company.

of the financial power wielded by the large company. Some transnational corporations have been found to have acted in ways that have exploited host countries and their people:

- Transnational corporations often set up production in countries that have high levels of poverty and low wages. They often employ young children, pay workers the minimum amount possible, and provide very little in the way of safe working conditions or employee benefits such as meal breaks, sick pay, holiday pay or superannuation.
- Profits are often returned to the home country rather than being used to benefit the economy of the host country.
- Many transnationals will bring their own managerial and skilled staff with them, leaving only menial work for the local population.
- Many transnational corporations have a poor record in environmental matters. They often exploit the laxity of environmental regulations in the host country to pollute the air and waterways there.
- Transnational companies often use complex systems of **transfer pricing** to avoid paying tax on profits earned in the host country. This means that the government of the host country does not gain much additional revenue from the operations of the TNC.

FIGURE 4 This young boy working in a textile factory in India is making clothes to supply a transnational clothing company.

5.5.5 Regulating the activities of TNCs

As a result of international concerns over the activities of some TNCs, the United Nations identified some key responsibilities for the largest transnational corporations:

1. Do not use forced or compulsory labour.
2. Respect the rights of children to be protected from economic exploitation.
3. Provide a safe and healthy working environment.
4. Pay workers enough to ensure an adequate standard of living for them and their families.
5. Recognise the rights of employees to join unions and other collective bargaining organisations.

5.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Define the term 'transnational corporation' and provide three examples.
2. What is an economic entity? Give two examples.
3. Which TNC is the most internationalised in the world, and what percentage of its sales occur outside its home country?

Explain

4. What type of economic or business activity involves most of the largest transnational corporations? (*Hint:* Refer to table 2.)
5. Explain three possible advantages and three possible disadvantages for a host country of having a transnational corporation set up a factory or other operation in its territory.

Discover

6. Use the **Tax Justice Network** weblink in the Resources tab to learn more about the issues associated with taxing corporations, and then use this information to answer the following:
   (a) Identify two reasons why it is important to tax transnational corporations.
   (b) What is the difference between tax evasion, tax avoidance and tax cheating?
   (c) Explain the international system that currently exists to oversee the taxing of transnational corporations.
   (d) Give an example of the way in which transfer pricing is used to avoid tax.
   (e) Explain one possible solution to the current problem of TNCs avoiding tax.

Predict

7. What do you think might happen if the government of a relatively poor country decided to change the laws to collect more tax from TNCs operating within its borders?

Think

8. Why do you think the United Nations thought it necessary to draw up a code to govern TNC behaviour?
9. What short- and long-term benefits do you think could result for a TNC that always behaved ethically and respected human rights?

learnON RESOURCES — ONLINE ONLY

Explore more with this weblink: Tax justice

5.6 SkillBuilder: Developing graphs from tables

5.6.1 Tell me

One picture is worth a thousand words. While a table of data can provide useful information, presenting this data as a graph can make the information more accessible and easier to read. Spreadsheet software such as Excel can be used to create graphs from tables, and the process is very simple.

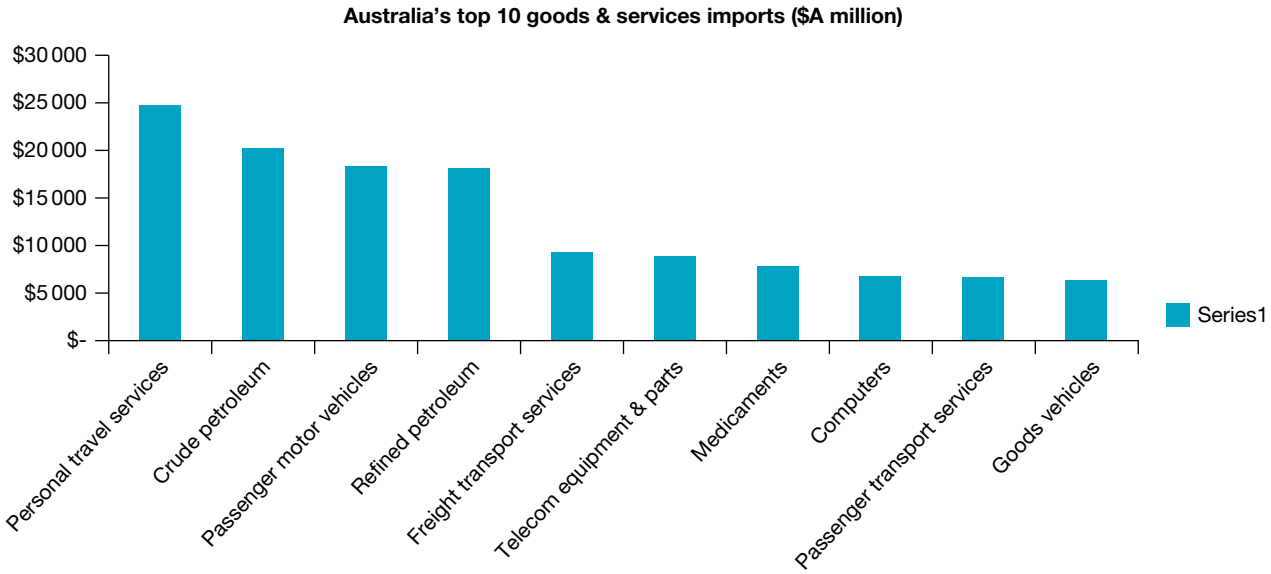
5.6.2 Show me

Using table 2 'Australia's top ten goods and services imports in 2014 (A$ million)' in section 5.3.5 of this topic, we can carry out the following steps:

1. Open a new Excel file.
2. Copy the ten categories of imports into the first column. You may need to make the column wider to fit the text.
3. Next to each category of imports, copy the value of each of these imports in the second column.
4. Select all cells in the column with the figures and convert to dollars by clicking on the dollar sign in the number formatting section of the 'Home' toolbar.
5. Select both columns, and click on the 'Insert' tab. You will then see the 'Charts' creation section of the toolbar.
6. Click on 'Column', and the column graph menu will drop down. You can choose various formats of column graphs to present your data, including 2D, 3D, cones or cylinders.
7. Click on your selected format and the data will be presented as a column graph in the centre of the page.

8. Click anywhere within the boundary of the graph and the 'Chart Tools' toolbar will appear at the top ofthe page. Click on the 'Design' tab to change the design of your graph, including the colour of the columns.
9. Click on the 'Layout' tab and then on 'Chart title' to insert a title for the graph.
10. Your finished graph will present a comparison of the different categories of imports as shown in figure 1.

FIGURE 1 Graph showing Australia's top ten goods and services imports in 2013 (A$ million)



5.6.3 Let me do it

Apply the same process to the other three tables in this topic:

- section 5.3.4, table 1, 'Value of overseas imports of goods by top 30 countries of origin, Australia, 2014–15'
- section 5.5.2, table 1, 'Ten largest TNCs by percentage of sales that occur outside home countries'
- section 5.5.3, table 2, 'Top 15 transnational corporations by revenue, 2014'.

5.7 Review

5.7.1 Summary

- Globalisation provides the means for increased interaction between consumers, producers, workers and governments in one economy with their counterparts in other economies.
- Increased trade between nations has helped to fuel economic growth and assist poorer countries to achieve higher standards of living.
- Globalisation has also led to the growth of large transnational corporations, many of which have used their power to exploit workers in poorer countries.
- Australia has benefited from globalisation because of the overseas demand for our mineral resources and the access to cheaper imported products for consumers. On the downside, cheaper imports have led to the closure of many of our own manufacturing industries.
- Globalisation has created a great deal of environmental damage throughout the world, leading to the international community becoming more aware of the need for sustainability and environmental protection.

- Australia relies heavily on imported goods brought in from countries all around the world.
- Over 50 per cent of our imports in the 2014–15 financial year came from six of our ten largest trading partners, while our top 30 sources of imports accounted for almost 90 per cent of the total value of all imported goods.
- Australia imports goods and services because our local producers may not make a product as efficiently as it is made in another country, or a particular raw material may not be produced in sufficient quantities to satisfy demand.
- In globalised manufacturing industries, raw materials, components and machinery can come from a variety of sources from all over the world, making supply chain management a major task for transnational corporations.
- Mobile phone manufacturer Nokia is an example of a company that had to set up factories all over the world to satisfy demand for its products.
- With factories in eight different countries, supply chain management is a key concern for a company like Nokia.
- Environmental sustainability and the ethical treatment of workers in poorer countries are issues that must be considered in the supply chain management of all transnational corporations.
- Transnational corporations are large business organisations that have their home base in one country and operate partially owned or wholly owned businesses in other countries.
- Many of the most globalised TNCs conduct more than 70 per cent of their business outside their home country.
- Some of the largest transnational corporations have annual revenue that is larger than the GDP of many countries. This can give them greater power and influence than these countries, and lead to exploitation of these countries and their people.
- Transnational corporations can bring many benefits to countries in which they operate, such as employment and new technology.
- Some TNCs have been found to be acting unethically by not paying enough tax in countries in which they operate, by paying low wages and by not providing safe and healthy working conditions.

5.7.2 Your turn

1. Over the last 20 years, many organisations opposed to the effects of globalisation and the increasedpower of TNCs have sprung up across the world. Supporters of these groups have held protests invarious parts of the world, including in Australia in 2000, 2006, 2007 and 2011.

   In small groups, examine the arguments in favour of and against economic globalisation and the increasing power of transnational corporations. Use the arguments outlined in this topic and make use of online resources to provide statistics and evidence to support your arguments.
2. ‘The growth of globalisation and the increasing power of transnational corporations has done more harm than good to the economies of Australia and many other countries.’ Do you agree or disagree?Conduct a class debate on this issue.

TOPIC 6
Managing financial risk

6.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

6.1.1 Balancing risks and rewards

Rock climbing is a risky activity. If you do it with no safety equipment, your risk of having a serious accident increases. Wearing safety equipment minimises the risk, but it is still not as safe as staying on the ground. However, staying on the ground can be less rewarding than climbing. Like rock climbing, making financial decisions can be risky but those risks can be minimised. A wise money manager knows that making financial decisions requires balancing the financial risks against the rewards through appropriate risk-management strategies.

FIGURE 1 Like rock climbing, financial decisions involve risks and rewards.

Starter questions

1. List some of the risks associated with investing money.
2. List some of the rewards associated with investing money.
3. How prepared are you to take on financial risk?
4. What strategies are you aware of that can be used to manage financial risks and rewards?

INQUIRY SEQUENCE

6.1 Overview 127
6.2 The role of banks and other deposit-taking institutions 128
6.3 Different types of investment 131
6.4 Protection from financial risk 133
6.5 Managing debt 138
6.6 **SkillBuilder:** Reading a sharemarket chart 140
6.7 **Review** 143

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Watch this eLesson: Managing risk (eles-2386)

6.2 The role of banks and other deposit-taking institutions

6.2.1 The changing nature of banks

The Australian banking system has undergone great change over the last 30 years. Commencing with **deregulation** in the 1980s, the federal government removed many of the rules controlling the banking sector. Foreign banks were allowed to enter the Australian market and greater competition was encouraged. A wide range of institutions now offer financial products to customers. They include banks, building societies, credit unions, finance companies, superannuation funds, friendly societies and life insurance companies.

The Australian Prudential Regulation Authority (APRA) oversees authorised deposit-taking institutions (ADIs): banks, credit unions and building societies. ADIs are authorised to take deposits from customers under the *Banking Act 1959*. Deposit-taking institutions pool these deposits. This means they put them together and then lend them to individuals and businesses in the form of loans and **mortgages**.

FIGURE 1 Deregulation of the banking sector in Australia has allowed foreign banks to enter the market and compete with local banks.

6.2.2 Banks

Banks offer a wide range of financial services to all participants in the Australian economy — accepting deposits; offering credit cards, cheques, overdrafts, investment and savings accounts; and lending money through personal and business loans and mortgages. Banks also provide other typical banking services such as internet banking, automatic teller machines (ATMs) and financial advice.

A bank savings account is an easy and safe place for people to keep their money. This type of account allows you to deposit money and make withdrawals. In return for your deposits, the bank pays you money known as **interest**. The amount of interest paid depends on the type of account, the number of times interest is paid into the account each year and the amount of money in the account.

A bank is a business that wants to make a profit, so it accepts money as savings (deposits) at a lower interest rate and lends that money at a higher interest rate. You may receive interest of between 2 and 4 per cent from the bank on your savings account, but the bank will charge between 5 and 15 per cent interest to those who borrow money. The difference between these two rates of interest is one of the ways a bank makes a profit.

6.2.3 Credit unions

A credit union is a financial institution that is owned and operated entirely by its members. Credit unions provide a range of products and services that are similar to those offered by banks. These include accepting deposits, offering personal and home loans, and providing payment services such as credit cards. To open an account with a credit union, you have to be an 'eligible' member. Every credit union has its own rules for determining eligibility, but it sometimes means that you have to belong to an industry affiliated with the credit union or be related to an eligible member. Because a credit union is focused on the financial wellbeing of its members, maximising profit is not its main objective.

FIGURE 2 Providing ATMs is one of the many services offered by banks.

FIGURE 3 Banks act as intermediaries between lenders and borrowers.

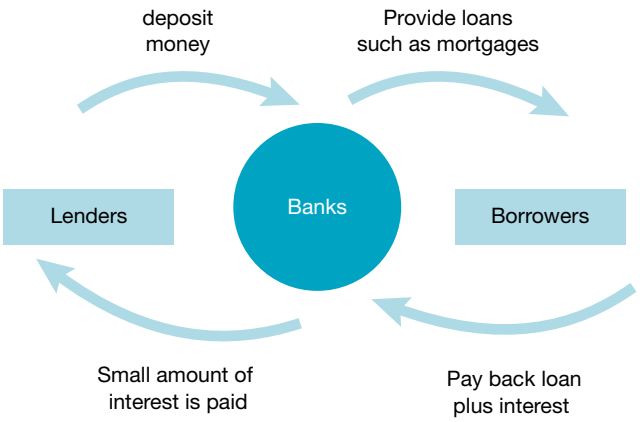

FIGURE 4 People's Choice Credit Union is owned by its members. Its purpose is to help members save and borrow money.

6.2.4 Building societies

Like credit unions, building societies are owned and operated by their members. As their name suggests, building societies historically supported their members in purchasing homes. In more recent times, building societies have expanded to offer similar services to banks. As deposit-taking institutions, building societies accept deposits from customers and provide loans and payment services. There are now less than ten building societies in Australia because many of them converted to banks or merged with banks.

FIGURE 5 Building societies originally helped their members to buy homes but over time they have become more like banks.

6.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What is an authorised deposit-taking institution?
2. Define mortgage.

Explain

3. Explain why banks offer low interest rates on savings but charge higher interest rates on loans.
4. Construct a diagram showing how deposit-taking institutions pool savings and lend them to individuals and business.

Discover

5. Use the **APRA** weblink in the Resources tab to write down the name of one Australian-owned bank, one foreign-owned bank, one credit union and one building society.
6. Working in groups, use magazines and newspapers or internet resources to find pictures representing the three types of deposit-taking institutions (banks, credit unions and building societies). Paste the pictures onto poster paper and correctly label each one. Write a brief description of each type of deposit-taking institution.

Predict

7. Outline what might happen if banks, credit unions and building societies could no longer collect deposits.

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Explore more with this weblink: APRA

6.3 Different types of investment

6.3.1 Saving for the future

There are many different types of investment that enable people to accumulate savings for the future. Some Australians choose to buy properties (such as a house, apartment or land) as investments. As property prices generally increase over time, so too does the value of their investment. Others choose to buy shares or invest in term deposits or managed funds.

FIGURE 1 The largest investment most people will ever make is buying their own home.

6.3.2 Shares

Buying **shares** means buying a certain number of units of ownership in a company. This makes you a shareholder of that company. Some people might buy thousands of shares, others only a few. As the value of a company's shares goes up or down, so too does the value of the shareholder's investment. Owning shares allows you to benefit from the company's profits, which can be given to you as **dividends** or as extra shares. You may also benefit from **capital growth** if the value of your shares increases.

FIGURE 2 The electronic display board of the Australian Securities Exchange shows the prices of shares traded on that exchange.

Buying and selling shares takes place in the **sharemarket**. In Australia, such transactions take place through the Australian Securities Exchange (ASX), which was formed in 1987 by amalgamating the six capital-city stock exchanges. A stockbroker has direct access to the market for trading shares and, for a small fee, acts as an **agent** to buy and sell shares. This fee is known as brokerage.

It is important to diversify your investments so that all your 'eggs' are not in one basket if anything goes wrong. The Australian sharemarket makes this easier by offering a wide choice of companies in which to invest. There are over 2000 companies listed on the ASX. These companies are involved in a wide range of industries covering most sectors of the economy, from financial services to industrials and healthcare. Investing in a range of companies spreads the risk. Investing in shares also gives you flexibility. Shares can be bought and sold quickly — you can sell shares and generally have access to your money in three days or less.

FIGURE 3 On the Australian Securities Exchange, shares can be purchased in companies such as Telstra, Qantas and Woolworths.

6.3.3 Term deposits

One place to keep large sums of money is in a fixed-term deposit. All major banks offer term deposit accounts where you can place your money for a fixed period of time. The time can range from one month to five years. The banks offer a higher rate of interest on such deposits compared with at-call deposits that can be withdrawn at any time.

Term deposits are considered to be low-risk investments because the bank assures the return, but the return tends to be lower than that obtained from owning other types of investments such as shares. The funds in the term deposit are locked away until the end of the term unless you choose to make an early withdrawal, in which case penalty fees will be charged. You therefore need to select an account whose term and rate of interest best suit your needs.

6.3.4 Managed funds

Some people choose to invest in managed funds. These are portfolios of shares, property, public infrastructure, private equity and other investments that are chosen by a professional fund manager. Investing in a managed fund spreads the risk over different types of investment. Decisions about what to invest in are made by a professional, but this also means that investors have no say in the fund's investment decisions.

Most funds have entry and exit fees, and some have monthly fees. It can also be difficult to access your money quickly. Investing in a managed fund is therefore a good choice if you are happy to put your money into an investment and leave it there for a long period.

FIGURE 4 In a managed fund, a professional fund manager invests the money pooled from many individual investors into a range of assets, including shares and property.

6.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What is the ASX?
2. What are dividends? What do they mean for an investor?
3. What is the difference between a term deposit and a managed fund?

Explain

4. Place the terms *financial sector* and *healthcare sector* in the following sentences.
   When an individual buys shares in a pharmaceutical company they are investing in the ____ , and when they buy shares in an insurance company they are investing in the ____.
5. In your own words, explain why people invest in shares.
6. Briefly outline the benefits and risks of:
   (a) share ownership
   (b) term deposits
   (c) managed funds.

Predict

7. What do you think might happen if the price of shares you own fell to zero?

Think

8. Use internet resources to find information about term deposits from two banks. Imagine that you wish to invest $5000 for 12 months. Compare the two term deposits by considering the following criteria: interest rates, when interest is received, account fees, application fees. Present your findings in a table. Decide which bank you would invest with.

6.4 Protection from financial risk

6.4.1 Looking after your money

People invest in order to earn a positive return on their money. Making any sort of investment involves a **financial risk**. Some financial decisions can have completely unexpected or unwanted outcomes. Thankfully, there are ways that consumers can protect themselves against risks.

FIGURE 1 Protecting yourself from financial risk when making an investment is like having a lifebuoy aboard a ship in case it hits rough water and capsizes.

6.4.2 Financial risks

There are many types of financial risk. The basic risk is that the value of the investment will fall and the person making the investment will lose everything. Note that making any sort of investment involves a risk. The only way to avoid risk altogether is to not invest money at all. However, doing so means that you miss out on any potential rewards.

Scams and identify theft are also financial risks. Let us examine these two financial risks in a little more detail.

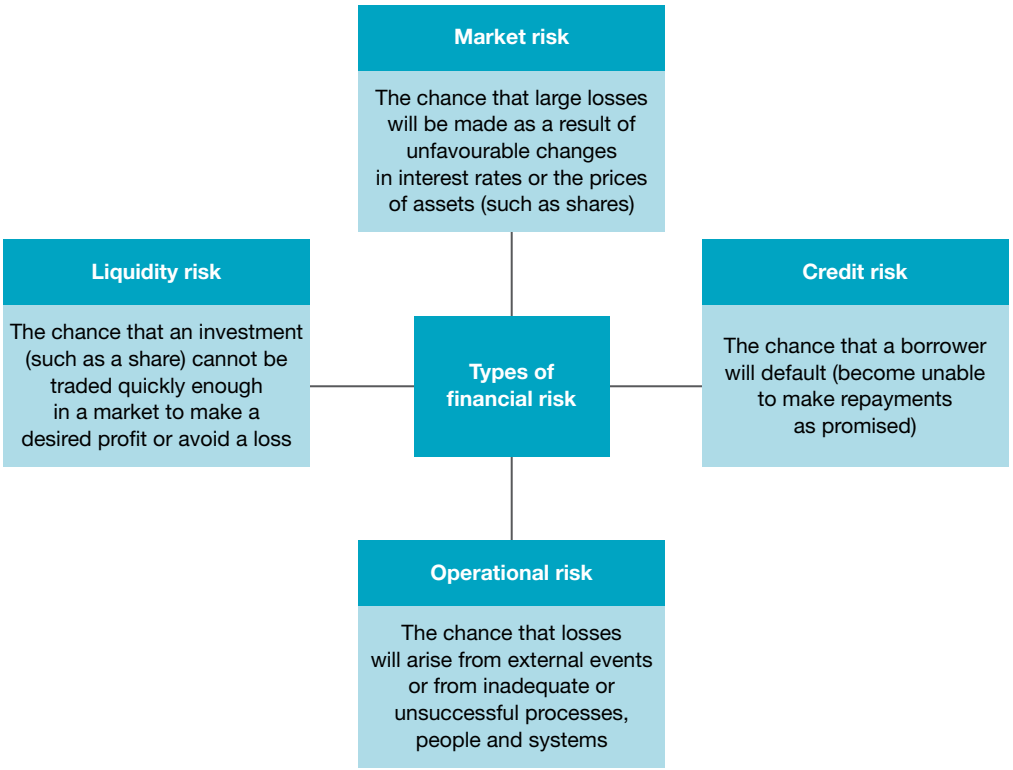
Scams

A scam is a dishonest scheme to trap you into parting with your money. The range of scams is limited only by the imagination of scammers themselves. Generally, scams fall under two categories:

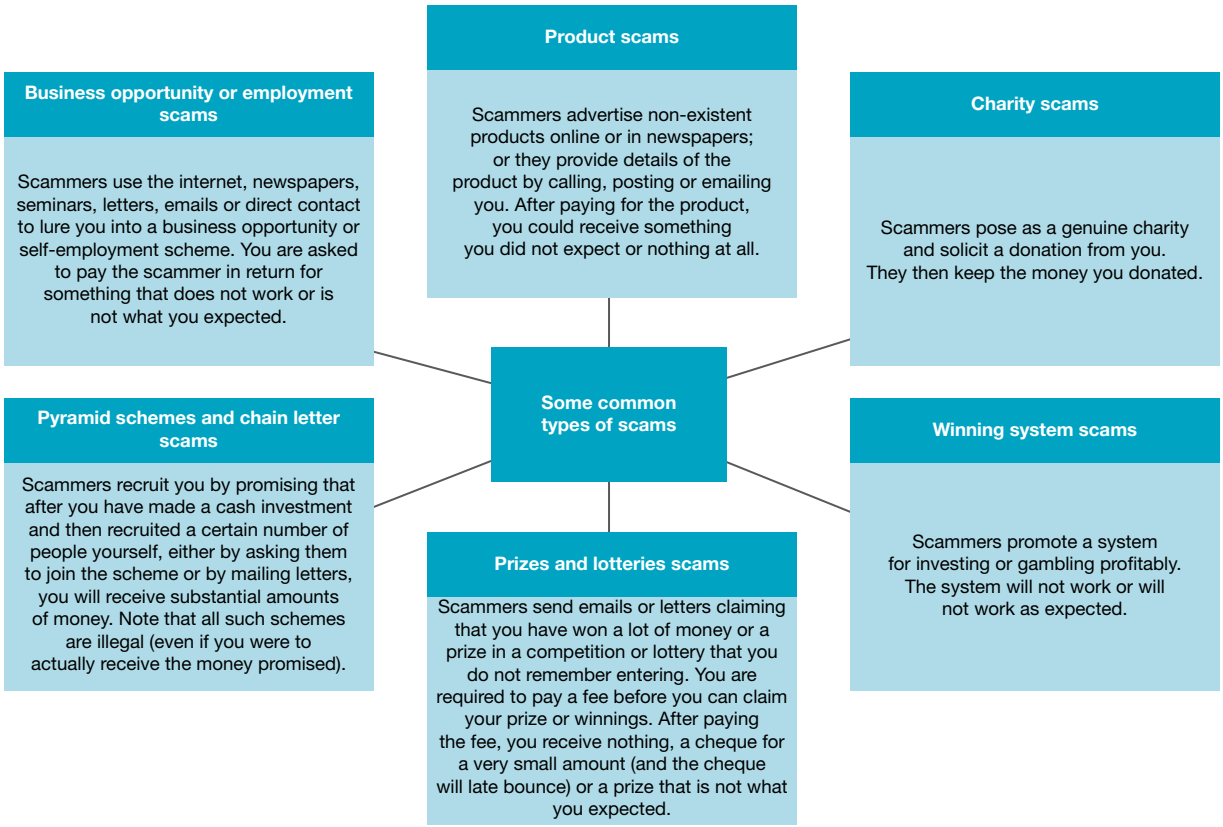
- an attempt to convince you to send the scammer money in return for the promise to do something — a promise the scammer never intends to complete in full if at all
- the use of unscrupulous means to gain access to your personal details such as credit card information, bank account numbers and passport details. This is referred to as identity theft (examined in more detail in the next section).

Some common scams are shown on the next page.

Types of financial risk



Common scams



Scams are often successful because they look genuine. Scammers are also very skilled at manipulating people emotionally. To avoid being a victim of a scam, you should make the effort to research any offers made to you. Always ask questions and think carefully before making any decision.

Identity theft

Identity theft is a growing problem worldwide. It occurs when someone illegally obtains your personal details, such as bank account numbers, and uses those details to commit **fraud**. The identity thief uses your stolen identity to do the following things in your name:

- borrow money
- open a new credit card account
- buy goods.

FIGURE 2 Identity theft can result in your entire identity being assumed by a scammer who might use it to open bank accounts, obtain loans or credit cards, or conduct other illegal activities — all in your name.

Anyone who provides personal information to an unsecured website when shopping online risks becoming a victim of identity theft. If the online seller asks you for additional information such as your email address or phone number, do not provide them unless you are confident the seller can be trusted.

A growing number of consumers have had their identity stolen through phishing. In this type of fraud, you are sent an email that looks like it comes from a trusted source such as a bank. The thieves ask you for information that may seem reasonable, such as your account number and PIN (personal identification number). To avoid being a victim of phishing, you should be suspicious of any email that makes an urgent request for your personal financial details. Do not click on links within the email or reply to any pop-up screen that asks you for personal details.

6.4.3 Protecting yourself from financial risk

There are many ways that consumers can protect themselves from financial risk:

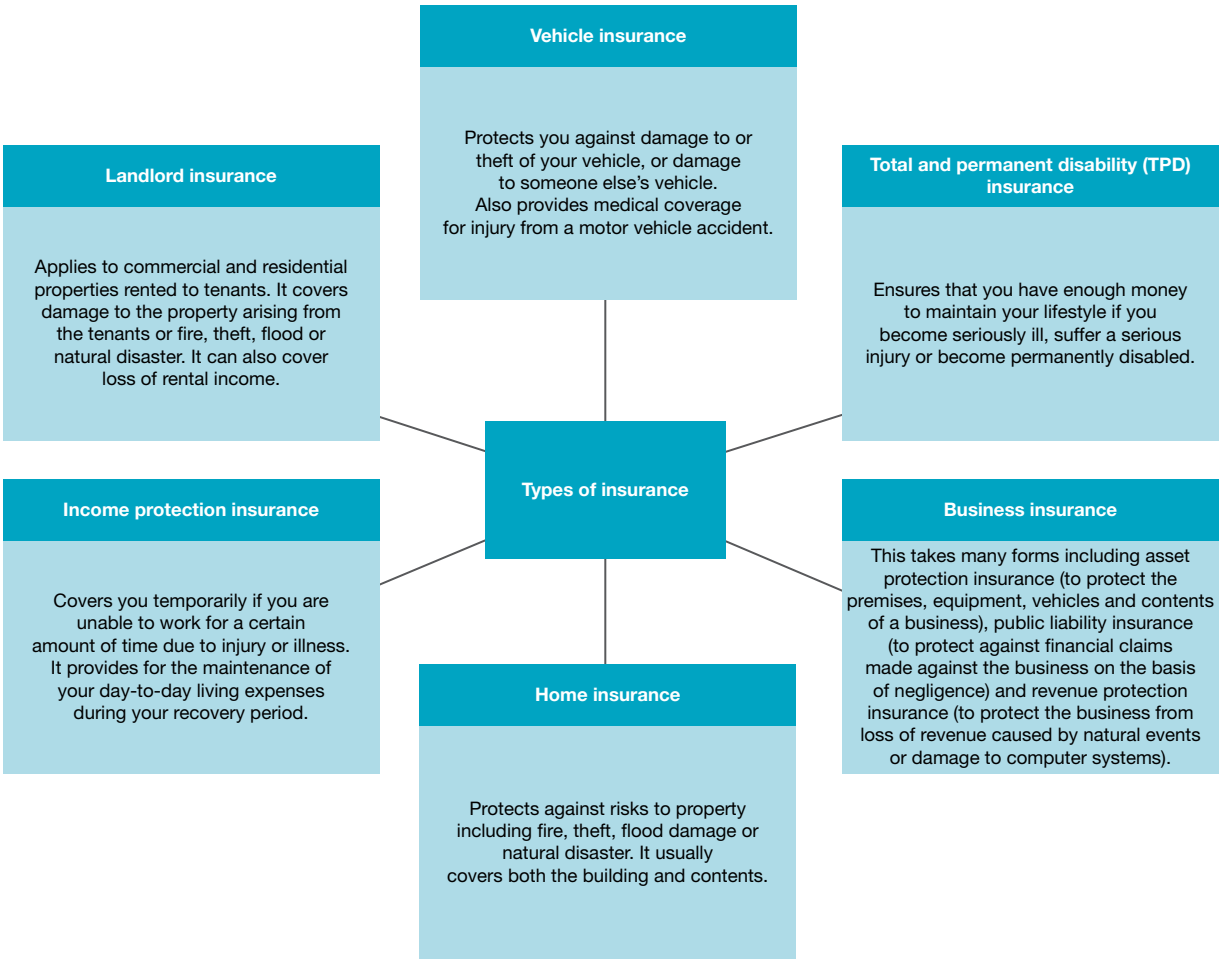
- Make informed decisions and seek advice from qualified financial advisers.
- Be aware that all investments involve some level of risk, and understand the need to weigh up risk and return.
- Diversify by investing in a wide range of assets. You could invest in several different shares and have the rest of your money split between term deposits, property and managed funds.
- Have insurance, savings and superannuation. This is examined in the following section.

FIGURE 3 One way of protecting yourself from financial risk is to invest in a range of different assets with varying levels of risk.

Insurance

Taking out **insurance** protects you financially from any unexpected losses. Some common types of insurance are illustrated below.

Types of insurance



Savings

You can reduce financial risk by having savings — funds from which to draw when things go wrong. (Savings are discussed in more detail in subtopic 6.5.) You save by earning more money than you spend. Savings are usually kept in savings accounts, term deposits or any of the other investments explored in this topic. As the case study 'Australians struggling to save' explains, recent research indicates that many Australians struggle to save any money.

CASE STUDY

Australians struggling to save

A June 2014 report by ME Bank revealed that many Australians are finding it hard to save cash at the end of each month. The Household Financial Comfort Report showed that in June only 46 per cent of the 1500 households surveyed were able to save. This was the lowest percentage since ME Bank's first biannual survey in October 2011. For the households able to save each month, the amount they were saving fell by 12 per cent.

Approximately 42 per cent of families broke even at the end of the month and 12 per cent overspent, drawing on savings, loans or home equity. The households overspending increased their spending by 13 per cent. Almost one-quarter of the households surveyed said they would not be able to raise $3000 in an emergency; this was a rise of 6 per cent. The bank's economic consultant, Jeff Oughton, said that 'households are most uncomfortable with their amount of savings, in both normal times and in cases of an emergency.'

Superannuation

When a person retires, they may be able to access an **age pension** in order to survive. This is an amount provided by the federal government to help an elderly person meet their basic needs. It does not allow for a luxurious or comfortable lifestyle, especially if debts have been accumulated. Although the government does provide a pension, it is not always sufficient to maintain a preferred lifestyle. As a result, a person may need to work longer or sell assets in order to generate the cash flow required.

You can make sure that you have a good lifestyle in retirement, and protect yourself from having to watch every dollar you spend, by taking advantage of **superannuation**. This is a compulsory savings scheme whereby employers contribute an additional percentage of an employee's **gross wage** into a **superannuation fund**. Employees can also choose to contribute to this fund, thus increasing the overall amount they will receive on retirement. How much employees choose to contribute is up to them. There are laws in place that determine when you are eligible to access your superannuation savings. Recent changes have made it attractive to remain working until at least age 60.

6.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. Identify two examples of financial risk.
2. Suggest one way that you might protect yourself from each of the financial risks you identified in question 1.

Explain

3. Max did not do any security checks when he made an online purchase of a new computer game. Explain why Max could fall victim to identity theft.
4. Patrick was surprised to receive an email from his bank. The email message read: 'We regularly verify our customer accounts. We were unable to verify your information. Please click here to update and verify your account information.' Explain why Patrick should be suspicious of this email. Advise him what to do next.
5. Choose one type of insurance and explain how it can protect you from financial risk.
6. Read the case study 'Australians struggling to save' in this section and answer the following questions:
   (a) According to ME Bank's June 2014 report, how many Australians households were able to save cash at the end of each month?
   (b) Why is it important to have savings?
7. Why is it so important to be ready for retirement? What options are there for people who have not saved for retirement?

Discover

8. Ask your teacher to invite a guest speaker to talk to your class about the importance of having a lifetime savings plan, and to explain why superannuation is so important. Write down one or two questions you could ask if given the opportunity.

Predict

9. What might happen if you had no insurance?
10. What are some of the consequences of being ill-prepared for retirement?

6.5 Managing debt

6.5.1 Making good decisions

Are you the type of person who burns through their money fast? Money is great to have but it won't last long unless you make wise choices. If you keep track of your money and spending habits, you can become a wise money user and make your money work for you. Continuing to borrow money can land you in trouble.

FIGURE 1 The temptation to spend money is everywhere.

6.5.2 Good and bad debt

When you borrow money or owe money to someone, you are said to be in **debt**. You have a financial obligation to repay the borrowed money. Debt can be a good thing if it is used to leave you better off in the long-term. A mortgage, where you borrow money to purchase a home or property, is an example of good debt. Taking out a student loan or a loan to start a new business are also examples of good debt. These are borrowings to invest in assets that will grow in value over time.

Some adults and young people get into a lot of debt. Reasons for this include unemployment, illness, the rising cost of living, gambling and the overuse of credit cards. Unfortunately, instead of reducing expenditure and paying off debts, there is a temptation to borrow more money. This can lead to out-of-control or spiralling debt.

The bad news is that the consequences of debt can be very serious. A person who cannot keep up with payments for the purchase of a car, for example, faces having the vehicle **repossessed**. They may get some of their money back, but there is no guarantee.

FIGURE 2 Excessive debt can cause stress, reduce savings and affect your ability to borrow money in the future.

In really serious situations, a person who has many debts and no way of repaying them faces personal **bankruptcy**. This is a formal, legal way of saying that the person 'cannot pay their debts'. The period of bankruptcy usually lasts for three years, but it can affect the rest of your life. Some consequences are:

- Your credit rating is affected and you may find it difficult to borrow money.
- It can affect employment opportunities.
- Your residence may have to be sold to help pay your debts.

FIGURE 3 Gabrielle is aged 14 and in debt. She borrowed $40 from her brother for some clothes she 'just had to have'. Now she has discovered she owes $100 for call costs from her mobile phone. She feels sick with worry and is scared to tell her parents.

6.5.3 How to manage debt

Now for the good news! There are steps you can take to overcome being in debt. The first step is to face up to the problem instead of hoping it will go away. Make a list of your essential expenses and those that are optional. Avoid spending money on optional expenses. Buy only what you can afford without having to borrow. Lastly, work out a plan to repay the debt and stick to it.

6.5.4 Saving

There is no mystery about managing money, managing debt and building personal wealth. It's just a matter of regular saving. You can save money if you have more money coming in than you have going out. It requires only a simple maths calculation to work it out:

$40 income – $20 expenses = $20 remaining that can be saved

Wise money managers know that saving money:

- gives you more independence and security
- gives you a sense of satisfaction
- helps you pay for unexpected expenses
- avoids the need to borrow money and the worry about repaying the debt
- helps you plan for buying big items, such as a bike or a car.

It is easier to save money if you have clear financial goals in mind. The good thing about setting goals is that they give you a purpose for saving. Goals should be realistic and specific. For example, your goal might be 'to save $100 in six months to reduce my debt'.

Saving money is a bit like an exercise program or a diet. You have to have a plan and stick to it to make a difference. You should aim to save a minimum of 10 per cent of your income. That means you should put aside 10 cents out of every dollar you earn. Alternatively, you might decide to save a specific amount, such as $10 per week.

Use the following steps in figure 4 as a guide to work out your savings plan.

FIGURE 4 Developing a savings plan

STEP 1: Work out what expenses are essential and how much you have left over that could be saved.

↓

STEP 2: Decide how much you can save each week to reach your goal(s).

↓

STEP 3: Start saving immediately.

↓

STEP 4: Re-evaluate your financial goals as the need arises.

Once you have made the decision to develop a savings plan, your debt should gradually fall. When you have reduced your debt to a satisfactory level, an easy and safe place to keep your extra money is in a savings account. When your savings have built up, you may wish to consider other forms of investments, such as term deposits, managed funds, shares or property.

6.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What is debt?
2. Briefly outline the difference between good and bad debt.

Explain

3. Explain three consequences of getting into too much debt.
4. How can you manage debt?

Discover

5. Use the **MoneySmart savings goals calculator** weblink in the Resources tab to calculate how long it would take you to save $5000 if you started with $500 and saved $100 a month at an interest rate of 5 per cent. Write down the amount of time it would take to reach your goal. Experiment with other numbers.

Think

6. Look at figure 3. Advise Gabrielle as to what steps she could take to pay off her debts.
7. Together with a classmate, create a brochure for parents on money management. The aim of the brochure is to encourage parents to teach their children to be money wise and manage debt. It should state why it is important for young people to be able to save and suggest how parents can provide a positive role model for their children. Add any tips you think would be helpful.

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Explore more with this weblink: MoneySmart savings goal calculator

6.6 SkillBuilder: Reading a sharemarket chart

6.6.1 Tell me

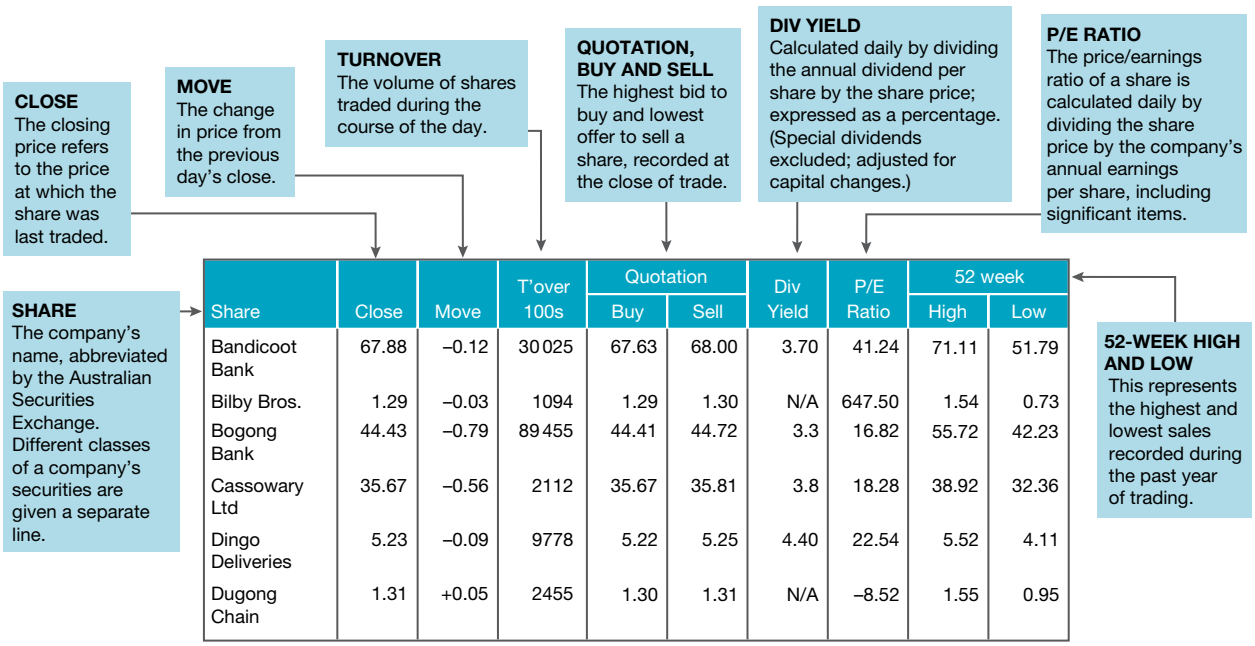
What is a sharemarket chart?

A sharemarket chart provides information on how shares are performing. It is one form of reporting changes in the sharemarket. Sharemarket charts are available in newspapers, on television and radio news and on the internet. Many factors are included in a sharemarket report, and not all media may provide data on the same factors. An example of a sharemarket chart is shown in the interactivity below.

Some of the factors included in charts and other reports are: information on share prices, changes in price and percentage price changes. For example, when a sharemarket chart mentions ‘net change’, it is referring to the difference between the current end-of-day share prices and that of the same share on a previous day.

Other factors that a sharemarket chart usually includes are the share names, symbols, dividend rates and percentage yields. The dividend rate refers to the return per share a company pays to shareholders over a given period, while the percentage yield refers usually to the annual income per share, expressed as a percentage of the cost of the share.

A sharemarket chart



Share	Close	Move	T'over 100s	Quotation		Div Yield	P/E Ratio	52 week	
				Buy	Sell			High	Low
Bandicoot Bank	67.88	–0.12	30 025	67.63	68.00	3.70	41.24	71.11	51.79
Bilby Bros.	1.29	–0.03	1094	1.29	1.30	N/A	647.50	1.54	0.73
Bogong Bank	44.43	–0.79	89 455	44.41	44.72	3.3	16.82	55.72	42.23
Cassowary Ltd	35.67	–0.56	2112	35.67	35.81	3.8	18.28	38.92	32.36
Dingo Deliveries	5.23	–0.09	9778	5.22	5.25	4.40	22.54	5.52	4.11
Dugong Chain	1.31	+0.05	2455	1.30	1.31	N/A	–8.52	1.55	0.95

Why are sharemarket charts useful?

Just as a weather report informs people about conditions outside and helps them decide whether to put on a coat (or take off their jumper) for outdoors, similarly a sharemarket chart tells you about the conditions in the sharemarket but helps you decide whether to buy (or sell) shares.

An important reason why an investor should be able to read a sharemarket chart is that it provides important information needed to make decisions about investments. Information about movements in shares enables investors to decide whether to hold, sell or buy shares in any of the 2000 companies listed on the Australian Securities Exchange, or become involved in other sharemarket investments.

Furthermore, in a sharemarket chart, the amount of shares sold and the highest and lowest prices for such shares may be included. This information is relevant for most investors, economists and advisers because it helps them in their sharemarket analysis.

6.6.2 Show me

How to read a sharemarket chart

Procedure:

Step 1: Recognising the type of sharemarket chart

Look carefully at the chart heading and the headings of the columns to know what it is showing.

- Some charts divide listed companies into indices according to types such as industrial, metals and mining, energy and so on. This allows people to compare the financial performance of one company against other companies in the same sector by displaying the figures in one index.
- Other charts show the performance of the top 20, 50, 100, 200 or 300 listed companies, giving a more accurate general picture of the way the sharemarket is moving.
- For an overall picture of worldwide share price movements, other charts indicate the general picture in stock exchanges in the United States, Japan and elsewhere around the world.

Step 2: Learning the meaning of column headings

- Use an economics dictionary, glossary or the key (which accompanies the chart) to find out what each column is showing.

Step 3: Looking at the data

- Each listed company has a unique three-letter symbol, for ease of location in online charts or in daily newspapers. (Use the **ASX listed companies** weblink in the Resources tab to see the companies listed on the Australian Securities Exchange.)
- Use a ruler to help you read accurately across the columns.
- + in front of a 'Move' number means that the value of a share rose against the previous day's closing value.
- – indicates that the share value fell against the previous day's closing value.
- Online links allow people to find recent and past financial information about any listed company, using tables and interactive charts.

Step 4: Analysing the data

- Examine the size of changes in data for a share from one period to another.
- Look for trends in the movement of shares in general or of particular shares.
- Compare shares to see how well or poorly one has performed against others.
- Use graphs and online interactive data to further analyse and compare data.

Step 5: Making predictions

- Consider whether a trend will continue, change pace or change direction.
- Apply your knowledge of current economic events to judge their likely effects on particular shares.

6.6.3 Let me do it

Developing my skills in reading a sharemarket chart

Indexes, such as the Banks index, enable comparison between the financial indicators for similar companies (in this case, banks). Go to the **Financials** weblink in the Resources tab to view another sharemarket chart. You will see that this chart has a different layout from the chart in the above interactivity. The order of columns and some column headings have changed. Note that market cap is an abbreviation of *market capitalisation*. It refers to the value (capitalisation) the market puts on a company (obtained by multiplying the number of shares by the price per share).

Use the **Financials** weblink in the Resources tab to answer the following questions.

1. Which bank's share recorded the highest price when last traded that day? (Use the code.)
2. How does this bank's share price compare with its highest price within the last year?
3. Which bank had the highest market capitalisation value for the day?
4. Which company recorded the greatest range between highest and lowest sales price for its shares over the last year?
5. How many of the codes do you recognise? Click on the codes of five of the banks and follow the links to find their full names.
6. Explain why a 'Move' figure of zero does not mean that the price of the share did not change during the day.
7. Compare the number of rises and falls and identify whether, overall, bank shares rose or fell on the day.
8. Select three bank shares that appear worth investing in. Justify your selection.
9. Explain why figures for one day are not necessarily a good basis on which to buy or sell shares.
10. Using the code for one of the banks whose shares you would consider buying, download or copy a graph showing its share price movements over a longer period, and explain how this might affect your initial decision.

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Explore more with these weblinks: ASX listed companies, Financials

6.7 Review

6.7.1 Summary

Making financial decisions has both risks and rewards. The risks involved in managing your money and making investments can be minimised by smart and sensible decision making. You need to be aware of the different options available to you in both types of financial institution and financial product. Investments such as property, term deposits, shares and managed funds are all options to increase your return and offer different rewards and risks. Insurance, savings and superannuation are important ways to plan for your future and achieve your financial goals.

- There are many types of financial institution in Australia including banks, credit unions and building societies.
- There are different types of investment you can make to increase your money, but all have different levels of risk.
- It is important to be aware and cautious of financial risks such as scams and identity theft.
- Debt can be good or bad debt, but always needs to be managed wisely.
- Insurance, savings and superannuation all help you protect yourself from financial risk and plan for the future.

6.7.2 Your turn

Lucky you! You have just inherited $10 000 from an aunt living overseas that you did not even know existed. The lawyer contacting you tells your family that the aunt left no other beneficiaries. He directs you to a news article reporting her passing.

One week after finding out about your aunt, you receive a letter from the lawyer's firm in the mail. It tells you that the inheritance will be difficult to access because of government regulations. All you need to do is to provide your personal details, including credit card information, and a small amount of money to release the inheritance.

1. List some of the options available to you for investing the money you have inherited.
2. What financial risks are associated with these options?
3. Explain the action that should be taken with the inheritance letter.
4. Use the **SCAM watch** weblink in the Resources tab to find out what you should do in response to the news of your inheritance. Write down some of the tips for protecting yourself.

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Explore more with this weblink: SCAM watch

TOPIC 7
Innovation and competition in the marketplace

7.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

7.1.1 The relationship between competition and innovation

It's a competitive world out there. Every business must find strategies that will enable it to survive. A business competes with other businesses to sell products in a market. If a business cannot sell its product to customers, it will not last for very long. There are more than two million businesses actively trading in Australia right now, with an estimated 2400 opening each week. Some will fail and some will flourish. A business is more likely to continue if it can achieve a **competitive advantage**. This occurs when it can produce and sell goods or services better than its competitors, possibly through lower costs or by differentiating the product from those of competitors. Creating a competitive advantage means that a business can meet the changing demands of the market and improve its profit margin.

FIGURE 1 Businesses need to find a competitive advantage in order to survive.

Businesses must embrace innovation if they wish to achieve a competitive advantage. At a basic level, innovation refers to businesses coming up with new ways of doing things. When businesses come up with new ideas, processes or products, they give themselves an edge over their competitors. The next subtopic will examine the concept of innovation and look at some different ways that businesses can be innovative.

Starter questions

1. Think of an industry (such as retail, banking or computing) and list five businesses that compete in that industry.
2. Explain what is meant by the term 'competitive advantage.'
3. Why is competitive advantage important to a business?
4. How can a business create or develop a competitive advantage?
5. Outline the link between competition and innovation.

INQUIRY SEQUENCE

7.1 Overview 144
7.2 Innovation 145
7.3 Emerging techniques 148
7.4 Pursuing competitive advantage 153
7.5 Strategies to create competitive advantage 156
7.6 Corporate social responsibility and competitive advantage 162
7.7 **SkillBuilder:** Analysing a business case study 166
7.8 **Review** 168

7.2 Innovation

7.2.1 Defining innovation

Innovation can mean many things to different people but essentially it is about coming up with new and improved ways of doing things. This can include many things such as: developing ideas for a new good or service (invention), improving an existing good or service, and changing the way that a good or service is produced or delivered. As Australian businesses are increasingly forced to compete on a global scale, they rely on innovation to help them establish an advantage over competitors.

FIGURE 1 Innovation involves many skills and processes.

7.2.2 Types of innovation

There are many different types of innovation, however, two of the most common types are **product innovation** and **process innovation**:

- *Product innovation* occurs when a new product is created or an existing product

is improved. This may mean modifying the features of a product or changing the features altogether. Product innovation results in the final product or service being changed in some way. For example, each time that Apple releases a new iPhone, they change some of the phone's features.

- *Process innovation* occurs when changes and improvements are made to the production process of a product or service. The final product may not necessarily change but the way it is produced does change. Process innovation is usually aimed at improving efficiency; that is, producing the same product or service with fewer resources. An example of process innovation is the use of robotics in the manufacturing process of a car. While the final product is the same, innovation has occurred in the production process.

7.2.3 How can a business foster innovation?

The Department of Industry, Innovation and Science (DIIS) is a department within the Australian Government. The DIIS has created an online hub to provide businesses with practical advice on how they can foster innovation within their organisation. It encourages businesses to recognise that innovation is the key to establishing a competitive advantage. While all business are different, the online hub identifies six key steps towards business innovation. They are outlined in figure 2.

FIGURE 2 The six key steps towards business innovation

1. Conduct an analysis of the trends in the market environment, your customers' wants and needs and your competitors.
2. Consult with customers and employees for ideas on improving processes, products and services, both internally and external.
3. Seek advice. Use available resources such as business advisers, grants and assistance to drive innovation in your business. This may include seeking intellectual property (IP) protection to commercialise your ideas.
4. Be open to new ideas and adaptive to change.
5. Develop a strategic, responsive plan, which promotes innovation as a key business process across the entire business.
6. Train and empower your employees to think innovatively from the top down.

7.2.4 Examples of innovations in business

Process innovation

Example 1 — Bertalli's Alpine Breads

Bertalli's Alpine Breads Benalla bakery recently completed a $450 000 expansion of its production line, with a $75 000 grant from the Victorian government's regional growth fund. Bertalli's Alpine Breads supplies specialty breads to Coles, Woolworths and independent stores in Victoria. An innovative new packaging machine, which replaced the traditional bread-loaf packaging with sealed clear packaging, extends the shelf life of the business's bread by up to 10 days. This means the business can now potentially supply a range of interstate markets including supermarkets, retail health food businesses and specialty food outlets.

Example 2 — Snap Laundromat

Snap Laundromat in Brisbane has introduced an innovative new technology to its washing machines and dryers that enables customers to pay for and operate the laundry services with their smart phones. The founder of Snap Laundromat, Ian McFarlane, created a small network controller about the size of a cake of soap to go inside each machine.

FIGURE 3 Use of technology applications can make the customer experience simpler, quicker and more worthwhile.

The customer can either swipe a QR code on the machine or visit a website to create an account. Once the account has a balance, they can select a dryer or washing machine of their choice. Mr McFarlane said that customers, particularly young people and travellers, have been very quick to take up the new technology. He has started a new business, Eziwash, to make the controllers available to other laundromats. The use of this technology application means that customers can quickly and easily pay for their laundry service, particularly if they do not have cash, and could encourage more people to use the laundromat. Eventually the technology will have the ability to download customer data and to reward customers for their loyalty.

Product innovation

Example 1 — McDonald's 'Create Your Taste'

McDonald's is one of the world's most recognisable brands. Its products and business model have existed for many decades with very little modification. In light of increased competition, growing demand for customised products and greater health awareness of consumers, McDonald's has engaged in product innovation. In recent years, the business has developed its 'Create Your Taste' menu that now exists in a number of Australian stores.

This innovation to McDonald's product range allows consumers to design their own burger, either in-store or online. Furthermore, the interactive machines in selected stores are an innovation on the traditional fast food business model. This innovation is an attempt by McDonald's to differentiate itself from other businesses in the fast food industry and establish a competitive advantage.

FIGURE 4 McDonald's has engaged in product innovation with its 'Create Your Taste' menu.

7.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. Define *innovation*.
2. Identify two examples of innovation in business.
3. Distinguish between product innovation and process innovation.

Explain

4. Explain how innovation can help a business achieve a competitive advantage.
5. Explain how a business can foster innovation.

Think

6. Other than product and process innovation, how else might a business engage in innovation?

Research

7. Undertake research to identify a business that has engaged in either product innovation or process innovation. Use your research to answer the following questions:
   (a) Identify the business
   (b) Outline the nature of the business's innovation
   (c) Classify the innovation as either product or process innovation
   (d) Explain how this innovation has helped the business establish a competitive advantage

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Watch this eLesson: Robotics in an automobile factory (eles-2609)

Explore more with these weblinks: Research and innovation, Alpine Breads, Snap Laundromat, Create Your Taste

7.3 Emerging techniques

7.3.1 Harnessing new ideas and techniques

The world is constantly changing. To keep pace with changing market conditions, businesses need to remain competitive by using emerging techniques — the latest ideas or new processes. Currently, this includes social media, blended marketing, open innovation and digital technologies.

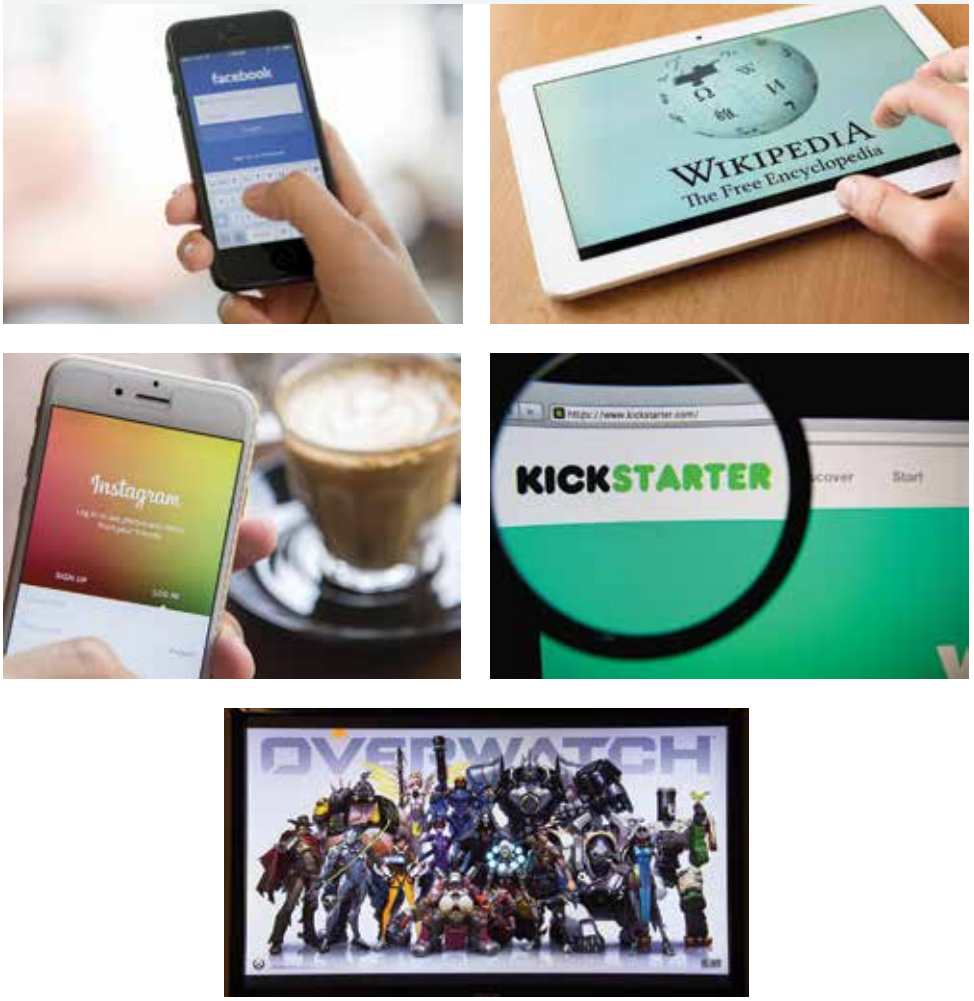
7.3.2 Social media

The range of **social media** that individuals and businesses can access is both diverse and constantly changing. Social media includes social networks, blogs and microblogs, collaborative projects, content communities, virtual game-worlds and social worlds, social bookmarking and crowdsourcing.

Social media offers businesses a relatively inexpensive means to interact with customers and form stronger relationships with them. A business joining a social network can achieve a competitive advantage because it is able to communicate with customers directly and respond to their needs accordingly. This can develop customer loyalty. Social media also allows businesses to provide information about their products to customers and prospective customers that can be accessed by them at any time. By deciding who they will follow on social media, businesses can refine their target group and focus on communicating with a specific audience.

However, using social media can cause a business to lose control over what customers write or say about its product. Individuals using social media are free to discuss, review and criticise a product or a business. Various legal problems can arise from the use of social media such as false and misleading claims, copyright issues and privacy concerns. Nonetheless, customers today expect that businesses will have a social media presence. If a business does not meet this expectation, then customers may find an alternative outlet and the business will miss out on the chance to connect with them directly.

Examples of social media



7.3.3 Blended marketing

Blended marketing is a mix of internet (online) **marketing** and traditional (offline) marketing methods to create a more wide-ranging and comprehensive marketing strategy. Successful businesses integrate the two methods to gain a competitive advantage. Because so many people spend substantial amounts of time online, it is vital that a business has an online presence. This can be done through online advertising, or by connecting or engaging with existing or potential customers through social media. Traditional marketing is still important because it allows a business to reach people who are not online and also appeals to a broad range of senses.

FIGURE 1 ANZ, which uses blended marketing, launched a new online media publication called *Blue Notes* that focuses on financial services news and trends for customers.

CASE STUDY

Birdsnest blends marketing strategies

When Jane Cay purchased a retail business in the regional New South Wales town of Cooma in 2004, she had no inkling of how large the store was going to grow. The business employed five staff and, after Ms Cay decided to focus on women's fashion and rename the business, it grew steadily over the following two years. Faced with the opportunity to open another store, Ms Cay opted for taking Birdsnest online and a website was launched in 2008. Since then, the business has grown to making approximately $20 million in revenue annually and employing more than 100 people. The online business provides customers with the opportunity to shop by colour, by occasion or by body shape. Birdsnest now sells to customers throughout Australia and the world.

Birdsnest has recently established a presence on social media and can be found on Facebook, Twitter, Pinterest, Instagram and Google+. The business also has its own blog. A full-time staff member is employed to manage Birdsnest's social media presence. More than 100 000 people visit its Facebook page. The page is updated daily with postings for outfits of the day and regular promotions. Ms Cay says, 'Our Facebook page is at the forefront of what we do.'

Birdsnest also uses traditional marketing methods as part of a blended marketing strategy. When a customer buys something online, the website will suggest accessories that complement the outfit. This is a form of suggestive selling, which has been around for a long time, just executed differently. The business has also used more conventional print advertisements. Mini-magazines advertising Birdsnest's fashions were recently included in *Australian Women's Weekly*, *InStyle* and *Country Style*.

FIGURE 2 Social media blended with traditional marketing techniques allows a retail business to reach and connect with more customers.

7.3.4 Open innovation

Open innovation is based on the notion that no business is capable or big enough to effectively innovate on its own. Open innovation can create opportunities for a business and make them more competitive because it can reduce costs, accelerate the time it takes to get a product to market, increase the differentiation of products in the market, and create new ways for a business to earn revenue.

A business might take advantage of open innovation by bringing suitable external ideas and technologies into its own innovation process. These ideas may come from universities, other businesses or individuals. A business may also realise that some of its own ideas and technologies are not suitable for its own purposes and could be better utilised by another business.

CASE STUDY

Open innovation at Samsung

Samsung has introduced open innovation as an initiative to identify and grow future technologies and infrastructure. Samsung Group is a South Korean multinational company that includes several subsidiaries. The company produces goods and services in many industries, including electronics, heavy industry, construction, defence, insurance, advertising and entertainment. Samsung Electronics is the most recognised of its subsidiaries, known for producing mobile phones, tablet computers, televisions, cameras and other home appliances.

To put open innovation into operation, Samsung has adopted a number of approaches. The company actively participates in global consortiums (associations of two or more individuals, businesses or organisations) that perform research and development. Samsung builds links between its industry and top universities. The company encourages independent research, and sponsors the training of students and employees in universities around the world. By cooperating with suppliers of equipment and materials to influence their manufacturing and quality processes, Samsung ensures that its own products are competitive. Several research facilities have been set up in a number of countries.

Samsung recently launched the Open Innovation Center in Silicon Valley, California. The complex includes an accelerator division that will support small businesses in getting their products off the ground while they gain access to Samsung's people, products and plans. A venture capital arm will allow Samsung to invest in new businesses that are trying to create new technologies. A mergers and acquisitions team will acquire companies that could assist Samsung, and a partnerships team will allow Samsung to find ways to work with all the other businesses that wish to partner with it.

7.3.5 Digital technologies

The rapid expansion of digital technologies has allowed businesses and consumers to interact in different ways than ever before. These technologies allow for large amounts of information to be stored and transferred on tiny devices such as mobile phones. Many businesses have used digital technologies to try to differentiate themselves from competitors and gain an advantage. Businesses that do not engage with digital technologies run the risk of falling behind their competitors and losing some of their market share. Tesco, a British grocery retailer is one such business that has successfully used digital technologies.

CASE STUDY

Tesco's virtual supermarkets

In response to falling domestic sales, British supermarket giant Tesco turned to the growing Asian market to reverse their fortunes. The business realised that their traditional model of bricks-and-mortar supermarkets was just not meeting the needs of many of their busy customers, especially in South Korea. Tesco's own research revealed that employees in South Korea worked some of the longest hours in the world and this greatly restricted the time they had available to buy their groceries. Combined with this, a significant proportion of the South Korean workforce are young professionals who are very tech-savvy.

In 2011, Tesco combined with digital technology company Samsung to launch a 'virtual supermarket' in Seoul, South Korea. The virtual store consists of a series of posters designed to look like supermarket shelves (see figure at right) that were placed on walls in public places such as subways and train stations. Customers download an app onto their phone and scan the QR code of the products they wish to buy. Once customers have scanned all the products they want to buy, they pay for groceries online and decide on a delivery time. The groceries are usually delivered on the same day that they are purchased. Tesco successfully used digital technology to gain an advantage over its competitors.

FIGURE 3 Tesco developed the virtual supermarket in South Korea in response to the busy lifestyle of many of their customers.

The pricing of digital products has been a controversial topic, with many critics claiming prices are too high, as no physical goods need to be created. However, defenders claim that as much time and effort needs to be put into producing digital products as physical goods, and that reducing prices would create inferior products, as shortcuts would need to be taken to cover costs. Do you think the current pricing models are fair? [Critical and Creative Thinking]

7.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. List five examples of social media.
2. What is the difference between blended marketing and marketing?
3. Briefly outline what open innovation is about.

Explain

4. Describe *how* the following emerging techniques can support a business in gaining a competitive advantage:
   (a) social media
   (b) blended marketing
   (c) open innovation.
5. In what ways can social media damage a business's competitive advantage? Suggest some ways that a business might deal with these problems.
6. Read the case study 'Birdsnest blends marketing strategies' in this section and answer the following questions:
   (a) Outline the types of online marketing techniques that Birdsnest uses.
   (b) What traditional marketing technique is Birdsnest beginning to utilise?
7. Read the case study 'Open innovation at Samsung' in this section and answer the following questions:
   (a) How has Samsung put open innovation into action?
   (b) What has Samsung recently introduced to support open innovation?
   (c) Briefly Outline how the new complex will support the use of open innovation at Samsung.

Discover

8. Use the **Birdsnest** weblink in the Resources tab to identify the variety of social media that ituses. Find its blog and make a list of some of the items you can read about there.
9. Visit the websites of at least two different retail stores and compare the types of social media theyuse.

Predict

10. List the consequences of a business utilising emerging techniques.

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Explore more with this weblink: Birdsnest

7.4 Pursuing competitive advantage

7.4.1 Surviving and thriving

A business will generally seek a competitive advantage to ensure that it performs as well if not better than its competitors, so that the business survives. That is, the business seeks to make enough profit to be able to continue into the future. Businesses also seek to build or create a competitive advantage to meet the changing demands of a competitive global market.

7.4.2 Meeting the changing demands of a competitive global market

Businesses expect that they will operate in a **competitive market**. This is a market where a large number of businesses compete with each other to satisfy the demands of a large number of customers. In a competitive market no single buyer or seller has the power to exert control over the market or prices. Today, markets can be global. This means that goods and services are exchanged between businesses and customers across the world.

Demand is constantly changing in the global market. The demands of customers in any market can change due to:

- Changing incomes — either increasing (so customers are likely to demand more products, particularly luxury items) or diminishing (so it is likely that customers will demand fewer products).
- Changing tastes and fashions — which can increase or reduce the demand for certain products.
- Changing prices of complementary and substitute goods and services — some products are complementary (they go together like cars and petrol, or pens and paper); others are substitutes (they can replace each other like margarine and butter, or tea and coffee). This means, for example, that if the price of petrol increases then demand for petrol will fall, which can cause demand for cars to fall because cars and petrol are complementary. This may lead to the demand for cars switching from large to small cars that consume less petrol, because large cars and small cars are substitutes.
- Changing population — changes in age and gender distribution will impact on demand; for example, an ageing population is likely to demand products related to the health and retirement industries.
- Changing expectations about the market, including future prices and incomes — which means that customers will act in a certain way if they expect that something is going to happen.
- Changes in the number of potential customers — an increasing number of customers often generates greater demand for products, whereas a decline in the number of potential customers is likely to reduce demand.

If any of these factors change, then the demand from customers for a business's products will change — by increasing or decreasing. A business that operates in a competitive market will need to build or create a competitive advantage to meet these changing demands before competitors do.

FIGURE 1 Nike has created a competitive advantage by focusing on social media, including its own social network (Nike+), and introducing Nike concept stores.

7.4.3 Improving the profit margin

Profit is the financial reward that a business aims to achieve in return for taking the risk of producing a good or service and attempting to sell it to customers in a market. A business will normally have an owner (or owners) who have invested in the business and are relying on the business to make a profit so that they can earn a return. For this reason, profit is a good measurement of the success of a business. A business with a competitive advantage is more likely to make a profit.

Profit margin is more than just the difference between the money that has been collected from selling the completed product (sales revenue) and all the business expenses. Profit margin is an indicator of the financial health of a business. More specifically, it measures the amount of profit that a business earns from the sales of its product. Profit margin is expressed as a percentage and is calculated using the following formula:

$$\text{profit margin} = \frac{\text{profit}}{\text{sales}} \times \frac{100}{1}$$

FIGURE 2 Aldi's competitive advantage is its low-cost strategy which it uses to offer customers value for money and improve its profit margin.

Most businesses aim for a high profit margin. A business with a low profit margin would need to examine expenses to see whether reductions could be made. It follows then that a business with a competitive advantage, such as a low-cost manufacturer, should be able to improve its profit margin.

7.4.4 Achieving efficiencies and lower costs

As mentioned in the previous section, businesses seek to create a competitive advantage so that they can make a sufficient and sustainable profit in the long term. To do this, they must develop strategies to reduce their costs.

Many types of costs are incurred by a business, including:

- wages and other employee-related costs
- rent or mortgage repayments
- financial costs (such as interest on a loan)
- insurance
- cost of materials from suppliers
- advertising and other marketing costs.

While all businesses incur costs as part of their operations, it is important that a business look to achieve efficiencies in order to

FIGURE 3 Businesses aim to cut expenses (costs) in order to achieve their ultimate goal of sustainable profit maximisation.

keep these costs to a minimum. By manufacturing products at a low cost, a business can generate more profit from each sale.

Consider the formula for net profit:

$$\text{net profit} = \text{total revenue} - \text{total expenses (costs)}$$

This formula clearly identifies two components of net profit: revenue and expenses (costs). Businesses are constantly seeking to establish a competitive advantage to improve their revenue and reduce their costs. That way, they are able to achieve their ultimate goal of sustainable profit maximisation.

7.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What is a competitive marker?
2. List the factors that can cause the demands of customers in a market to change.
3. Define the term 'profit margin'.

Explain

4. Construct a diagram showing how the changing demands of a market can impact on a business.
5. Explain why a business would seek to build or create a competitive advantage.
6. Outline how a profit margin is calculated and what it reflects.

Predict

7. What might happen to a business if it did not attempt to build or create a competitive advantage when facing changing demands in a market?

Think

8. Consider each of the following cases and suggest how:
   (a) an increase in people's income would affect the demand for jewellery
   (b) an increase in the number of people concerned about the environment would affect demand for plastic bags
   (c) a surge in the price of petrol would affect demand for large cars
   (d) a fall in the price of butter would affect the demand for margarine
   (e) an increase in the average age of the population would affect the demand for health services
   (f) a decrease in the number of people who think that the economy will perform well in the next year will affect the demand for electrical products
   (g) an increase in the number of customers willing to purchase products will affect the demand for fruit and vegetables.
9. For each of your answers to question 8:
   (a) suggest if there is an opportunity for a business to develop a competitive advantage, and if so, briefly explain how this could be achieved
   (b) suggest if there is an urgent need for a business to develop a competitive advantage, and if so, briefly explain how this could be achieved.
10. Charlie owns and operates a teddy bear factory. Last year, he earned $250 000 in sales revenue with expense of $190 000.
    (a) Calculate whether or not Charlie has made a profit.
    (b) Calculate the profit margin for Charlie's business.
    (c) Comment on how successful Charlie's business has been in generating profit.
    (d) How successful has the successful been in generating profit if the industry standard is a profit margin of 20 per cent?
    (e) Advise Charlie on how he could improve his business's profit margin,

7.5 Strategies to create competitive advantage

7.5.1 A range of strategies

Businesses use a variety of strategies to create competitive advantage. These include offering a lower cost product, achieving improved productivity, differentiation (including improving quality and speed of delivery), implementing efficient internal operations strategies, and research and development.

7.5.2 Reducing the cost of a product

The price of a product can be lowered in two ways. First, the business can simply reduce the price. This will create a competitive advantage if the price is lower than the price offered by competitors and if customers choose the lower priced product. However, it will have the effect of reducing the potential profit that the business can earn.

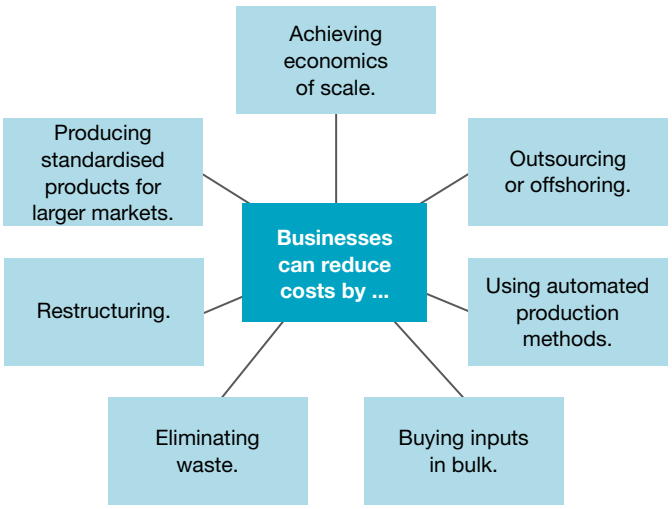
A second method is to reduce costs. If production costs are lowered, the business can reduce the price while maintaining a healthy profit margin. As illustrates, there are several ways that a business can reduce costs. In 2014, Optus engaged in **outsourcing** and **offshoring** more than 70 jobs from its customer division in an effort to drive down costs through an ongoing **restructure**. This meant that jobs were sent overseas (offshoring) or sent to another business (outsourcing). By reducing staff expenses or by cutting staff numbers, businesses can reduce costs. Restructuring (reorganising the way the business is structured) is another way that businesses reduce staff and therefore cut costs. Coles is another business that engaged in restructuring in 2014. As a result, more than 400 jobs were lost at its store support centre in Melbourne.

A business can attempt to reduce costs by increasing the production capacity of its facilities. This is often referred to as achieving economies of scale, which means that the business will produce more units of a good or a service on a larger scale while reducing the per unit cost. Caltex Australia has expanded and upgraded facilities in

FIGURE 1 Driverless trucks can help decrease costs and improve productivity.

FIGURE 2 Optus has lowered costs by offshoring and outsourcing jobs as part of a restructure.

How business can reduce costs



Western Australia, Brisbane and Melbourne to keep up with the demand for its products from customers. For many businesses, reducing costs is a matter of working more efficiently (working smarter) by finding new and improved ways to manufacture goods or provide services.

7.5.3 Achieving improved productivity

One of the main objectives of a business is to improve the efficiency of its operations and **productivity**. Productivity measures the amount of **output** compared to the amount of **input** that goes into production. By improving productivity, businesses can be more competitive as they produce products at lower costs than competitors. Productivity can be improved by reducing the number of inputs required to obtain the same level of output or an increased output. Alternatively, productivity can be improved if inputs remain the same but output increases, thereby obtaining more from the inputs.

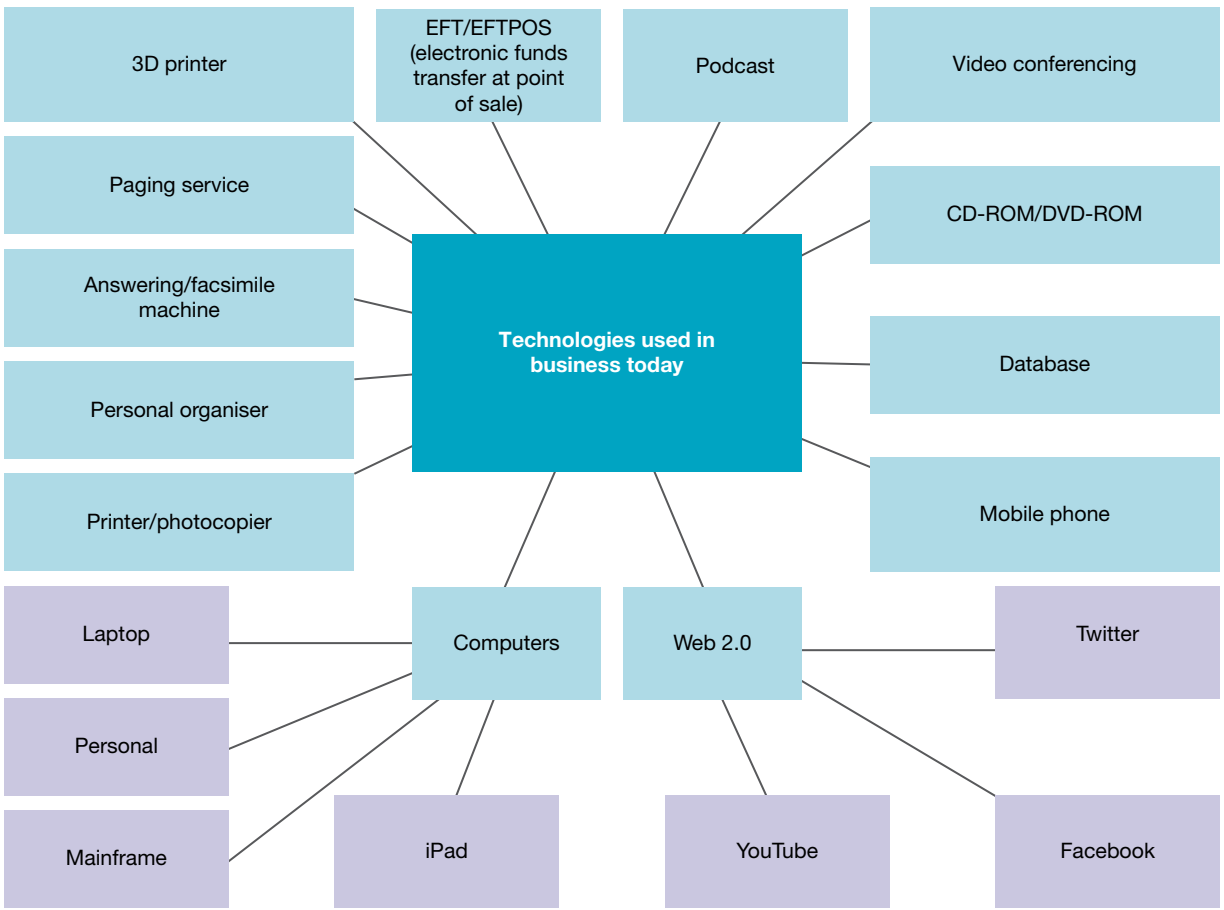
There are many strategies that businesses can use to improve productivity. Some of these strategies include:

- capital investment
- investing in technology applications
- materials management.

Capital investment

Capital investment involves putting financial resources into physical resources such as machinery, equipment and facilities. These investments are essential for a business to be able to provide goods and services to customers. Investing in **capital** can improve productivity. For example, building a modern assembly line

FIGURE 3 Technologies used by businesses today



in a factory will reduce costs and the use of labour while producing more products, which increases the productivity of the business's capital. An investment in capital also increases the productivity of labour and other resources employed by a business.

Investing in technology applications

Investment in **technology** is another way businesses can improve productivity. Regardless of whether they are manufacturing a good or producing a service, businesses can use technology to speed up or shorten processes and maximise the use of resources. Using technology means production can take place using less labour or fewer materials. Technology also enables businesses to drive **innovation**. New technology can support a business in designing or developing new products or processes. It can also be used to actually produce new or improved products or as part of a new innovative process.

Materials management

Materials management is concerned with managing the way materials are received and stored, and making sure they are available to the operations process when required. Many businesses have large quantities of materials on hand to complete production. This is called stock or **inventory**. Businesses hold large inventories to make sure they do not run out of materials. However, this can become a huge cost for a business because the stock has to be stored. Stock that takes up storage space for a long time can also result in the business missing opportunities to invest money in other places. In addition, materials can become unusable after a certain period of time. It is very important to manage materials effectively so that costs can be kept down.

Some businesses use an inventory system called **just-in-time** (JIT). This system ensures that the correct materials arrive just as they are needed for production, which can reduce storage costs and reduce the risk of waste occurring in storage, thereby improving the business's productivity.

CASE STUDY

Just-in-time (JIT) real estate

REA Group is a global online real-estate advertising company based in Melbourne that owns and operates property-advertising sites in Australia, including www.realestate.com.au. The business has applied the just-in-time system to software development. Decisions are made based on having access to the right information at the right time. This supports its efforts to be focused on customers and their rapidly changing needs. The business avoids carrying out excessive planning or documentation because this is considered to be a waste. In this way, innovation and creativity are encouraged.

FIGURE 4 REA Group uses the just-in-time system to access the right information about customer needs at the right time.

7.5.4 Differentiation

A business can create a competitive advantage through **differentiation**. This refers to a business's efforts to make a product stand out by providing unique or superior value to customers in comparison with the products of its competitors. Unique or superior value can be offered through adding features, packaging, marketing, creating a flexible product, and speed of delivery or quality. Let us look at two of these factors: quality and speed of delivery.

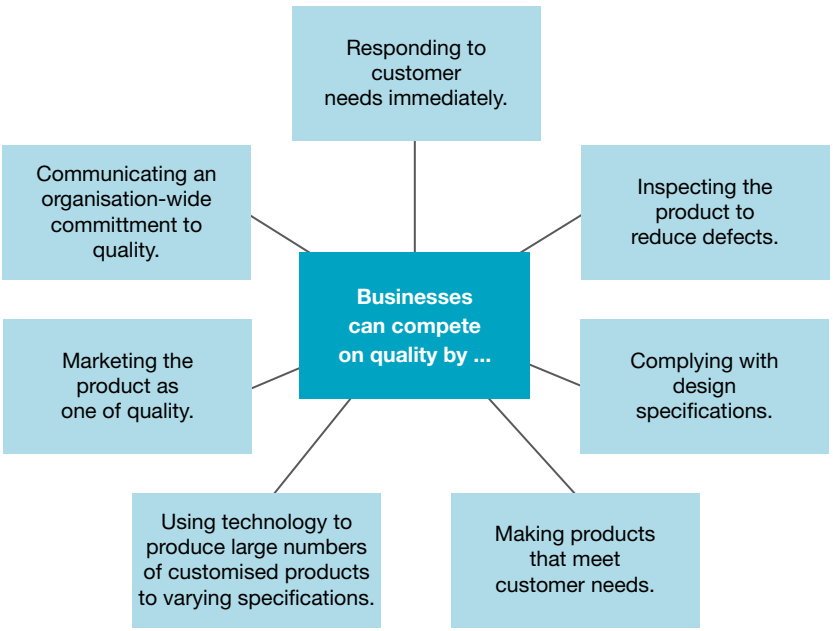
FIGURE 5 Businesses have differentiated bottled water through marketing techniques. By packaging it differently and creating an image, one water bottle is different from the next.

Quality

Many businesses compete on **quality**. Quality essentially means that the customers get what they want. A quality product has a high degree of excellence and achieves the purpose for which it was designed. A quality product should be reliable, easy to use, durable, well designed and delivered on time. It should include after-sales service and have an agreeable appearance. A business that competes on quality will produce the best good or service available in the market. Quality is important to National Australia Bank (NAB). The bank says: 'Each of our brands is uniquely positioned, but built on a common commitment to provide our customers with quality products and services, fair fees and charges, and relationships built on the principles of help, guidance and advice.' This means that NAB listens to the needs of customers and addresses issues of concern. As illustrates, there are several ways that businesses can compete on quality.

FIGURE 6 National Australia Bank emphasises quality products and customer service to create competitive advantage.

How businesses can complete on quality



Speed of delivery

Many businesses create a competitive advantage by improving their speed of delivery. There are several ways that businesses can compete on speed of delivery, including being prepared to change and act on new trends quickly. These

methods can be used to differentiate the business's product from those of competitors. Amazon, the world's largest internet company, has worked hard to improve its speed of delivery. To reduce delivery times it has added new fulfilment centres (warehousing facilities that receive, process and fill incoming orders), and is beginning to deliver orders directly to customers rather than using external package carriers. Increasingly high levels of automation are being developed to improve the speed of filling orders. The retail giant has also announced plans to use drones to improve the speed of package delivery.

FIGURE 7 Amazon creates a competitive advantage by ensuring that the products it sells are delivered quickly.

7.5.5 Implementing efficient internal operations strategies

Businesses can make use of **operations** strategies to reduce costs and differentiate a product. Operations strategies are used to manage the production of the business's product, whether it is a manufactured good or the provision of a service. Operations are responsible for the transformation of inputs, including materials, equipment and labour used in the process of production, into output — the finished product.

Operations strategies for lowering costs include:

- ensuring that there are stable production processes with limited interruptions
- ensuring that all resources are put to their best possible use
- constantly looking for opportunities to streamline production processes
- updating facilities and equipment with new, more efficient technology.

Operations strategies for improving quality and speed of delivery include:

- evaluating processes to ensure that there are minimal defects
- relying on extensive use of integrated technology and computerisation to minimise defects and to develop strong links with the customer
- establishing efficient relationships between suppliers and the business to ensure that quality materials are delivered on time and in the right quantity
- adapting the process used to transform inputs into output to respond to the need for constant improvement.

FIGURE 8 Operations strategies are used to manage the production of the business's goods and services.

7.5.6 Research and development

Businesses undertake **research and development (R&D)** in order to expand their knowledge of products and processes. **Invention** (developing something new) and innovation (improving something that already exists) are vital for providing a business with a competitive advantage. Researchers and scientists undertake R&D in a business to produce new products, improve existing products or develop new processes (find new ways to do things).

R&D can make a business more competitive. For example, it can develop new products in response to those of competitors, or improve existing products to make them superior to those of competitors. R&D can also lead to technological developments, such as robotics and information technology, that improve the way the product is produced or the way it is delivered to customers and thereby improve business competitiveness.

FIGURE 9 Businesses invest millions of dollars in research and development to gain a competitive advantage.

7.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. List the ways that businesses can lower costs.
2. What is meant by the word 'restructure'?
3. Define differentiation.
4. Briefly outline the features that form a quality product.
5. List line ways that businesses can compete on quality.
6. What is meant by the word 'operations'?
7. Define research and development

Explain

8. Outline the difference between outsourcing and offshoring.
9. Explain how Amazon has improved its speed of delivery.
10. Draw a concept map that outlines how a business can implement efficient internal operations strategies to create a competitive advantage.
11. Outline the difference between invention and innovation.

Think

12. Explain how the following strategies will create a competitive advantage for a business:
    (a) offering a lower cost product
    (b) improving the speed of delivery
    (c) improving the quality of the product
    (d) implementing efficient internal operations strategies
    (e) undertaking research and development.

Discover

13. Visit your local supermarket or convenience store and choose three different brands or bottled water. (If you can, take a photograph of your three bottles.) Describe the ways that each business has made its product appear to be different from the other water bottles.

7.6 Corporate social responsibility and competitive advantage

7.6.1 Benefits of corporate social responsibility

Society today expects businesses to act in a socially responsible manner. Those that adopt strategies based around **corporate social responsibility** should improve their competitive advantage by bolstering their business reputation. Customers who believe that a business has a reputation for being socially responsible are more likely to continue to deal with that business. They are also likely to refer the business to other customers. Employees will want to work for the business, reducing the costs of replacing staff and increasing productivity. While it can be expensive and time consuming to introduce socially responsible strategies, doing so should increase sales and profits. Conversely, a lack of social responsibility can damage a business's reputation and reduce its competitive advantage.

FIGURE 1 Many palm oil producers are trying to demonstrate corporate social responsibility by sourcing their palm fruit from sustainable plantations that do not destroy the habitat of endangered species such as orangutans.

7.6.2 Corporate social responsibility strategies

Corporate social responsibility requires business managers or owners to take steps to ensure that the broader social welfare of the community — including employees, customers and suppliers, and the natural environment — is taken into consideration when conducting business dealings. A socially responsible business attempts to achieve two goals simultaneously: expanding the business and providing for the greater good of society. An important premise of social responsibility is to act in a way that is 'above and beyond' making a profit and obeying the law. Strategies based on corporate social responsibility include managing staff appropriately, sourcing raw materials from sustainable sources, managing customer relationships appropriately and conducting a social report.

Managing staff appropriately

A business that is socially responsible treats and pays its employees fairly, and maintains a safe working environment. We tend to take these responsibilities for granted in Australia, but they are often not legally required or enforced in developing countries. Irregular or incomplete maintenance of production facilities can result in injuries or even fatalities. Toxic production processes can threaten the health of employees, as has been the case with asbestos mining and manufacturing. Some businesses have been condemned for

employing workers in sweat shops or using child labour. Others have been criticised for using suppliers that engage in these practices. Customers can react and stop purchasing a business's products if they learn that the business is exploiting employees or failing to meet their health and safety needs.

Many stores sell clothes that are made in sweatshops. On the other hand, ensuring that all products are produced in ethical conditions will significantly raise the prices of these goods.

Sourcing raw materials from sustainable sources

Many businesses work with their suppliers to ensure that the suppliers follow guidelines on socially responsible behaviour. Customers will reward businesses that source raw materials in a way that does not pollute the environment, threaten endangered species, waste natural resources or contribute to global warming.

Managing customer relationships appropriately

A business needs to make sure that the goods and services it produces are of the required quality — that they are safe and reliable. Dangerously defective or harmful products can result in the injury or even death of consumers. The delivery of a product can raise issues around the socially responsible behaviour of managers, such as fair and equitable treatment of customers regardless of whether they come from wealthier or poorer regions. A business that develops a reputation for not caring about its customers is likely to find that they no longer purchase its products.

FIGURE 2 Most businesses are serious about providing safe and reliable products.

Conducting a social report

Today, many businesses assess their progress towards fulfilling their corporate social responsibilities by conducting a **social report**. A social report may also be referred to as a corporate social responsibility report, a values report, a social audit or a sustainability report. The report details what a business has done, and continues to do, to address the social and environmental issues that are relevant to the business. The report also assesses how the business's practices and operations affect society.

CASE STUDY

The Body Shop

Dame Anita Roddick founded The Body Shop in 1976 and since then it has grown to become a worldwide business. It has a range comprising 1200 products, including soaps, shampoos, moisturisers, cosmetics and make-up. There are over 2500 shops in more than 60 countries, with over 90 stores throughout Australia.

Anita Roddick's original vision was to build a socially responsible business that supports the community. She developed five values:

1. activate self-esteem
2. oppose animal testing
3. support community fair trade
4. defend human rights
5. protect the planet.

These values guided The Body Shop's employees and the business decisions they make for three decades.

Although Anita Roddick died in 2007 and the company now operates as an independent subsidiary partly owned by Natura, The Body Shop has maintained a reputation for acting ethically and gained a competitive advantage by advocating for social and environmental causes.

The Body Shop pioneered the use of social audits and continues to produce a values report. It is renowned for its global campaign to raise self-esteem in women and rally against the beauty industry's stereotyping of women. More recently, the company has conducted a campaign to stop sex trafficking.

The Body Shop has a history of campaigning against animal testing. Its website explains, 'We believe that testing cosmetics on animals is unethical, unnecessary and should be banned. We do not test our cosmetic products or ingredients on animals, nor do we commission others to do so.' It is also among the few companies who comply with the requirements of the internationally recognised Humane Cosmetics Standard.

Community Fair Trade was a program launched by The Body Shop with the aim of supporting direct trade with marginalised communities around the world. The Body Shop Foundation was established in 1990 to fund human rights and environmental protection groups. In 1998, The Body Shop organised a worldwide campaign with Amnesty International to raise awareness of the plight of human rights defenders throughout the world. More recently, The Body Shop has developed an ethical trade strategy with five steps for improving the working conditions of its staff and suppliers.

The Body Shop promotes environmental sustainability through such means as working with Greenpeace and funding energy efficiency projects in the developing world. The company has launched sustainable stores (called Pulse stores), attempted to reduce its carbon footprint by tracking the transportation of its products, reduced water consumption and energy use, and invested in renewable energy supplies. Waste has been cut, post-consumer recyclate (materials that have been recycled) has been incorporated into its packaging, and sustainable materials are used in its products.

FIGURE 3 Social responsibility increases The Body Shop's competitive advantage by setting it apart from other businesses selling body care products and cosmetics.

FIGURE 4 Anita Roddick called on the Cosmetic, Toiletry and Perfumery Association in 1996 to back a European Union (EU) ban on cosmetics testing on animals.

7.6 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What is corporate social responsibility?
2. Make a list of strategies based around corporate social responsibility.
3. What is the purpose of a social report?

Explain

4. Copy and complete the following table to identify the advantages and disadvantages of adopting socially responsible strategies.

Advantages	Disadvantages
Customers are more likely to want to deal with a socially responsible business.	Socially responsible strategies can be expensive TO introduce and implement.

5. Read the case study 'The Body Shop' in this section and answer the following questions:
   (a) In not more man 60 words, identify and explain the chief reasons for The Body Shop's success.
   (b) Outline the socially responsible strategies that The Body Shop has introduced.

Discover

6. The Body Shop aims to reduce me impact on the environment and empower local communities to share knowledge and trade equally. Use the internet to search for **The Body Shop – Community Trade** and complete the following table:

Product	Community producer
All-in-One BB cream	The Eudafano women's Cooporative in northern Namibia
Cocoa butter hand and body lotion	
Shea lip butter	
White musk libertine eau de partum	
Honeymania lip balm	
Wild argan oil bubbling bath	

7. Visit The Body Shop in your area. Collect evidence of the values that the business holds by examining products, checking ingredients and packaging, observing evidence of environmental concerns, and reading any information that challenges traditional views, Present your findings to the class by way of a talk, a computer application or a poster.
8. Visit your local shopping centre to observe business practices that promote recycling and protection of the environment. Record any examples of socially responsible strategies being practiced. Identity a business you believe is not environmentally aware and write a letter explaining why adopting strategies based around corporate social responsibility can increase the competitive advantage of their business. Suggest some ways that the business can promote recycling or other environmentally sound practices.

Predict

9. What do you think might happen to the competitive advantage of a business that does not adopt socially responsible strategies?

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Explore more with this weblink: Corporate social responsibility

7.7 SkillBuilder: Analysing a business case study

7.7.1 Tell me

A business case study helps you understand business concepts. It is a real-life example that shows how businesses work and how business concepts apply to individual situations.

Business people use case studies to understand the strategies that other businesses have introduced and to identify which ones have succeeded or failed. When you have identified the elements of a case study, you will be able to better understand business concepts.

CASE STUDY

Using innovation to create a long-term competitive advantage

BlueScope is a manufacturer of steel and supplier of steel products to global building and construction markets. It operates in Australia, New Zealand, Asia and North America. BlueScope has used open innovation and research and development to create a competitive advantage.

Working with several universities and industry partners, including BlueScope, the Australian Research Council (ARC) recently launched a steel research hub located at the University of Wollongong. The new facility brings scientists and researchers together from various steel manufacturers and research institutions to develop new technologies for the Australian market. A key focus of the steel research will be energy and sustainability, as well as more efficient building construction and solutions for harsh environments.

BlueScope has modified its products and changed the ways it interacts with customers, suppliers and competitors so that it is not just competing on price. The company strongly believes that by using innovation to create a competitive advantage, it will develop products that will allow it to keep manufacturing in Australia.

One of BlueScope's innovative new products is called Next Generation Zincalume. By combining magnesium with an aluminium, zinc and silicon coating, a unique protective barrier has been formed which makes steel more resistant to corrosion. Zincalume steel also has a smaller impact on the environment through a reduced use of zinc and aluminium.

Furthermore, BlueScope plans to transform its popular Colorbond product. A photovoltaic laminate will be added, resulting in a roof panel that can produce solar power. Panels will also transfer thermal energy in and out of buildings as required.

FIGURE 1 BlueScope's managing director and CEO, Paul O'Malley. In the 2014 financial year, BlueScope achieved an EBIT (earnings before interest and tax) of almost $250 million, a significant increase of 237 per cent on the previous year.

7.7.2 Show me

How to analyse a business case study

Procedure:

Step 1

Read the case study twice: once to get the general idea of the content and the second time to identify the key issues. As you read through the second time, use a highlighter, arrows and sticky notes to identify the key issues. To do this, double click on the text you have chosen, and choose the 'Highlight' option. You could choose a different colour of highlighting for each key issue. You may also choose to make notes, using the 'Add note' function.

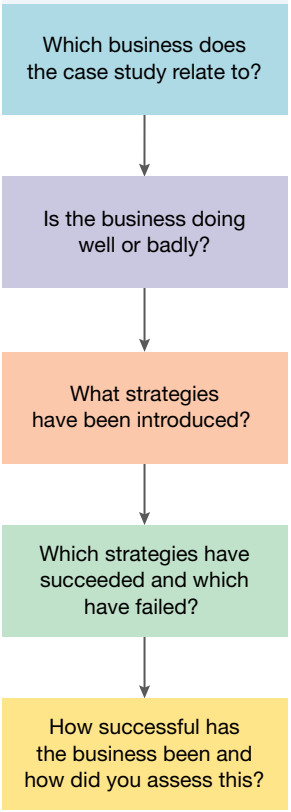
Step 2

Identify and define important terms. Use a dictionary or the internet to find out what they mean.

Step 3

Write your answers in dot points using the heading shown in the diagram in figure 2.

FIGURE 2 How to analyse a business case study.



7.7.3 Let me do it

Developing my skills

Read the case study 'BHP Billiton plans to lower costs and lift production of iron ore' below. Use the steps on the diagram shown in figure 2 to analyse the case study.

CASE STUDY

BHP Billiton plans to lower costs and lift production of iron ore

BHP Billiton, the world's largest mining company, unveiled plans in 2014 to reduce costs and lift production at its Western Australian iron ore mines. It said that this would make it the world's lowest-cost supplier to China.

The company announced that it would cut costs at Western Australia Iron Ore (WAIO) by at least 25 per cent and that it should be able to boost capacity by 65 million tonnes per year. BHP Billiton's iron ore president Jimmy Wilson, said, 'We have already significantly cut the cost of production at WAIO and plan to go further.'

BHP Billiton has cut approximately 1000 jobs over the past two years during a major cost cutting drive in its iron ore division. It is likely that there will be many more job losses as a consequence of this announcement. Improving the efficiency of the performance of its existing equipment and infrastructure will also help to reduce costs. BHP Billiton will undoubtedly make better use of its mining equipment and increase the use of autonomous (driverless) drills and trucks.

The price of iron ore has fallen by 40 per cent in recent years and there is currently an oversupply of the product China's production of steel, which makes use of iron ore, is expected to increase. However, by reducing its own costs while increasing production, BHP Billiton puts pressure on prices and creates difficulties for smaller competitors such as Atlas Iron and BC Iron, which have high production costs. They find it difficult to continue to make a profit in these conditions. This is what gives BHP Billiton its competitive advantage. BHP Billiton can cope with an overabundance or oversupply of iron ore because it can reduce its costs.

Mr Wilson said, 'We believe we have some sustainable advantages and our aspiration is to be down the bottom end of that cost curve.'

FIGURE 3 BHP Billiton's Mount Newman iron ore mine in Western Australia.

7.8 Review

7.8.1 Summary

Businesses seek to build or create a competitive advantage, often through innovation, to meet the changing demands of a competitive global market and improve their profit margins.

- Businesses use strategies such as offering a lower cost product or a differentiated product to create a competitive advantage. Implementing efficient internal operations strategies or investing in research and development can support the business in introducing these strategies.
- Business strategies based around corporate social responsibility can also increase competitive advantage by improving reputation.
- Businesses can use emerging techniques — such as social media, blended marketing, and open innovation — to gain an advantage over competitors.
- Reducing the price of the product or reducing costs (by restructuring, increasing production capacity or working more efficiently) can achieve a lower cost product.
- Differentiation can be achieved by offering a product that stands out as being unique or offering superior value through such means as packaging, marketing, quality or speed of delivery.
- Socially responsible strategies include managing staff appropriately, sourcing raw materials from sustainable sources, managing the customer relationship appropriately and conducting a social report.
- Using social media to interact with customers directly and promote products, and making use of online and offline marketing techniques (blended marketing), can improve the competiveness of the business.
- Open innovation involves the use of internal and external ideas to support the business in improving its processes or products.

7.8.2 Your turn

Read the following case study and then answer the questions:

> Zack has started a new small business called Superior Garden Roses and comes to you for advice. He has been growing roses in a nursery in his backyard and has built up a significant amount of stock. Most of his sales so far have been from word of mouth — his friends and family have bought roses and then recommended the business to other customers. Zack is aware that there are many competitors selling roses but he is determined to grow his business. He would very much like to build or create a competitive advantage.

1. Explain to Zack why businesses seek to build or create a competitive advantage.
2. Outline the different strategies that Zack's business could use to create a competitive advantage.
3. What are the advantages and disadvantages of adopting strategies based on corporate social responsibility?
4. Explain to Zack if, in your opinion, corporate social responsibility strategies would increase his business's competitive advantage.
5. Describe some emerging techniques that Zack's business could use too gain an advantage.

TOPIC 8 Australia's changing work environment

8.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

8.1.1 How have workplaces changed?

In order to appreciate the changes in Australia's contemporary work environment, it is useful to investigate the workplaces of the past. One hundred years ago, Australian workplaces looked dramatically different to the way they do now. In 1914, the Australian economy largely relied on the agricultural and manufacturing sectors. Although many women actively participated in the workforce, these industries mainly employed men. All this changed in April 1914 when Australia joined World War I. With thousands of men leaving to fight for their country, Australian women were charged with the responsibility of driving the economy. Women found themselves in unfamiliar jobs and unfamiliar industries. This rapid change in the Australian workforce paved the way for women's rights in Australia and laid the foundations for future development.

FIGURE 1 Australian women making bricks during World War I

Fast-forward 50 years and Australian workplaces had undergone significant change. In 1964, Australia's reliance on the agricultural industry had lessened thanks to a post–World War II focus on manufacturing and trade. The production of motor vehicles, metals and textiles increased significantly during this period. The focus of Australia's trade partners also shifted during this era. Australia's growing relationship with the United States of America had begun to overshadow our traditional ties with Great Britain. Workplaces at this time were typically small and family run, although some larger companies had begun to develop their influence.

In 2016, we again find dramatic changes in the Australian workplace. Although the agricultural industry remains strong, the Australian manufacturing industry has found itself unable to compete with cheaper overseas competitors. The powerful mining industry has risen to take the place of this once-important source of employment. Technological developments have also made modern workplaces more dynamic and flexible. As Australia's place in the global economy continues to develop, there is no doubt that our workplaces will change to follow suit.

Starter questions

1 How does the workplace of 1914 compare with that of today?
2 How has the focus of the Australian economy changed over the last 100 years?
3 Who are the main participants in Australian workplaces?
4 What impact did World War I have on the Australian workforce?
5 What impact did the post–World War II period have on the Australian economy?

INQUIRY SEQUENCE

8.1 Overview 169
8.2 Participants in the Australian workplace 170
8.3 Changing roles of employees 174
8.4 Employer responsibilities in the workplace 177
8.5 Government responsibilities in the workplace 180
8.6 **SkillBuilder:** Preparing a résumé 181
8.7 **Review** 184

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Watch this eLesson: The changing work environment (eles-2388)

8.2 Participants in the Australian workplace

8.2.1 Who is in the workplace?

You could be forgiven for assuming that the Australian workplace involves only two groups of people — employers and employees. Our nation's work environments are much more complex than this simple relationship. Trade unions and governments have a significant impact on the nature of Australian workplaces. The ways in which these groups function and interact with each other form the basis of Australian work environments and, on larger scale, our country's economy. In this topic, we identify and examine the participants in the Australian workplace.

FIGURE 1 The major participants in the Australian workplace

FIGURE 2 Employees, employers, trade unions and governments are all participants in the modern Australian workplace.

8.2.2 Employees

In the coming months, many of you will enter the Australian workforce for the first time. Some of you probably already have. Whether you flip burgers at the local fast-food shop, stack shelves at the supermarket or deliver medicines for the chemist, you are part of the Australian workforce. An employee is someone who works for another person or entity in return for financial compensation. This work may vary in a number of ways including the nature of the work completed, the level of responsibility and the time spent completing the work. Whether you work as a server at the drive-thru at McDonald's or as the company's **chief executive officer (CEO)**, you are still an employee of McDonald's. Although their roles and responsibilities vary, both the server and the CEO undertake specific jobs and are paid for their time and effort.

FIGURE 3 A McDonald's server and the company's CEO, Don Thompson. Their jobs are very different but both are employees of the same company.

As at March 2016, more than 11.9 million Australians were classified as employees. This figure equates to just under half (49 per cent) of Australia's total population. Casual, seasonal, part-time and full-time employment are all included in this calculation. An increasing number of employees are looking for more flexible working conditions. It is estimated that nearly 35 per cent of Australia's workforce is employed on

a casual or contract basis. Although this kind of work provides employees with increased flexibility, casual work does not come with the same rights and benefits as part-time or full-time employment.

8.2.3 Employers

A diverse range of employers exists within Australia. As at June 2015, there were more than 800 000 employing businesses in Australia. The majority of these were small businesses with only one to four employees. The full breakdown of employing businesses in Australia is shown in table 1.

TABLE 1 Number of businesses (by size) in Australia as at June 2015

Number of employees	Number of businesses in Australia
1–19	781861
20–199	50991
200+	3522
Total	863374

Source: Data derived from ABS 8165.0 — *Counts of Australian businesses, including entries and exits* (June 2013 to Jun 2015).

From the smallest self-run business to the largest **multinational company**, all employers in Australia are subject to the same responsibilities and requirements. As we investigate later in this topic, employers are legally and ethically required to provide safe and fair working conditions for their employees. These responsibilities include the provision of:

- a safe workplace
- adequate financial compensation for work completed
- necessary and relevant education and training
- contributions to superannuation
- essential rights to employees (such as adequate breaks and supervision).

A number of government organisations hold employers to these responsibilities. The most influential of these is the Fair Work Commission (FWC). There have been several versions of the FWC including Fair Work Australia and the Australian Industrial Relations Commission. The Fair Work Commission ensures that employees' rights are protected and that employers comply with Australian employment law. It also acts as a tribunal for employees who feel their employers have failed in the discharge of their responsibilities.

8.2.4 Trade unions

The history of trade unions can be traced back to the merchants guilds of the Renaissance period. In those organisations, workers who held the same job banded together to organise their industry, set prices, agree upon standard practices and protect the rights of their members. Australian trade unions play a similar role. They are organisations of workers who actively seek better pay, safer working conditions and increased job security. It is not compulsory for workers in a particular industry to join a union, although it is strongly encouraged by union members.

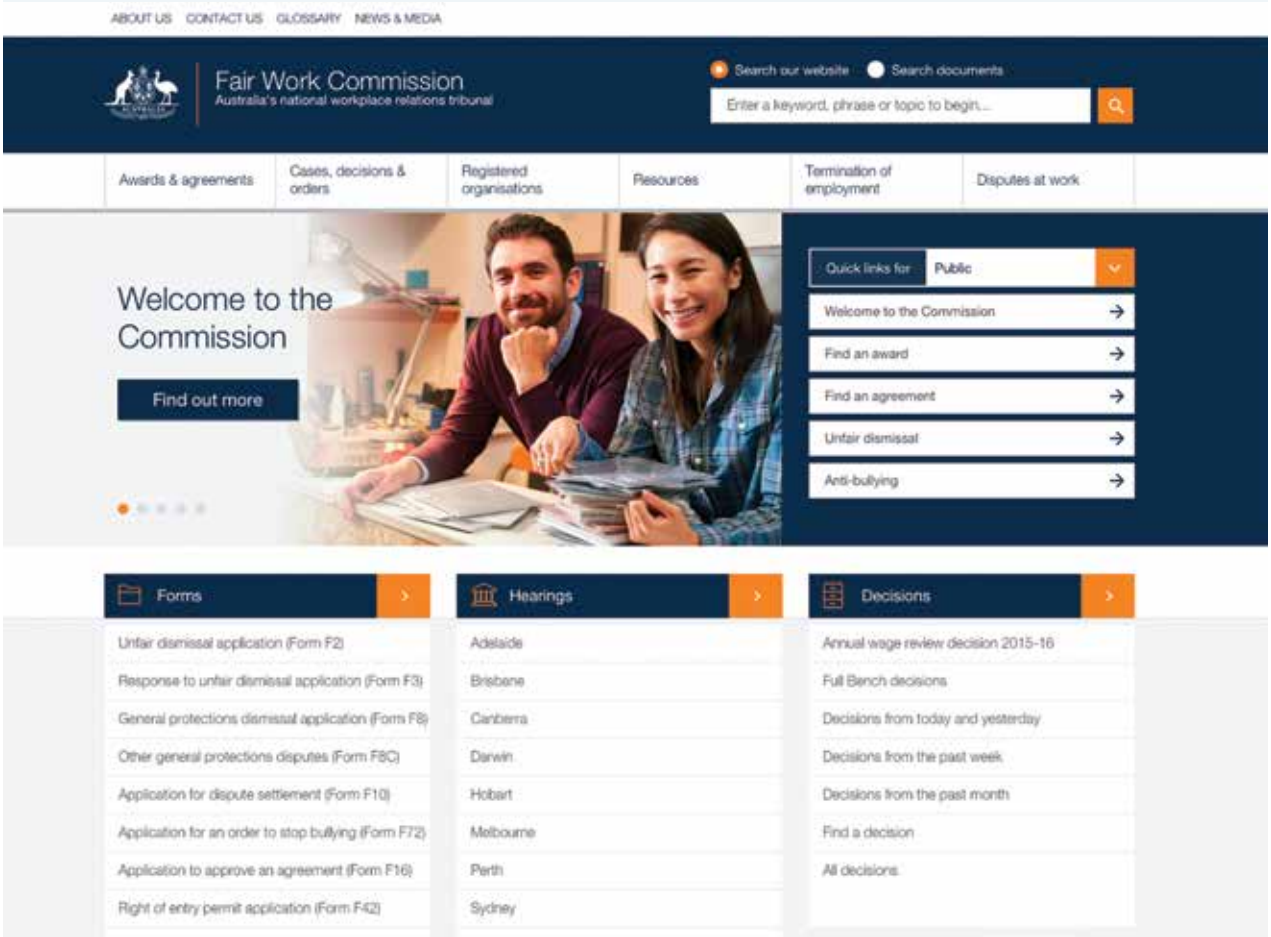
FIGURE 4 Teachers protesting for higher wages and better conditions at the Rod Laver Arena in Melbourne

A union with large numbers of active members can place more pressure on governments and employers than a smaller union. This pressure usually takes the form of **industrial action**, which can include strikes and work bans. Industrial action can be brief and isolated, or it can continue for days or weeks — even years in extreme cases. The longest industrial action in Australia occurred in 1946 and lasted for three years! It started when Aboriginal workers in Western Australia's Pilbara region refused to work until they were properly paid and provided with safe working conditions. Participating in industrial action is one way in which trade unions can affect the Australian workplace. Through this mechanism, they can be a crucial part of the Australian working environment.

8.2.5 Governments

Federal, state and local governments also play a crucial role in the Australian workplace. By setting and enforcing employment standards, our governments are one of the most important components of the Australian working environment. The regulation of minimum wages, leave and superannuation entitlements are just some examples of these standards. Government projects both create and sustain employment in Australian states and territories. All three levels of government are involved in the planning and implementation of new projects. Regardless of whether these projects involve the construction of new infrastructure or the creation of new training programs, they will generate jobs. Although private enterprise also generates jobs and helps set standards in certain industries, governments often have greater power and influence over job markets.

FIGURE 5 The Fair Work Commission is Australia's national workplace relations tribunal.



8.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What proportion of Australia's population is currently employed in casual, part-time or full-time work?
2. When did the first trade unions begin and what was their purpose?
3. What is the main role of governments in the Australian workplace?

Explain

4. Suggest reasons why someone would choose:
   (a) casual work over part-time/full-time work
   (b) part-time/full-time work over casual work.
5. Explain the role of the Fair Work Commission.

Think

6. Copy table 1 from this section and add a column titled 'Percentage of all Australian businesses'. For this new column, you will need to take each category of business and calculate the percentage of Australian businesses that fall into that category. For example, what percentage of Australian businesses have 1–4 employees? Complete this calculation for each category in the table.

Explore

7. Research an industrial action in Australian history. Write a summary of the dispute which answers these questions:
   (a) What was the dispute about?
   (b) Who was involved in the dispute?
   (c) What kind of industrial action was taken?
   (d) How was the dispute resolved?

8.3 Changing roles of employees

8.3.1 The impact of competition and technology

As dynamic and ever-changing environments, modern workplaces look dramatically different from those of the past. Ask your grandparents about the jobs they used to have. Many will tell you that they worked for only one or two companies during their entire careers. This is extremely unusual in modern Australian workplaces. By the time you retire, you are likely to have worked for more than 20 employers!

FIGURE 1 As employers respond to increased competition, they demand more of their employees.

With increased competition for business and jobs, a lot is expected of employees in the Australian economy. Technological developments facilitate and encourage the fluidity of modern workplaces. Through the use of internet and smartphone technology, for example, employers may expect their staff to regularly check emails and respond to customers at all times of the day. This same technology allows employees to work from multiple locations and have more flexible working conditions. In this section, we investigate how the Australian work environment continues to change and the impact such change is having on employees and their families.

8.3.2 Traditional employee roles

An employee's primary objective is to help their employer's business succeed. The specific role of an employee will depend on the nature of the business and the position they hold. The duties of an employee are usually detailed in a **position description** or outlined in their employment contract. Minimum targets or objectives may also be listed by employers in a contract. Once an employee signs a contract, they are legally bound to meet any targets and fulfil their obligations to the employer.

Employees are also required to follow company values and adhere to company policies. These policies often include ethical and behavioural guidelines as well as more straightforward requirements such as the wearing of a uniform. In addition to these legal obligations, employees are expected to demonstrate positive workplace qualities. These include displaying effective teamwork, acting responsibly and showing initiative.

FIGURE 2 An employee's primary objective is to help their employer's business succeed

8.3.3 Increased competition

The global economy is an uncertain place for many businesses. While some companies have remained successful in these tough economic conditions, many more have been forced to scale back their operations and **retrench** staff. Toyota, Ford, Telstra and Qantas have all sacked staff in recent times in order to remain financially viable in the face of increased competition. Even the Australian Bureau of Statistics (which provides the majority of statistics for this topic) recently announced it would be cutting 100 jobs. Refer to table 1 to see the number of retrenchments by industry in 2013.

TABLE 1 Retrenchments by industry (2013)

Industry	Number of persons retrenched ('000)
Agriculture, forestry and fishing	5.4
Mining	15.4
Manufacturing	39.9
Electricity, gas, water and waste services	8.7
Construction	64.7
Wholesale trade	14.7
Retail trade	40.4
Accommodation and food services	29.2
Transport, postal and warehousing	23.1
Information media and telecommunications	6.7
Financial and insurance services	12.2
Rental, hiring and real estate services	7.5
Professional, scientific and technical services	33.5
Administrative and support services	15.4
Public administration and safety	18.1
Education and training	12.3
Health care and social assistance	20.1
Arts and recreation services	3.4
Other services	10.4
Total	381.4[a]

[a] Difference due to rounding errors.

Source: ABS 6105.0 — *Australian labour market statistics* (July 2014).

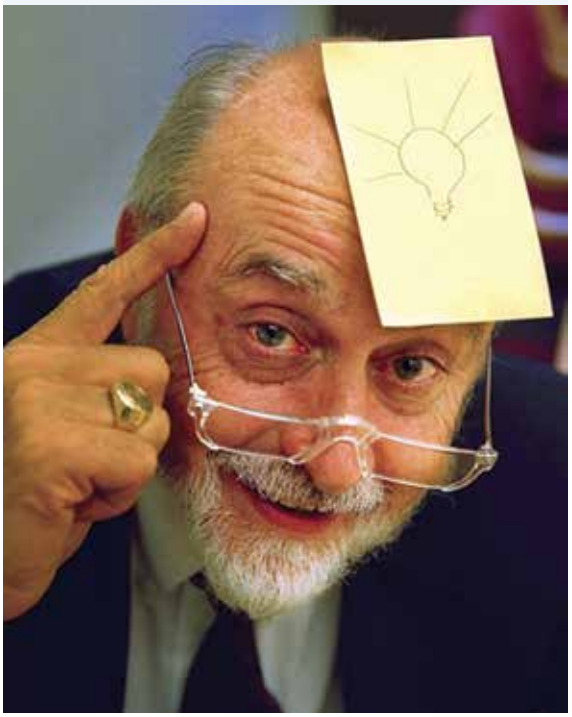
With job insecurity rising and the threat of retrenchment ever present, employees find themselves under increased pressure to perform in their positions. Many feel compelled to work longer hours and push themselves harder in order to prove their worth to their employers. This may create stressful and unsustainable workplaces, and have an adverse impact on employees' personal lives.

The rising rate of retrenchment in Australia has also increased competition for job vacancies. There is always only a finite number of job vacancies in the economy. As at May 2014, this number was 146 100. A higher number of retrenchments results in a higher number of people applying for these vacant positions. Such increased competition has both positive and negative consequences. Employers often see this competition in a positive light — it can result in a higher quality of applicant and more dedicated employees. Employees are more likely to see this competition in a negative light — it can increase workplace stress and also result in longer periods of unemployment if they lose their jobs. In this way, competition for employment can dramatically influence an employee in the workplace.

8.3.4 The rise of the intrapreneur

Employers constantly seek a **competitive advantage** in their industries. As a result, it is now expected that employees will actively seek ways to improve not only their own roles, but also the general functioning of the entire business. An employee who develops their own ideas for the financial benefit of their employer is known as an intrapreneur. (An entrepreneur, in contrast, is self-employed and develops ideas for the benefit of their own business.)

FIGURE 3 Sticky note inventor, Arthur Fry



The word was first used in the 1970s, and today there are many famous examples of intrapreneurship. The indispensable sticky note was invented in 1968 by an employee of stationery giant 3M. The 3M scientist invented a reusable adhesive that led to the creation of the sticky note. The Sony PlayStation and the Java programming language also resulted from employees demonstrating initiative in the workplace.

There are often financial incentives and rewards for employees who demonstrate intrapreneurship. Employees also receive non-financial rewards, such as the opportunity to use a broader set of skills and show creativity in the workplace. The benefits of these last two points should not be underestimated. 3M values intrapreneurship so much that employees are allowed to spend 15 per cent of their time working on their own projects.

8.3.5 A global workplace

Imagine you're happily working at your desk in the near future when your boss calls you into her office and says, 'How would you like to work in our New York office for six months?' The emergence of a truly global economy means that opportunities like this occur every day. If you are lucky enough to work for a multinational company, it is likely that you will be asked to visit or work in a number of locations around the world. In 2013 alone, over $1 trillion was spent by individuals and companies on business trips. This remarkable figure reflects the changing nature of modern working environments. Employees are frequently presented with incredible opportunities which further their careers at the same time as exposing them to new places and cultures.

8.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What kind of document describes the specific duties and responsibilities of an employee?
2. What are the positive impacts of a global economy on employees?

Explain

3. How has increased competition for jobs affected the Australian workplace?
4. What is an intrapreneur? Provide an example in your answer.

Think

5. Table 1 shows the number of retrenchments by industry in 2013. Use the data in the table to answer the following questions:
   (a) Which three industries shed the most number of jobs in 2012?
   (b) Provide a likely explanation for the downturn in each of these industries.

Predict

6. In question 5, you used the data in table 1 to rank the three worst performing industries. Now use the same data to predict which other industries are showing negative signs. Once you have identified these struggling industries (choose at least three), suggest what governments could do to rectify these patterns.

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Explore more with these weblinks: Car manufacturing, World air traffic

8.4 Employer responsibilities in the workplace

8.4.1 The best places to work

Each year the business magazine *Business Review Weekly* (BRW) publishes its list of companies with the best work environments in Australia. The 2014 top ten consists mainly of companies that are not well known to the general public. You have probably never heard of most of them. What these companies have in common is that they take their responsibilities to their employees very seriously. These employers view employee satisfaction as crucial to the success of the company itself. From free personal training and education programs to generous salaries, smart employers will provide the best possible work environments for their employees.

FIGURE 1 Google offices like this one in Tel Aviv (Israel) are known for their quirky design.

There are also official workplace responsibilities designed and enforced by government, and every employer in Australia must abide by them. We identify and discuss these responsibilities in this section.

8.4.2 Workplace health and safety

Whether employees spend their day working at a computer or harnessed to a tree, employers are obliged to provide safe working conditions. They have a **duty of care** to provide proper training programs, equipment and facilities for their employees. The nature of this support, known as workplace health and safety (WHS), is determined by the duties undertaken by the employee. For an office worker, this may require the provision of an ergonomic work station and regular breaks. For a tree lopper, this could necessitate more complex training programs and proper safety equipment.

FIGURE 2 WorkSafe officials conduct spot checks to ensure that employers are providing safe working environments

WHS law is described in the *Work Health and Safety Act 2011*. This Commonwealth legislation has corresponding state government Acts, with each state responsible for running its own WorkCover/WorkSafe authority. These government organisations hold employers to their WHS responsibilities. They conduct random spot checks on employers, imposing fines and other penalties should any breaches be found. WorkCover also serves to protect employees who suffer injuries resulting from an employer's negligent behaviour. If any such injuries occur, it is also the employer's responsibility to provide suitable alternative work for the injured worker. Mental health issues as well as workplace harassment and bullying are also covered by the federal Act.

8.4.3 National Employment Standards (NES)

All Australian employers must abide by the ten national employment standards (NES). Developed under the *Fair Work Act 2009*, these standards were established to protect the fundamental rights of Australian workers. It is therefore the responsibility of all Australian employers to follow the NES. Failure to comply with the standards can result in fines for individuals or companies. The details of the NES are listed in figure 3.

FIGURE 3 Entitlements under the ten national employment standards

The ten NES entitlements

- **Maximum weekly hours of work** — 38 hours per week, plus reasonable additional hours.
- **Requests for flexible working arrangements** — an entitlement allowing employees in certain circumstances as set out in the *Fair Work Act 2009* to request a change in their working arrangements because of those circumstances.
- **Parental leave and related entitlements** — up to 12 months' unpaid leave per employee, plus a right to request an additional 12 months' unpaid leave, plus other forms of maternity, paternity and adoption related leave.
- **Annual leave** — four weeks' paid leave per year, plus an additional week for certain shift workers.
- **Personal/carer's leave and compassionate leave** — 10 days' paid personal/carer's leave, two days' unpaid carer's leave as required, and two days' compassionate leave (unpaid for casuals) as required.
- **Community service leave** — unpaid leave for voluntary emergency activities and leave for jury service, with an entitlement to be paid for up to ten days for jury service.
- **Long service leave** — after working at an organisation for an extended period of time, employees qualified for a prolonged period of paid leave.
- **Public holidays** — a paid day off on a public holiday, except where reasonably requested to work.
- **Notice of termination and redundancy pay** — up to five weeks' notice of termination and up to 16 weeks' severance pay on redundancy, both based on length of service.
- **Provision of a Fair Work Information Statement** — must be provided by employers to all new employees, and contains information about the NES.

Source: Adapted from Fair Work Ombudsman factsheet, *Introduction to the national employment standards.*

The maximum weekly hours of work in Australia are set at 38, plus reasonable additional hours. However, many workers find themselves under pressure to consistently work longer hours.

8.4.4 Taxation and superannuation

From small family businesses to large corporations, all Australian employers have taxation and **superannuation** obligations. Employers must provide staff with necessary taxation documentation and ensure they are taxed at the correct amount. Adequate records of tax withheld must be kept and passed on to employees at the end of each financial year. Employers are also required to lodge the company's own taxation documents.

FIGURE 4 Superannuation is intended to provide a 'nest egg' that grows over a person's working life and accumulates enough money for them to live on when they retire.

Australian employers must also make regular contributions to their employees' superannuation accounts. Each pay period, a small proportion of money is diverted into a retirement fund mandated by the federal government. (The minimum amount from July 2014 was 9.5 per cent of each employee's income.) This fund is known as superannuation and is paid to all employees over 18 years of age. While employees are allowed to make additional payments to their own superannuation accounts, it is an employer's responsibility to make at least a minimum payment for each employee. Many superannuation funds invest this money for the employees. In this way, an employee's superannuation fund can grow significantly over time.

8.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What duty of care do employers have towards their employees?
2. What are the national employment standards (NES)?

Explain

3. What is superannuation and why is it important for an employee?
4. Explain how WorkCover/WorkSafe can help injured workers.

Think

5. Consider your own part-time job (or that of a friend if you do not have one yourself). What occupational dangers and risks are there at your workplace? What training and instruction have you had to minimise these risks?
6. Provide one argument for and one against the idea of compulsory superannuation.
7. Are there any entitlements described under the NES which you believe are unnecessary? Justify your response.

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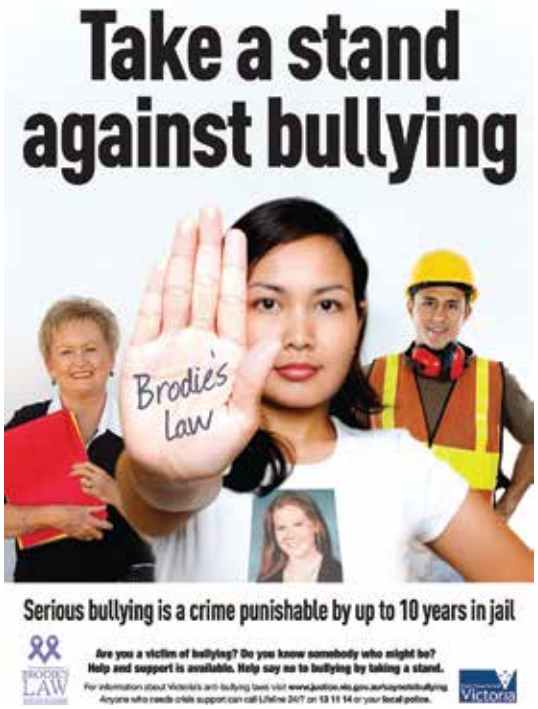
8.5 Government responsibilities in the workplace

8.5.1 Passing workplace legislation

Federal, state and (to a lesser extent) local governments are involved in developing and implementing the laws that facilitate effective workplaces. The *Fair Work Act 2009*, the *Work Health and Safety Act 2011,* as well as the various acts relating to anti-discrimination, are all examples of legislation that protects the rights and conditions of Australian workers. Discrimination on the basis of age, race, gender and sexual orientation are all subject to stringent federal and state legislation. Governments have a responsibility to make laws such as these to ensure the health and safety of employees and the productivity of the Australian economy. In this subtopic, we examine the responsibilities of government in the Australian workplace.

FIGURE 1 'Brodie's law' was established after incessant workplace bullying led teenager Brodie Panlock to suicide.



8.5.2 Generating growth

Economic growth, as measured by **gross domestic product (GDP)**, creates employment and generates income. High growth usually translates to low unemployment. By stimulating growth the government helps to keep people employed and earning incomes, and the businesses that employ them operating and making profits. You could argue that generating economic growth is one of the most important roles played by government in the workplace.

The problem in Australia as elsewhere in the developed world is the ageing of the population. According to a federal government report published in 2010 (*Australia to 2050: future challenges*):

- In 1970 there were 7.5 people of working age supporting each Australian over 65.
- In 2010 there were 5 people of working age supporting each Australian over 65.
- In 2050 it is predicted at current trends there will be only 2.7 people of working age supporting each Australian over 65.

Where will we find the people to do all the jobs that keep the nation running? Without enough people in the workforce, an economy can cease to function and an entire country can be crippled.

FIGURE 2 Governments create a system which allows for workplace agreements to be negotiated between employers and employees.

It is the responsibility of government to develop and implement policies that avert this projected decline. It must redesign the vehicle that is the Australian economy to ensure it is heading in the right direction. Possible strategies include the funding of training and education programs, as well as programs targeting skilled migrants.

8.5.3 Negotiating workplace agreements

Governments are also heavily involved in negotiating workplace agreements with various professions. Workplace agreements can take several forms. Essentially, they document the terms and conditions of employment between an employee (or group of employees) and their employer. Professionals in the public service such as teachers, nurses and paramedics regularly negotiate agreements with their state governments. It is the responsibility of these governments to work with employees and trade unions to develop fair and equitable agreements. Such negotiations are often challenging and sometimes lead to industrial action. While these actions can be disruptive, they can also be necessary for meaningful change to occur.

8.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. What is gross domestic product and how is it calculated?
2. What is a workplace agreement? Why are workplace agreements important?

Explain

3. Explain how governments can generate economic growth.

Think

4. Imagine you are a government adviser. In order to boost employment rates in Australia, which areas of the Australian economy would you prioritise? For example, would you encourage the immigration of skilled workers, or invest in education and training programs?

8.6 SkillBuilder: Preparing a résumé

8.6.1 Tell me

The first step in gaining employment is applying for a job. To do this, you will need a résumé: a short summary of your skills, experience and qualifications. (It is also known as a curriculum vitae, or CV.) A résumé is a crucial part of the job application process, and yours needs to stand out from the résumé of everyone else who has applied for the same position. With so many applicants, a poorly presented or badly written résumé may be the difference between getting the job and not even getting an interview! Employers are not concerned with fancy résumés, nor do they want to spend 20 minutes reading your entire life story. They are often put off by résumés with photographs and will not consider your application if you don't have the necessary skills. An effective (and ultimately successful) résumé will be:

- brief and succinct
- relevant to the position for which you are applying
- a strong and confident description of your skills, experience and qualifications.

FIGURE 1 Your résumé needs to stand out from the crowd to secure the interview that eventually leads to the job.

The following SkillBuilder will explain the various components of a résumé and present examples and templates on which you can model your own résumés.

Let us now examine the elements of an effective résumé.

Length

An effective résumé should be between one and two pages long. Remember that your résumé is merely a summary and an introduction to who you are as a prospective employee. If there is other important information that you wish to provide, you can do so through a cover letter or during the interview process. Do not be concerned if your résumé is only one page long. Some people are tempted to add irrelevant information simply to make a résumé longer and seem more impressive. This is a common résumé mistake and can impede your chances of getting the job.

Order

The order of your résumé is important and the information in it should flow logically. Use the following list as a guide:

- contact details
- opening statement/career overview
- key skills and personal attributes
- employment history
- education
- referees.

Contact details

Begin with your name, possibly in a slightly larger font than the rest of your résumé. You want to make a bold and positive impression from the first time an employer sees your résumé! You only need to provide your phone number and email address on a résumé. Make sure that your email address is professional and does not include any nicknames or inappropriate words and phrases. An address such as john.smith@jacarandamail.com would be more suitable than one such as smithy9999@jacarandamail.com.

Opening statement/career overview

A component usually seen in the résumés of older professionals, a brief opening statement or career overview can add a touch of maturity to your résumé. If you choose to include this component, make sure it is relevant to the position. There is no point explaining your experience and passion for babysitting if you are applying for a job as a dog washer.

Key skills and personal attributes

This section can be included as a simple bullet-point list of your relevant skills (including any technical skills) and personal attributes. You need to list the skills for which this particular employer is looking. In other words, the skills you list for one job application may differ from those you list for another, depending on the job requirements. Many applicants use the same résumé, changing only the employer name and job title (and sometimes forgetting to do even this), and then wonder why they have no success in their job hunting. Do not make this mistake.

Employment history

The convention for listing your previous jobs is to start from the most recent position and work backwards to the oldest. For each position you should provide the job title, the name of the employer and the dates (in months or years) during which you worked. You can also include a bullet-point summary of the main responsibilities of each job held.

Education

There is no need to list your entire educational history in a résumé. Instead, you need only include the highest level of education you have obtained. It is also a good idea to describe any achievements or positions of responsibility which you may have had during your time at school.

Referees

Ideally, at the end of your résumé you should include the names of two people who are willing to provide references. A reference is a written or verbal testimony about you by someone (the referee) who knows you well or for whom you have worked. One referee should be a past employer who can attest to your work ethic and professional performance. The second referee could be from a non-employer (such as your sporting coach or former teacher/principal) who can vouch for your character and personality. Make sure that you ask your referees for permission before listing them on your résumé.

8.6.2 Show me

Figure 2 contains the résumé of a Year 11 student who is applying for a casual position at a veterinary clinic. Consider how this student uses the components we have just discussed.

8.6.3 Let me do it

Using the example in figure 2 as a guide, create your own résumé. Make sure you follow the guidelines as to what to include and what to omit from your résumé. If you are happy with the final product, why not print off some copies and deliver them to businesses in your area at which you might like to work? Good luck!

FIGURE 2 Résumé of Chris Fernandez

Résumé of Chris Fernandez

Contact details

Email: chris.fernandez@jacarandamail.com
Mobile: 0400 000 000

Career overview

Current Year 11 student seeking career opportunities in veterinary sciences. Highly motivated and passionate individual with demonstrated experience working in high-pressure working environments. Dedicated to the health and wellbeing of animals and to the emotional welfare of their owners and families. Strong communication skills and the ability to learn quickly and effectively.

Key skills and personal attributes

- Customer service
- Relevant scientific background
- Caring and enthusiastic personality
- Proficiency in Microsoft Office Suite
- Verbal and written communication skills
- Occupational health and safety procedures
- Point-of-sale experience
- Proficiency in Macintosh operating environments

Employment history

McDonald's Restaurant (2013–present)

- Customer service: Provided customer service at register. Responded to all customer enquiries, providing support and guidance as required.
- Cash management: Ensured accurate management of all cash and electronic sales.
- Stock control: Conducted regular and thorough stocktake of inventory.

Achievements

- Employee of the Month, November 2013 and April 2014

Education

Heartback Secondary College
Years 7 to 11 (current)

Current subjects

Biology, Chemistry, Physics, English and Geography

Achievements

House Captain (2014); Debating Captain (2013–14); Student Environmental Group Coordinator (2012–13)

Volunteer placements

Green Valley Animal Shelter (2013 – present)

- Customer Service: Responded to incoming calls and customer inquiries . Liaison between customers and veterinary clinics.
- Practical duties: Cleaning of pens; involvement with welfare of animals.

Referees

Peter Parker
Franchise Manager
McDonald's Green Valley
Phone 01 9555 5555

April O'Neill
Manager
Green Valley Animal Shelter
Phone: 01 9555 5554

learnon RESOURCES – ONLINE ONLY

Explore more with this weblink: How to write a résumé

8.7 Review

8.7.1 Summary

The Australian workplace is a dynamic environment. It is shaped by a host of important participants including employers and their employees, governments and independent organisations such as trade unions. Each of these participants has a range of responsibilities. The fulfilment of these duties keeps the Australian economy moving in a positive direction. As our economy grows, it continues to become part of the larger global economy. This developing relationship has created new opportunities for individuals in the workforce. Employees in many industries benefit from the increased use of technology in the workplace and more flexible working hours and conditions. The global workplace is a creative workplace and one that fosters diversity and inclusion. The Australian community benefits as these positive elements of the changing Australian workplace filter through to the community level.

- Australian workplaces are ever-changing, dynamic environments.
- All participants in the Australian workplace have their own responsibilities.
- As Australia's place in the global economy grows, the roles of individuals and organisations in our workplaces will continue to develop accordingly.

8.7.2 Your turn

A cost/benefit table is a method of analysis frequently used in the business world. Table 1 is an example of a cost/benefit table applied to school attendance.

TABLE 1 Cost/benefit table for attending school

Costs	Benefits
• Waking up early	• Making lifelong friends
• Wearing a uniform	• Learning new skills and knowledge
• Too much homework	• Co-curricular opportunities
• Not enough free time	• Preparation for life after school
• Peer pressure	• Sport
• School fees and other financial costs	• The school canteen

In 2014, car manufacturer Toyota announced it would be shutting down the bulk of its Australian operations. While the company will maintain a presence in Australia, cars will no longer be produced by Australian workers. This move follows the trend set by other car companies and large-scale manufacturers. In order to understand this decision, complete a cost/benefit table for Toyota's Australian operations using the example in table 1 as a guide. Remember that the costs to Toyota of continuing to manufacture cars in Australia could be financial pressures or any other negative consequences of this activity. The benefits could be financial benefits or any secondary positive consequences.

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Try out this Interactivity: Crossword (int-5561)

UNIT 3
BIOMES AND FOOD SECURITY

9 The world of Geography 187

10 All the world is a biome 198

11 How can we feed the world? 219

12 What are the impacts of feeding our world? 250

13 Are we devouring our future? 271

14 2050 — food shortage or surplus? 290

15 Geographical inquiry: Biomes and food security 313

TOPIC 9
The world of Geography

9.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

9.1.1 Work and careers in Geography

Geographical skills will be useful for your future employment. An understanding of Geography and its application for managing sustainable futures is pivotal knowledge that will be desirable to future employers. In Geography, students are developing an understanding of the world. The skills you develop in Geography are transferrable to the workplace and can be used as a basis for evaluating strategies for the sustainable use and management of the world's resources.

Skills for work

Geography is a foundational skill for many occupations. Learning to navigate further education and training paths will help you to understand the variety of occupations that the study of Geography can lead to. The study of Geography includes important geospatial and spatial technology skills. These skills underpin the knowledge base of a range of courses and careers. Start your pathways exploration by considering who might use the key geospatial and spatial technologies.

- *Geospatial skills*: the ability to collect and collate information gathered from fieldwork and observations. Geospatial skills are used in careers such as surveying, meteorology, agricultural science and urban planning.
- *Spatial technologies*: technologies that demonstrate the connections between location, people and activities in digital formats. Jobs in the spatial industry are varied and include working in business and government. Spatial technologies apply many techniques, such as photogrammetry, remote sensing and global positioning systems (GPS). Spatial technologies manage information about the environment, transportation and other utility systems.

FIGURE 1 GIS (geographical information systems) being used to manage spaces and plan escape routes during a fire

FIGURE 2 Using GPS to survey and record road traffic movements for a local council

9.1.2 Where can Geography lead?

There is a range of careers that utilise Geography as a foundation skill. As you consider your pathway options for senior studies you may like to research some of the careers that are provided in figure 3.

FIGURE 3 Geography pathways

Meteorologist	Surveyor	Landscape architect
Meteorologists use geographical skills to forecast the weather, study the atmosphere and understand climate change.	Surveyors use geographical skills to measure, analyse and report on land-related information for planning and development.	Landscape architects use geographical skills to plan and design land areas for large-scale projects such as housing estates, schools, hospitals, parks and gardens.
Agricultural technician	**Park ranger**	**Environmental manager**
Agricultural technicians use geographical skills to support and advise farmers on aspects of agriculture such as crop yield, farming methods, production and marketing.	Park rangers use geographical skills to support and maintain ecosystems in national parks, scenic areas, historic sites, nature reserves and other recreational areas.	Environmental managers use geographical skills for project management and the development of environmental reports.

9.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

1. Select an occupational profile that is presented in figure 3. Use the **Job Outlook** weblink in the Resources tab to locate the Job Outlook website. At this site you will be able to explore a career that interests you. Job Outlook is a federal government website that provides information on employment in a range of occupations. It also includes information on the training, skills and tools needed for the career that you are researching.
2. Develop a career profile for your occupation of choice. In your profile include:
   - the geographical skills needed for this job
   - the geographical tools that may be used in this occupation
   - the study and training requirements that lead to this occupation
   - the job prospects for your chosen occupation over the next five years.
3. In Australia, there is a range of industries that employs *conservationists, oceanographers* or *agricultural scientists*. Use the **Job Outlook** weblink in the Resources tab to locate the Job Outlook website to research industries that may deal with land degradation, marine pollution or world food needs. For example, the Agricultural, Forestry and Fishing industries offer all three occupations and list a range of technical and professional tasks in their job descriptions.

   Develop a job description for one of the occupations. Highlight the geographical skills required, the tools needed to work with in this field and the core skills that are essential for the position.

INQUIRY SEQUENCE
9.1 Overview 187
9.2 Geographical concepts 189
9.3 **Review** online only 197

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Explore more with this weblink: Job Outlook

9.2 Geographical concepts

9.2.1 SPICESS

Geographic concepts help you make sense of your world. By using these concepts you can investigate and understand the world you live in, and try to imagine a different world. The concepts help you to think geographically. There are seven major concepts: ***scale***, ***place***, ***interconnection***, ***change***, ***environment***, ***sustainability*** and ***space***.

In this book you will use the seven concepts to investigate two units: *Biomes and food security* and *Geographies of interconnections*.

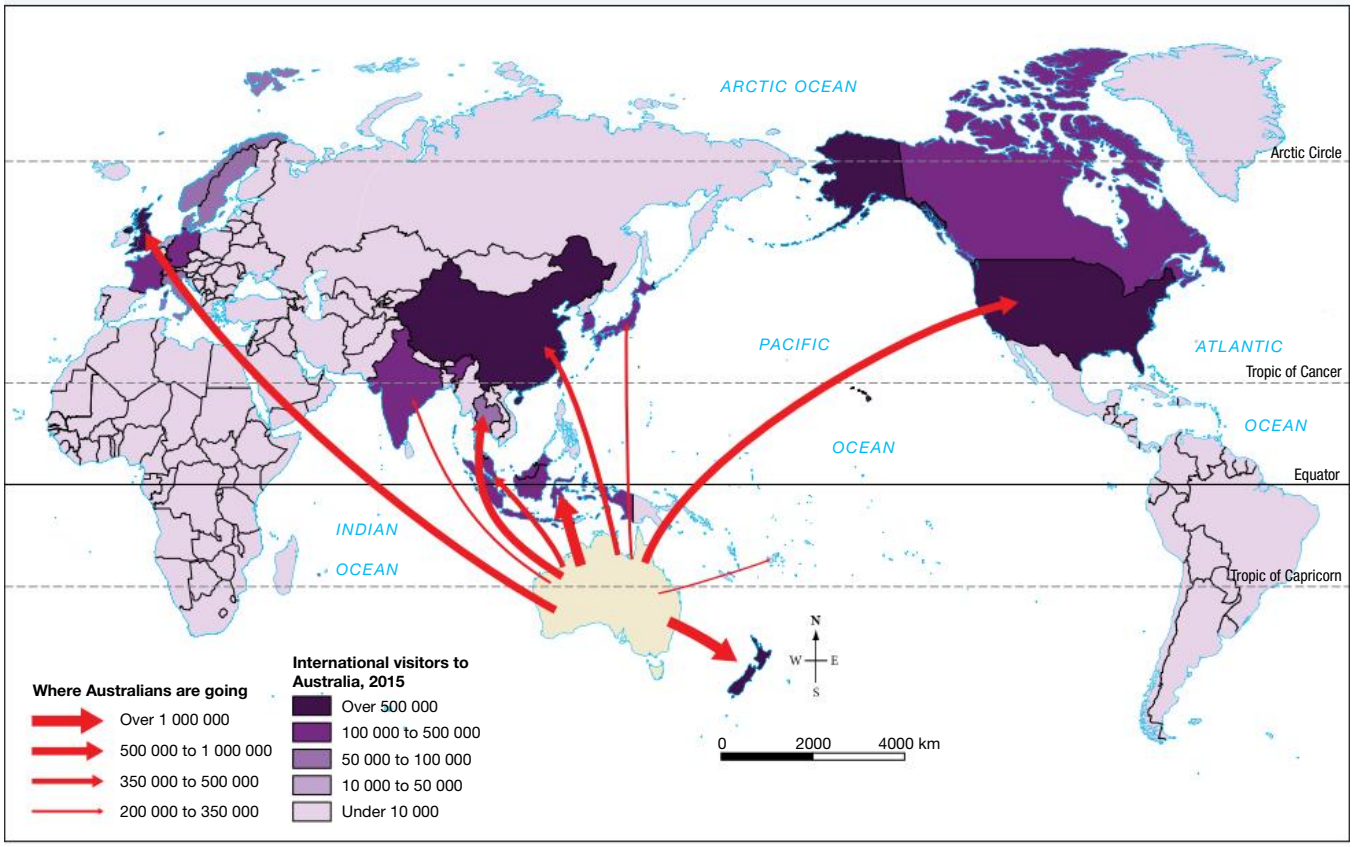
A way to remember these seven concepts is to think of the term SPICESS.

9.2.2 What is scale?

When we examine geographical questions at different spatial levels we are using the concept of scale to find more complete answers.

A little like using a zoom lens on a camera, scale enables us to examine issues from different perspectives, from personal to local, regional, national or global. Using scale helps in the analysis and explanation of phenomena. For example, climate is the most important factor in determining vegetation type on a global scale; whereas, at a local scale, soil and drainage might be more important. Different activities can also have an impact at a range of scales. The construction of an international airport in Cairns saw the development of tourism evolve from a local to an international scale with direct flights between Australia and South-East Asia.

FIGURE 1 Country of origin for tourists visiting Australia, and destinations for Australian tourists, 2015



Source: ABS, Austrade

9.2.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

1. (a) Compare the ***scale*** of movement of tourists from Australia to New Zealand and to China.
   (b) What reasons can you give for the differences?
2. Suggest one national-***scale*** and one international-***scale*** event that might influence the number of Australians visiting the United States.
3. Predict future trends in the number of tourists leaving Australia.
4. (a) Brainstorm with your class an example of an environmental issue at a local, national and global ***scale***.
   (b) How would solutions differ at each ***scale***?

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

Scale

9.2.3 What is place?

The world is made up of places, so to understand our world we need to understand its places by studying their variety, how they influence our lives and how we create and change them.

Everywhere is a place. Each of the world's biomes — for example, a desert environment — can be considered a place, and within each biome there are different places, such as the Sahara Desert. There can be natural places — an oasis is a good example — or man-made places such as Las Vegas. Places can have different functions and activities — for example, Canberra has a focus as an administration centre, while the MCG is a place for major sporting events and the Great Barrier Reef is a place of great natural beauty

with a coral reef biome. People are interconnected to places and people in a wide variety of ways — for example, when we move between places or connect electronically via computers. We are connected to the places that we live in or know well, such as our neighbourhood or favourite holiday destination.

FIGURE 2 Large-scale farming of green peppers in a greenhouse where soils, moisture, nutrients and the weather are all controlled

9.2.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Refer to figure 2.

1. Why do you think people have ***changed*** this place by building greenhouses there?
2. What characteristics of a desert biome are being altered in this ***place***?
3. What features might this location have for the production of food?
4. What would be the advantages and disadvantages of greenhouse farming?
5. Suggest the types of crops that would be suitable for greenhouse farming.
6. List ways in which people living in other ***places*** in Europe may be ***interconnected*** to the greenhouses in Almeria.

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Deepen your understanding of this topic with related case studies and questions.

Place

9.2.4 What is interconnection?

People and things are connected to other people and things in their own and other places, and understanding these connections helps us to understand how and why places are changing.

Individual geographical features can be interconnected — for example, the climate within a place or biome, such as a tropical rainforest, can influence natural vegetation, while removal of this vegetation can affect climate. People can be interconnected to other people and other places via employment, communications, sporting events or culturally. The manufacturing of a product may create interconnections between suppliers, manufacturers, retailers and consumers.

FIGURE 3 Many countries have strict laws dealing with e-waste disposal. It is often easier to export the material to countries in South-East Asia, where there are fewer laws and the wastes can be broken down, recycled or sold. It is extremely hazardous.

Source: Data from Greenpeace. Spatial Vision

9.2.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Refer to figure 3.

1. Describe the distribution of the main ports dealing with e-waste trade.
2. What is the ***interconnection*** between the main recycling countries and the main ports that receive and dispatch e-waste?
3. Where are the destinations of e-wastes from Europe?
4. Describe the ***interconnection*** between North America and Asia in relation to e-waste trade.
5. Create a diagram to show the ***interconnections*** that could occur for the growing, manufacturing, sales and consumption of a can of pineapple slices.

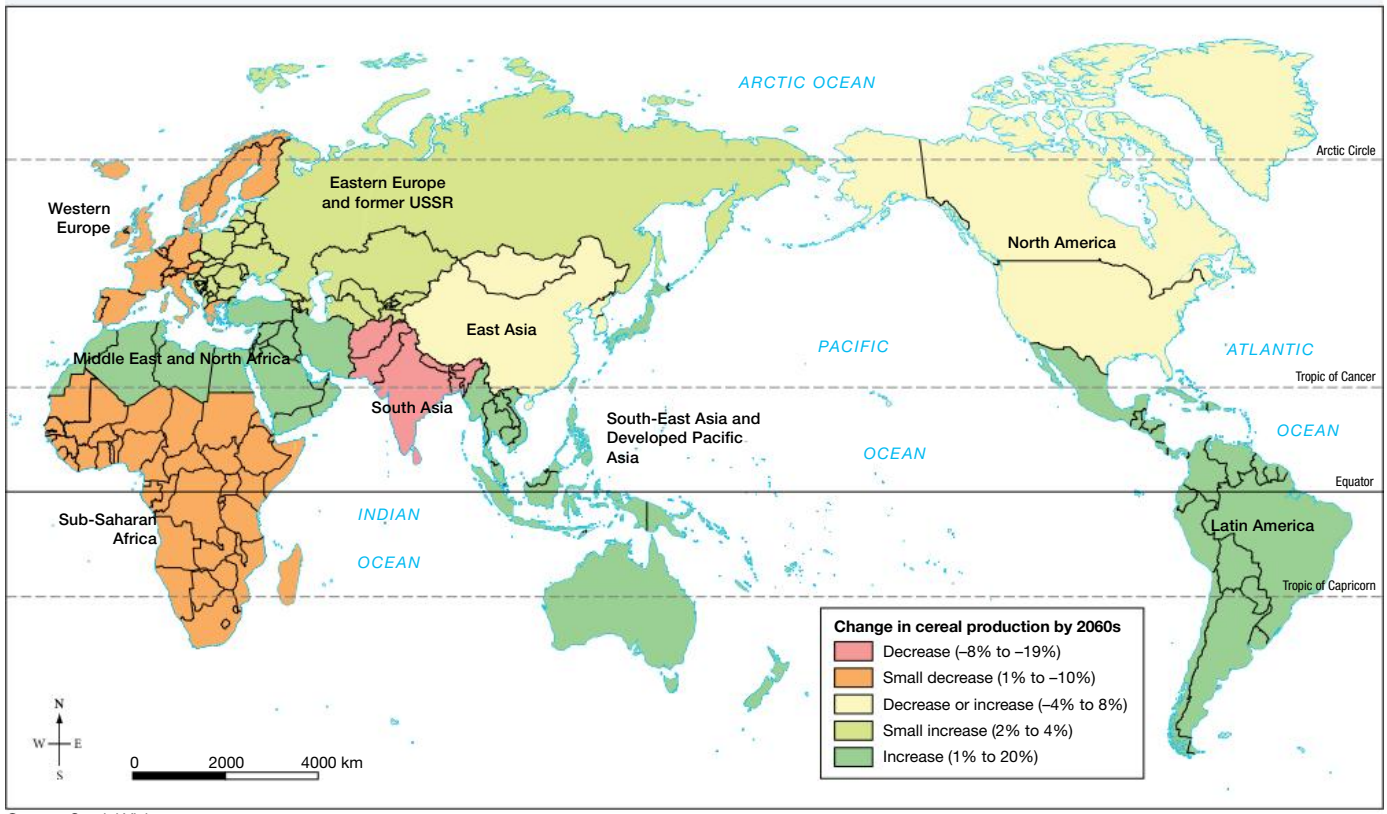
myWorldAtlas
Deepen your understanding of this topic with related case studies and questions.
Interconnection

9.2.5 What is change?

The concept of change is about using time to better understand a place, an environment, a spatial pattern or a geographical problem.

From a geographical time perspective, change can be very slow — think of processes such as the formation of mountains or soil. On the other hand, a volcanic eruption or landslide can change landforms rapidly. It may take some years for the boundary of a city to expand outwards, but in the space of a few weeks whole suburbs can be demolished to make way for a freeway. Change can also have physical, economic and social implications. Consider the effect of the internet over the past few years.

FIGURE 4 Predictions of the effects of climate change on cereal crops



Source: Spatial Vision

9.2.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Refer to figure 4.

1. Which regions of the world are predicted to experience decreases in cereal production as a result of climate ***change***?
2. Which regions are predicted to show an increase in cereal production?
3. Some countries, particularly those with a shortage of arable land, are buying land in other countries specifically for food production. What do you see as the advantages and disadvantages of such land purchases?
4. Explain how each of the factors listed below may influence whether a country experiences a ***change*** in cereal production in the future as a result of climate ***change***.
   (a) Level of development
   (b) Level of technological advancement
5. How would predictions help governments plan for future food security?

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
Change

9.2.6 What is environment?

People live in and depend on the environment, so it has an important influence on our lives.

The biological and physical world that makes up the environment is important to us as a source of food and raw materials, a means of absorbing and recycling wastes, and a source of enjoyment and inspiration.

People perceive, adapt and use environments in many ways. For example, different people could look at a well-vegetated hillside and one might see it as a source of timber for construction, another might see a slope that could be cleared and terraced to produce food, while another might view it as a scenic environment for ecotourism.

FIGURE 5 The East Kolkata wetlands act as a sewage filtration system and recycle nutrients through the soil to allow a wide range of food crops to be grown. The ponds provide one-third of the city's fish supply and are a protected Ramsar site for migratory birds.

9.2.6 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Refer to figure 5.

1. Look closely at the image and decide whether this is a natural or human ***environment***. Justify your decision.
2. In what ways might people have ***changed*** or modified the natural ***environment*** to allow farming to take place?
3. How would the people and economy of Kolkata benefit from these wetlands?
4. What would you consider to be the advantages and disadvantages of using a wetland ***environment*** as a natural sewage treatment system?
5. A major threat to the future of the wetlands is the growing population and urban spread into this farming area. How might this affect Kolkata's:
   - food security
   - ability to deal with sewage and waste
   - internationally recognised wetland ***environment***?

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

Environment

9.2.7 What is sustainability?

Sustainability is about maintaining the capacity of the environment to support our lives and those of other living creatures.

Sustainability involves maintaining and managing our resources and environments for future generations. It is important to understand the causes of unsustainable situations to be able to make informed decisions on the best way to manage our natural world.

FIGURE 6 The unsustainable nature of fishing

9.2.7 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Refer to figure 6.

1. What does this cartoon tell us about the ***sustainable*** nature of fishing?
2. How has modern technology contributed to a decline in world fish populations?
3. Suggests reasons why fishing can be considered an ***unsustainable*** practice.
4. Give reasons why some fish species are over-exploited while others are not.
5. What difficulties would arise with managing an ocean-based resource compared to a land-based resource?

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

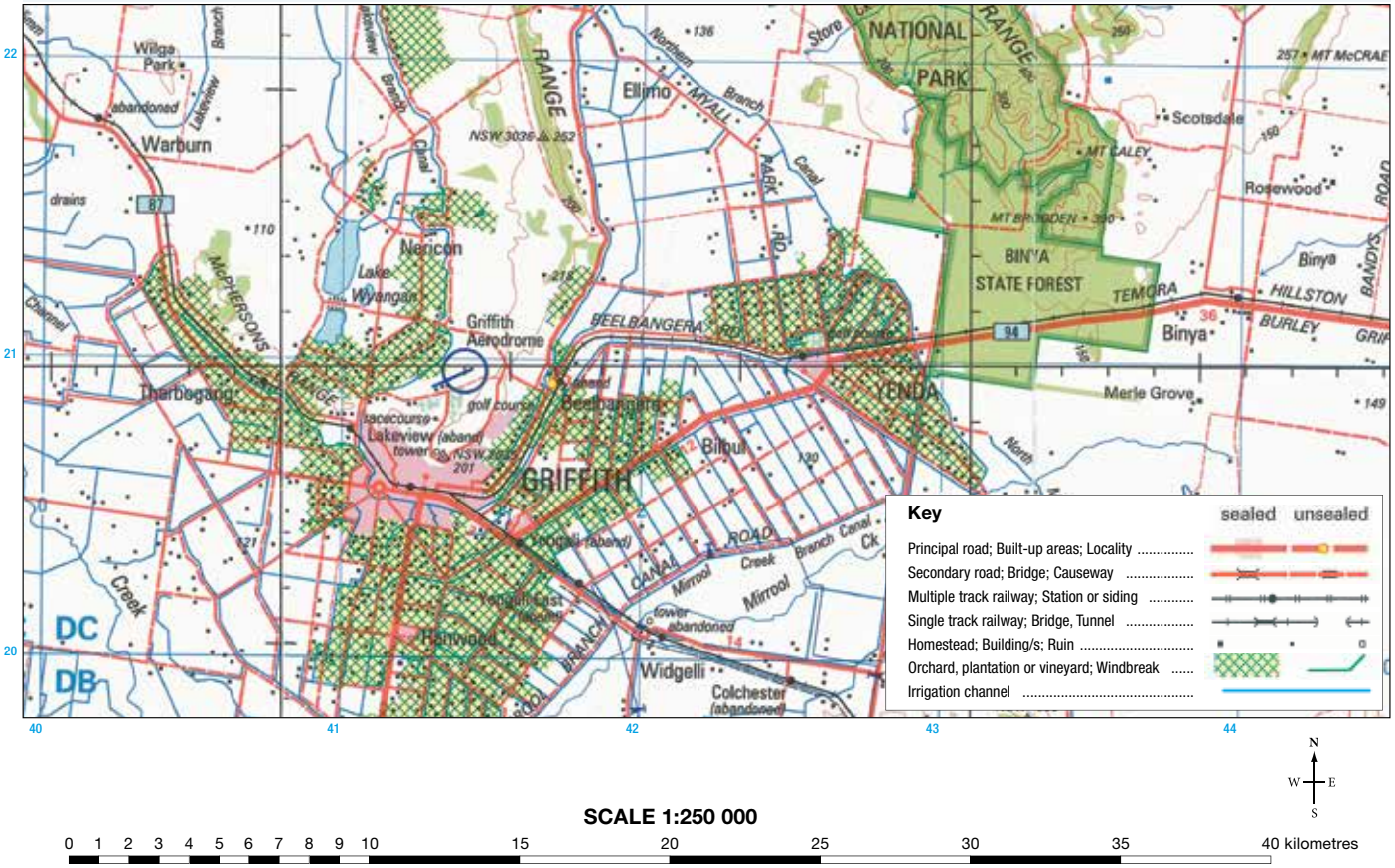
Sustainability

9.2.8 What is space?

Everything has a location on the space that is the surface of the Earth. Studying the effects of location, the distribution of things across this space, and how the space is organised and managed by people, helps us to understand why the world is like it is.

A place can be described by its absolute location; for example: latitude and longitude, a grid reference, street directory reference or an address. Or, a place can be described using a relative location — where it is in relation to another place in terms of distance and direction.

FIGURE 7 Topographic map extract, Griffith, New South Wales



Source: Commonwealth of Australia (Geoscience Australia).

9.2.8 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Refer to figure 7.

1. Use your atlas to locate Griffith. Provide its absolute location using longitude and latitude.
2. What is the location of Griffith Aerodrome relative to Lake Wyangan? Use distance and direction in your answer.
3. Identify the features located at the following grid references.
   (a) 413208
   (b) 435215
4. Give grid reference locations for the following.
   (a) Griffith Aerodrome
   (b) Lake Wyangan
5. Complete the following sentences by inserting the correct term to describe the distribution pattern. Choose from the following list of terms: rectangular; linear; scattered; clustered.
   (a) Buildings are distributed in a ..... pattern.
   (b) Irrigated fields in the orchards and vineyards create a ..... distribution pattern.
   (c) Railway lines form a ..... pattern.
   (d) The distribution pattern for buildings around Yenda tends to be more ..... than those to the west of Griffith.

6. How does the distribution of irrigated vineyards and orchards influence the distribution of buildings? Suggest a reason for your observation.
7. Describe how people have generally used the ***space*** shown in the map.

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
Space

9.3 Review

online only

9.3.1 Applying the concepts

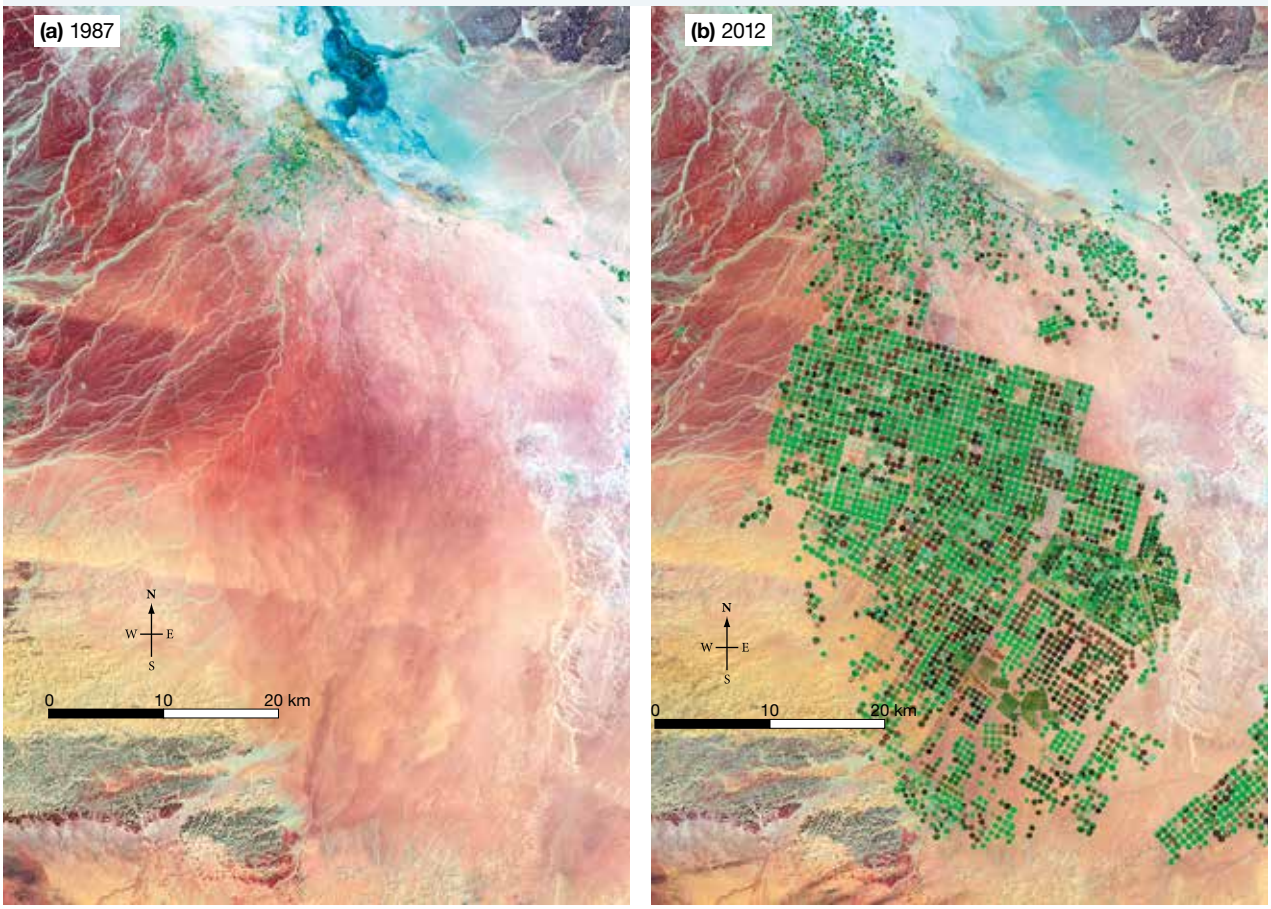
This final subtopic provides a range of opportunities for you to review and respond through:

i. revising and checking your geographic knowledge
ii. demonstrating your ability to apply geographical concepts and skills.

Go online to access:

- A topic test
- Short answer or extended writing responses

FIGURE 1 Satellite images of the Wadi As-Sirhan Basin in Saudi Arabia.



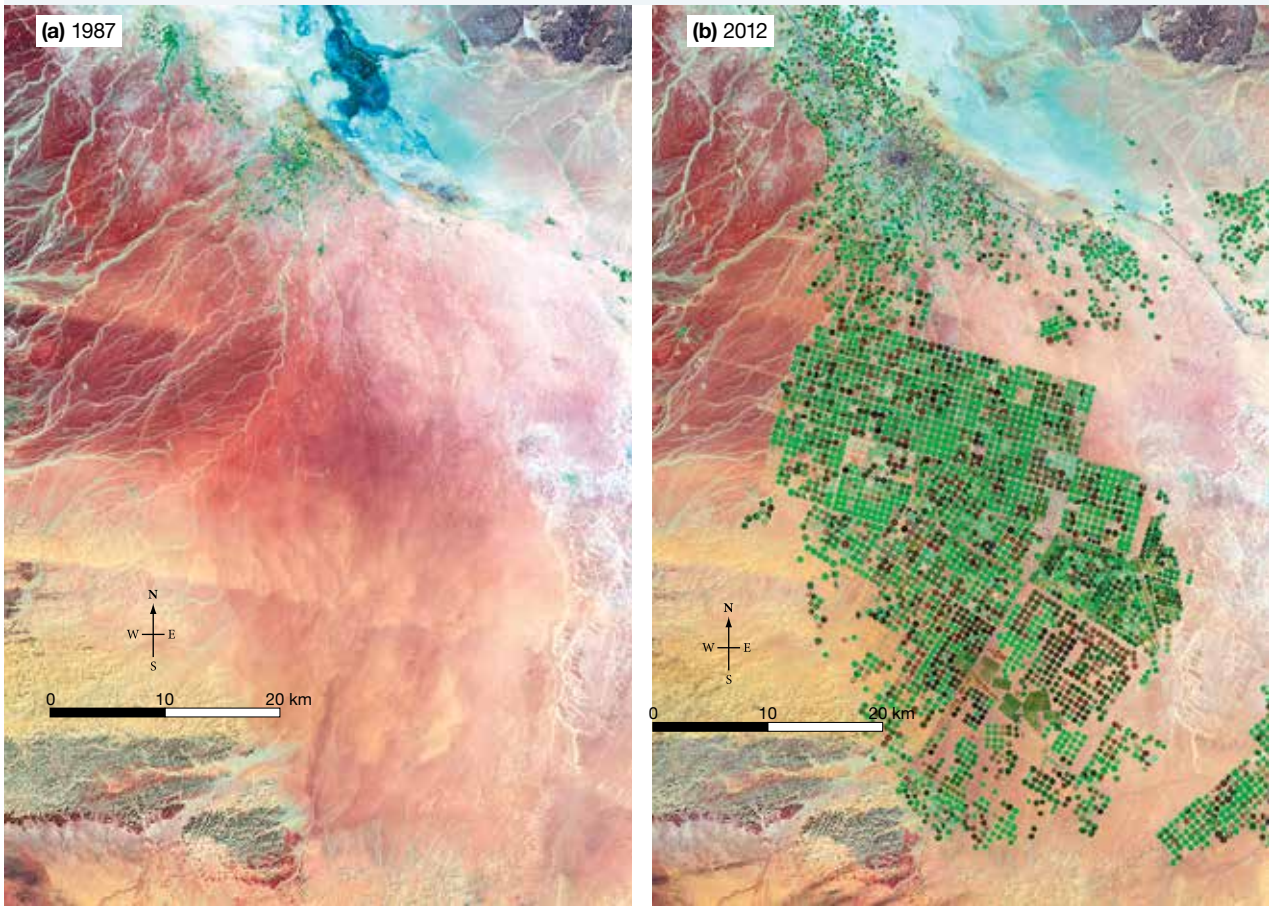
9.3 Review

9.3.1 Applying the concepts

Saudi Arabia is home to extensive desert regions. Today, thanks to advances in technology, much of the desert is being transformed into productive farming areas. Fruits, vegetables and grains are the main crops grown, and these help to improve the country's food security. Extensive drilling is tapping into underground aquifers as much as 1000 metres deep to access water for irrigation of water-hungry crops. Large circular sprays, called centre pivots, create a distinctive circular pattern of fields (see figure 1b).

Rainfall in the Wadi As-Sirhan Basin averages only 100–200 millimetres per year, which is insufficient to recharge underground aquifers. The water that is being pumped to the surface is actually 'fossil' water, possibly up to 20 000 years old. The volume of water that is being used for desert agriculture has more than tripled in just over 25 years.

FIGURE 1 Satellite images of the Wadi As-Sirhan Basin in Saudi Arabia. *Note:* Landsat imagery shows new vegetation as bright green, while dry vegetation or land lying fallow is shown as rust-coloured. Dry desert areas are shown as pink and yellow.



9.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

1. Where is Saudi Arabia located? (***space***)
2. Looking at figure 1a, how would you describe this ***place***?
3. What do you think the white lines to the north-west of the image are? What does this tell you about the climate in this region? (***environment***, ***space***)
4. Comparing the two images, describe the ***changes*** that irrigation has brought to this ***environment***.
5. Each of the fields in figure 1b is approximately 1 kilometre wide. What does this indicate about the ***scale*** of this irrigation region?
6. How would the isolation of this irrigation region affect the movement of fresh produce to markets in cities? (***interconnection***)
7. Hydrologists (water engineers) believe that it will be economical to continue pumping water for only another 50 years. Is the use of groundwater ***sustainable*** in the future?

TOPIC 10
All the world is a biome

10.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

10.1.1 Introduction

Where do the foods we eat and the natural products we use daily come from? Biomes. Biomes are communities of plants and animals that extend over large areas. Some are dense forests; some are deserts; some are grasslands, like much of Australia; and so the variations continue. Within each biome, plants and animals have similar adaptations that allow them to survive.

Biomes can be terrestrial (land based) or aquatic (water based). Understanding the diversity within them is essential to our survival and wellbeing.

Within each biome, there are many variations in the landscape and climate, and in the plants and animals that have adapted to survive there.

Starter questions

1. As a class, develop your own definition of the word *biome*.
2. What information about biomes is conveyed by the images shown on the previous page?
3. Brainstorm a list of biomes.
4. Select one of the biomes you listed in question 3, and create a mind map of the unique features you think it has.
5. What type of biome do you live in? If you cannot decide, why do you think that is?
6. Make a list of the things you use that have come from a biome. Compare your list with other students in your class.

INQUIRY SEQUENCE

10.1	Overview		198
10.2	**SkillBuilder:** Describing spatial relationships in thematic maps	online only	199
10.3	What is a biome?		200
10.4	How do we use the grassland biome?		203
10.5	What are coastal wetlands?		205
10.6	**SkillBuilder:** Constructing and describing a transect on a topographic map	online only	208
10.7	Why are coral reefs unique?		208
10.8	What are Australia's major biomes?		211
10.9	Why are biomes different?		213
10.10	How do we protect biomes?	online only	218
10.11	**Review**	online only	218

10.2 SkillBuilder: Describing spatial relationships in thematic maps

online only

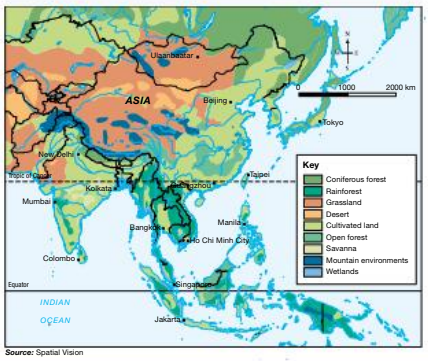
WHAT ARE SPATIAL RELATIONSHIPS IN THEMATIC MAPS?

A spatial relationship is the interconnection between two or more pieces of information in a thematic map, and the degree to which they influence each other's distribution in space. Describing these relationships helps us understand how one thing affects another.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1A Thematic map of Asia showing biomes



Source: Spatial Vision

learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Describing spatial relationships in thematic maps (eles-1726)

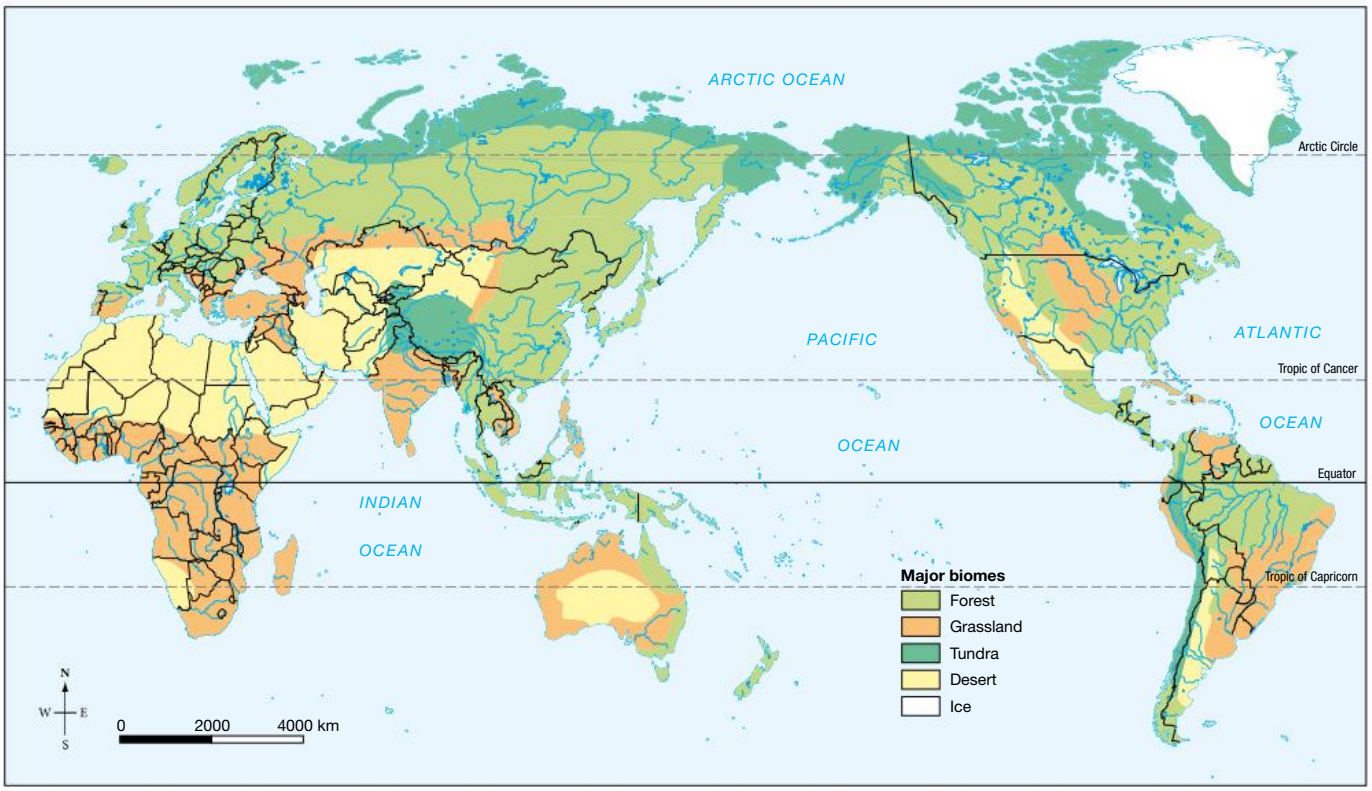
Try out this interactivity: Describing spatial relationships in thematic maps (int-3344)

10.3 What is a biome?

10.3.1 What and where are the major biomes?

Biomes are sometimes referred to as ecosystems. They are places that share a similar climate and life forms. There are five distinct biomes across the Earth: forest, desert, grassland, tundra and aquatic biomes. Within each, there are variations in the visible landscape, and in the plants and animals that have adapted to survive in a particular climate.

FIGURE 1 Major biomes of the world



Source: Spatial Vision

Forests

Forests are the most diverse ecosystems on the Earth. Ranging from hot, wet, tropical rainforests to temperate forests, they have an abundance of both plant and animal life. Over 50 per cent of all known plant and animal species are found in tropical rainforests. Forests are the source of over 7000 modern medicines, and many fruits and nuts originated in this biome. Forests help regulate global climate, because they absorb and use energy from the sun rather than reflect it back into the atmosphere. Forest plants recycle water back into the atmosphere, produce the oxygen we breathe, and store the carbon we produce. Forests are under threat from **deforestation**.

FIGURE 2 Forest

Deserts

Deserts are places of low rainfall and comprise the arid and semi-arid regions of the world. Generally they are places of temperature extremes — hot by day and cold by night. Most animals that inhabit deserts are nocturnal (active at night), and desert vegetation is sparse. Desert rain often evaporates before it hits the ground, or else it falls in short, heavy bursts. Following periods of heavy rain, deserts teem with life. Not all deserts are hot. Antarctica and the Gobi Desert in central Asia are cold deserts. About 300 million people around the world live in desert regions.

FIGURE 3 Desert

Grasslands

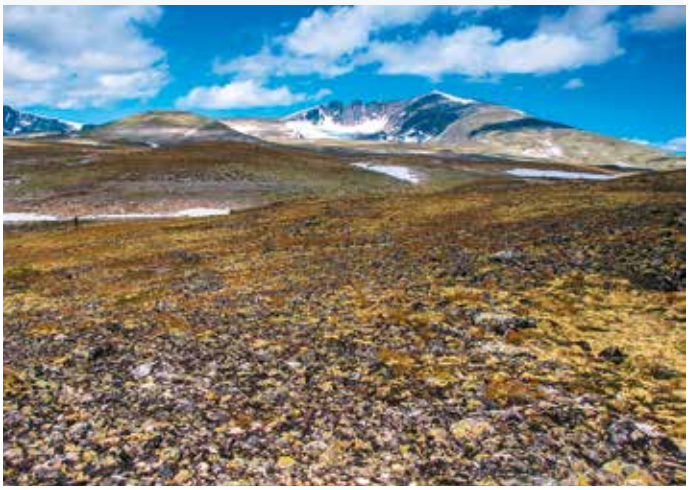
Grasslands are sometimes seen as transitional environments between forest and desert. Dominated by grass, they have small, widely spaced trees or no trees. The coarseness and height of the grass varies with location. They are mainly inhabited by grazing animals, reptiles and ground-nesting birds, though many other animals can be found in areas with more tree cover. Grasslands have long been prized for livestock grazing, but overgrazing of grasslands is unsustainable and places them at risk of becoming deserts. Over one billion people inhabit the grassland areas of the world.

FIGURE 4 Grassland

Tundra

Tundra is found in the coldest regions of the world, and lies beyond the **treeline**. The landscape is characterised by grasses, dwarf shrubs, mosses and lichens. The growing season is short. Tundra falls into three distinct categories — Arctic, Antarctic and alpine — but they share the common characteristic of low temperatures. In Arctic regions there is a layer beneath the surface known as permafrost — permanently frozen ground. The tundra biome is the most vulnerable to global warming, because plants and animals have little tolerance for environmental changes that reduce snow cover.

FIGURE 5 Tundra



Aquatic biomes

Water covers about three-quarters of the Earth and can be classified as fresh water or marine. Freshwater biomes contain very little salt and are found on land; these include lakes, rivers and wetlands. Marine biomes are the saltwater regions of the Earth and include oceans, coral reefs and estuaries. Marine environments are teeming with plant and animal life, and are a major food source. Elements taken from the roots of mangroves have been used in the development of cancer remedies. Compounds from other marine life have also been used in cosmetics and toothpaste.

FIGURE 6 Water

10.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Name the five major biomes of the Earth and classify them as either aquatic or terrestrial.
2. Identify the broad characteristics biomes share.

Explain

3. Look carefully at figure 1. Using geographic terminology and concepts (including reference to latitude), describe the location and characteristics of the five major biomes.
4. (a) The map in figure 1 identifies five basic biomes. However, the text tells you that within each there are variations. Suggest reasons for these variations.
   (b) Are all biomes equally important? Explain your answer.

Predict

5. Select one of the categories of biomes described in this section. Suggest how this biome might be ***changed*** and used by humans and what impact this ***change*** might have on the ***environment***.

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: Beautiful biomes (int-3317)

10.4 How do we use the grassland biome?

10.4.1 What are the characteristics of grasslands?

Grassland, pampas, savanna, chaparral, cerrado, **prairie**, rangeland and steppe all refer to a landscape that is dominated by grass. Once, grasslands occupied about 42 per cent of the Earth's land surface, but today they make up about 25 per cent of its land area. Grasslands are found on every continent except Antarctica.

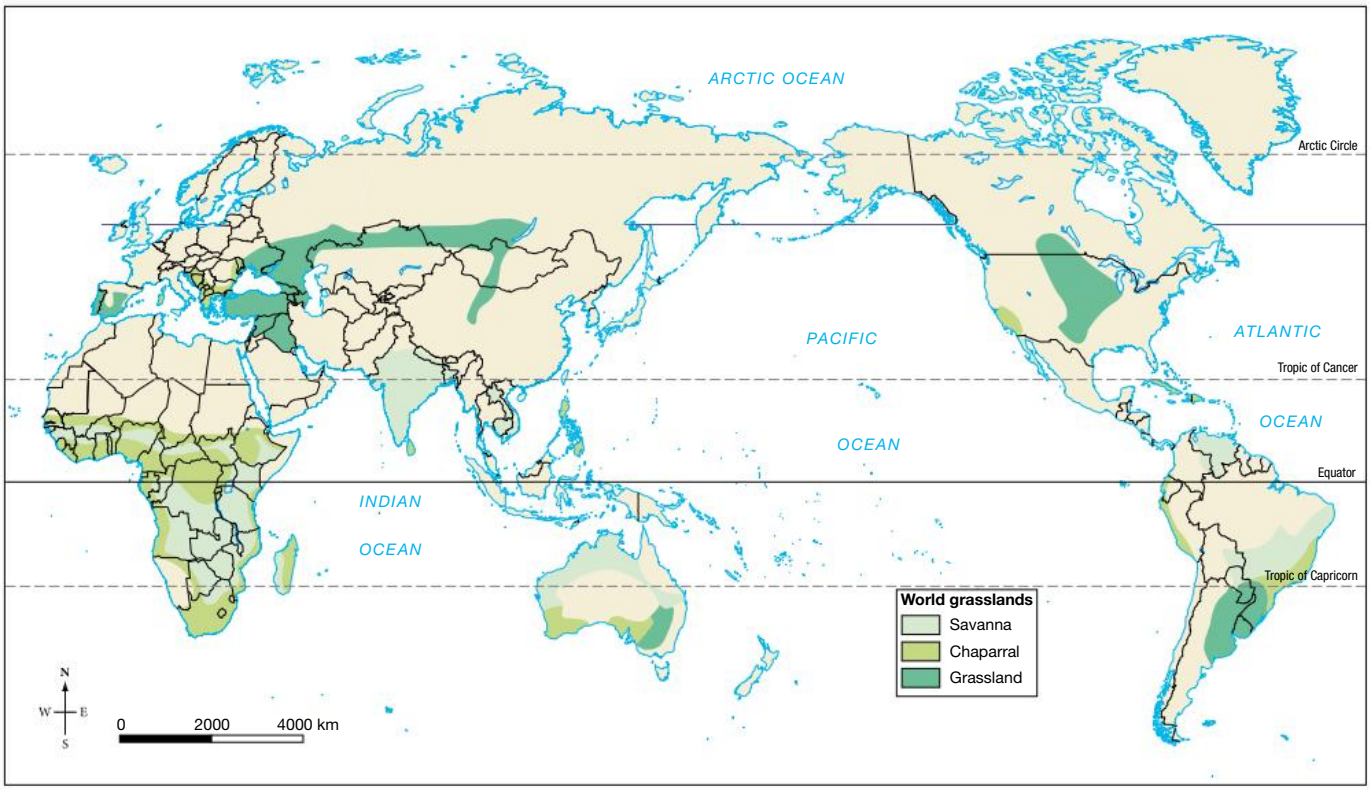
The grassland biome is dominated by grasses, and generally has few or no trees, though there may be more tree cover in adjoining areas, such as along riverbanks. They develop in places where there is not enough rain to support a forest but too much rain for a desert; for this reason they are sometimes referred to as a transitional landscape.

Grasslands are found in both temperate and tropical areas where rainfall is between 250 mm and 900 mm per year. In tropical regions, grasslands tend to have a distinct wet and dry season. In temperate regions, the summers tend to be hot and the winters cool. Generally, grasslands in the southern hemisphere receive more rainfall.

Grasslands can occur naturally or as a result of human activity. The presence of large numbers of grazing animals and frequent fires prevent the growth of tree seedlings and promote the spread of grasses. Unlike other plant species, grasses can continue to grow even when they are continually grazed by animals, because their growth points are low and close to the soil. Because grasses are fast-growing plants, they can support a high density of grazing animals, and they regenerate quickly after fire.

Some grasses can be up to two metres in height, with roots extending up to one metre below the soil.

FIGURE 1 Grasslands occupy about a quarter of the Earth's land surface.



Source: Spatial Vision

10.4.2 Why are grasslands important?

Grasslands are the most useful biome for agriculture because the soils are generally deep and fertile. They are ideally suited for growing crops or creating pasture for grazing animals. The prairies of North America, for example, are one of the richest agricultural regions on Earth.

Grasslands are also one of the most endangered biomes and are easily turned into desert. The entire ecosystem depends on its grasses and their annual regeneration. It is almost impossible to re-establish a grassland ecosystem once desert has taken over.

Almost one billion people depend on grasslands for their livelihood or as a food source.

Grasslands often depend on fire to germinate their seeds and generate new plant growth. Indigenous populations, such as Australian Aboriginal peoples, used this technique to flush out any wildlife that was hidden by long grass.

In more recent times, grasslands have been used for livestock grazing and are increasingly under pressure from **urbanisation**. Grasslands have also become popular tourist destinations, because people flock to them to see majestic herds such as wildebeest, caribou and zebra, as well as the migratory birds that periodically inhabit these environments.

FIGURE 2 Grasslands can support a high density of grazing animals. In Australia, we use grasslands for fine wool production.

All the major food grains — corn, wheat, oats, barley, millet, rye and sorghum — have their origins in the grassland biome. Wild varieties of these grains are used to help keep cultivated strains disease free. Many native grass species have been used to treat diseases including HIV and cancer. Others have proven to have properties for treating headaches and toothache.

FIGURE 3 Wheat is a type of grass.

Grasslands are also the source of a variety of plants whose fibres can be woven into clothing. The best known and most widely used fibre is cotton. Harvested from the cottonseed, it is used to produce yarn that is then knitted or sewn to make clothing. Lesser known fibres include flax and hemp. Harvested from the stalk of the plant, both fibres are much sturdier and more rigid than cotton but can be woven to produce fabric. Hemp in particular is highly absorbent and has UV blocking qualities.

In Australia today, less than one per cent of native grasslands survive, and they are now considered one of the most threatened Australian habitats. Since European occupation, most native grassland has been removed or changed by farming and other development. Vast areas of grassland were cleared for crops, and introduced grasses were planted for grazing animals such as sheep and cattle.

10.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What is a grassland?
2. Describe the global distribution of grasslands.

3. Why are grasslands an important ***environment***?
4. Describe the major threats to this ***environment***.

Explain

5. Explain how Indigenous populations used the grassland ***environment*** in a ***sustainable*** way.
6. Explain why so little of Australia's grasslands remain.

Discover

7. Grasslands are located on six of the Earth's seven continents. Working in groups, investigate one of the grassland biomes. Using ICT, create a presentation on your chosen biome that covers the following:
   - the characteristics of the ***environment***, including climate and types of grasses that dominate this ***place***
   - the animals that are commonly found there
   - how the ***environment*** is used and ***changed*** for the production of food, fibre and wood products
   - threats to this particular grassland, including the ***scale*** of these threats
   - what is being done to manage this grassland ***environment*** in a ***sustainable*** manner.

   Investigate how different factors involved in ethical decision-making can be managed by people and groups.

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Wheat

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Try out this interactivity: Grass, grains and grazing (int-3318)

10.5 What are coastal wetlands?

10.5.1 What are wetlands?

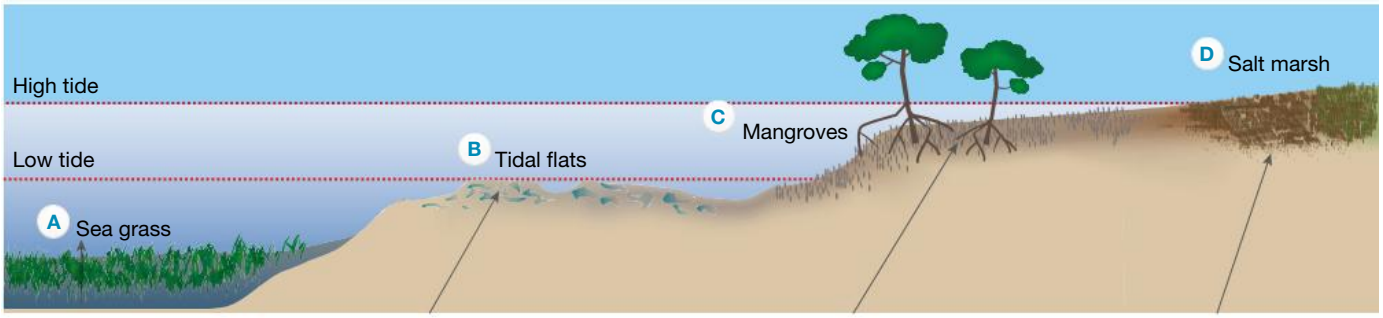
Wetlands are biomes where the ground is saturated, either permanently or seasonally. They are found on every continent except Antarctica. Wetlands include areas that are commonly referred to as marshes, swamps and bogs. In coastal areas they are often tidal and are flooded for part of the day. In the past they were often considered a 'waste of space', and in developed nations they were sometimes drained for agriculture or the spread of urban settlements.

10.5.2 Are wetlands important?

Wetlands are a highly productive biome. They provide important habitats and breeding grounds for a variety of marine and freshwater species. In fact, a wide variety of aquatic species that we eat, such as fish, begin their life cycle in the sheltered waters of wetlands. They are also important nesting places for a large number of migratory birds.

Wetlands are also a natural filtering system and help purify water and filter out pollutants before they reach the coast. In addition, they help regulate river flow and stabilise the shoreline. Figure 1 shows a cross-section through a mangrove wetland.

FIGURE 1 Cross-section of a wetland



A Seagrass meadows:
- are covered by water all the time
- bind the mud and provide shelter for young fish
- produce **organic matter**, which is consumed by marine creatures.

B Tidal flats:
- are covered by tides most of the time
- are exposed for short periods of the day (low tide)
- are formed by silt and sand that has been deposited by tides and rivers
- provide a feeding area for birds and fish.

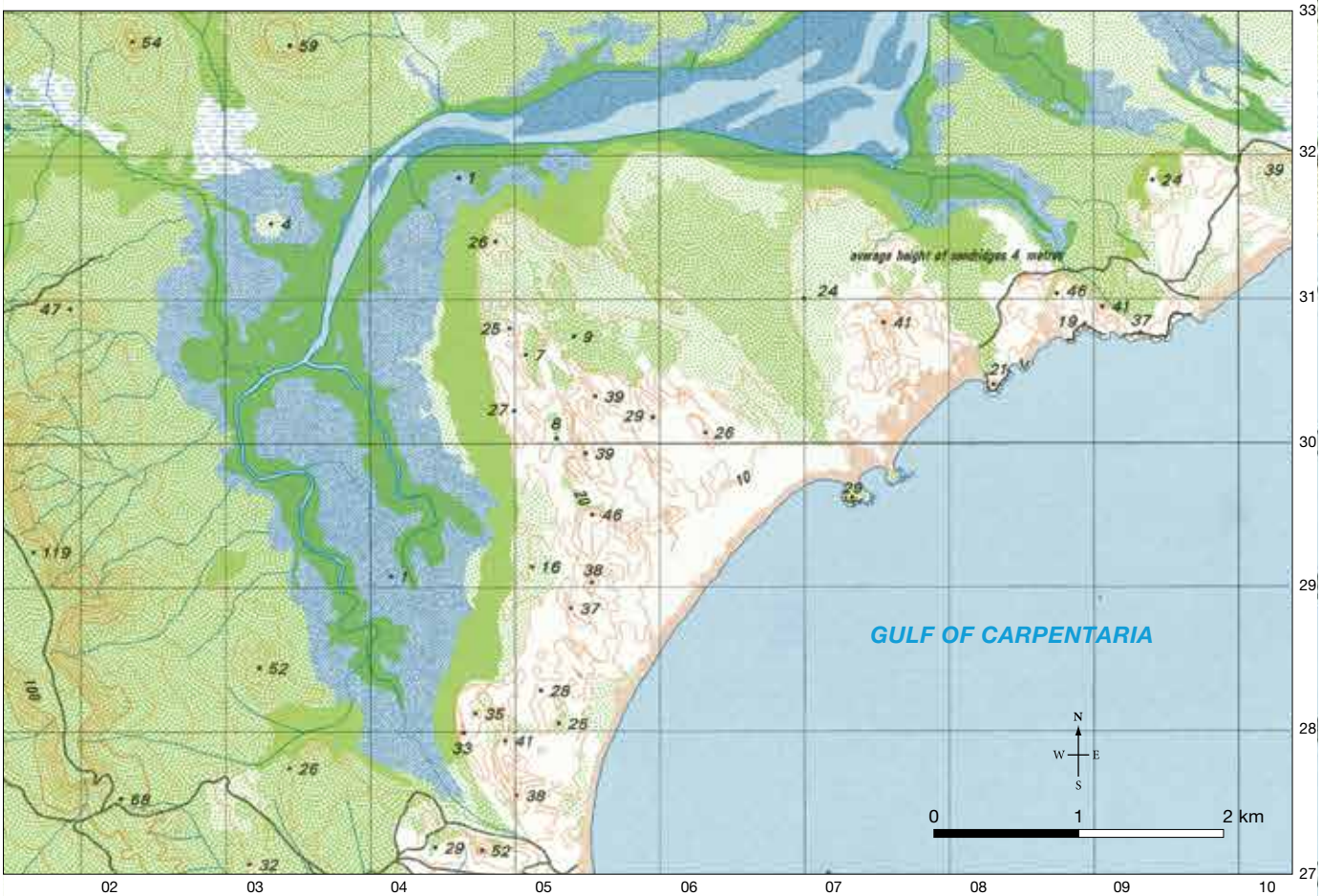
C Mangroves:
- have **pneumatophores** that trap sediment and pollutants from the land and sea
- change shallow water into swampland
- store water and release it slowly into the ecosystem
- have leaves that decompose and provide a food source for marine life
- provide shelter, breeding grounds and a nursery for marine creatures and birds.

D Salt marshes:
- are covered by water several times per year
- provide decomposing plant matter — an additional food source for marine life
- have high concentrations of salt.

FIGURE 2 Seagrass

FIGURE 3 Pneumatophores

FIGURE 4 Dalywoi Bay, Northern Territory



Source: The Australian Army © Commonwealth of Australia 1999

Key

Vehicle track; Road bridge; Stock grid

Mine; Building; Ruin; Church; Windpump; Yard

Fence; Horizontal control point; Spot elevation

Contour with value and cliff; Pinnacle

Depression contours; Sand; Distorted surface

Levee; Sandbridge

Razorback ridgeline; fault line

Vegetation; Dense, medium, scattered; Cleared lane

Rain forest; Pine

Orchard or vineyard; Line if trees or windbreak

Watercourse; Area subject to inundation

Swamp; Swamp definite boundary

Perennial lake; Watercourse

Intermittent lake; Watercourse

Mainly dry lake; Watercourse

Tank or Small dam; Waterhole

Saline coastal flat; Intertidal flat; Rock bare or awash

Lighthouse; Intertidal ledge or reef

Exposed wreck; Submerged wreck

Submerged reef; Submerged rock

Indefinite watercourse; Mangrove swamp

10.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Explain

1. How have mangroves adapted to survive in their marine–terrestrial ***environment***?
2. What are seagrass meadows and why are they important?
3. Refer to figure 4 and describe the landscape at the following grid references: 042309, 071329, 030320 and 055290.

Predict

4. In figure 4, locate the grid square inside grid references: 030300, 030310, 040030, 040310.
   (a) What is the area covered by these grid squares?
   (b) Describe how this ***environment*** would ***change*** over the course of the day.
   (c) A proposal has been put forward to construct a **canal housing estate** in this location. It is proposed that the estate will occupy this grid square and its surrounds. Describe the ***scale*** of this project.
   (d) Explain how the ***environment*** may ***change*** if this project goes ahead.

10.6 SkillBuilder: Constructing and describing a transect on a topographic map

online only

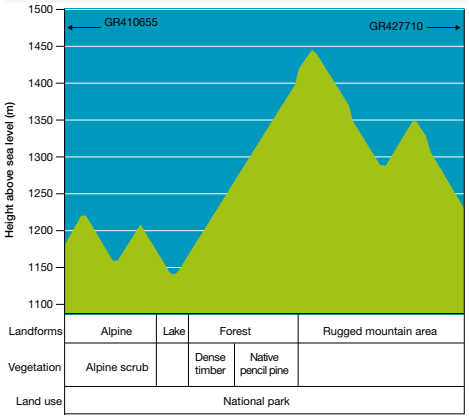
WHAT IS A TRANSECT?

A transect is a cross-section with additional detail, which summarises information about the environment.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 A transect of the Walls of Jerusalem National Park, Tasmania



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Watch this eLesson: Constructing and describing a transect on a topographic map (eles-1727)

Try out this interactivity: Constructing and describing a transect on a topographic map (int-3345)

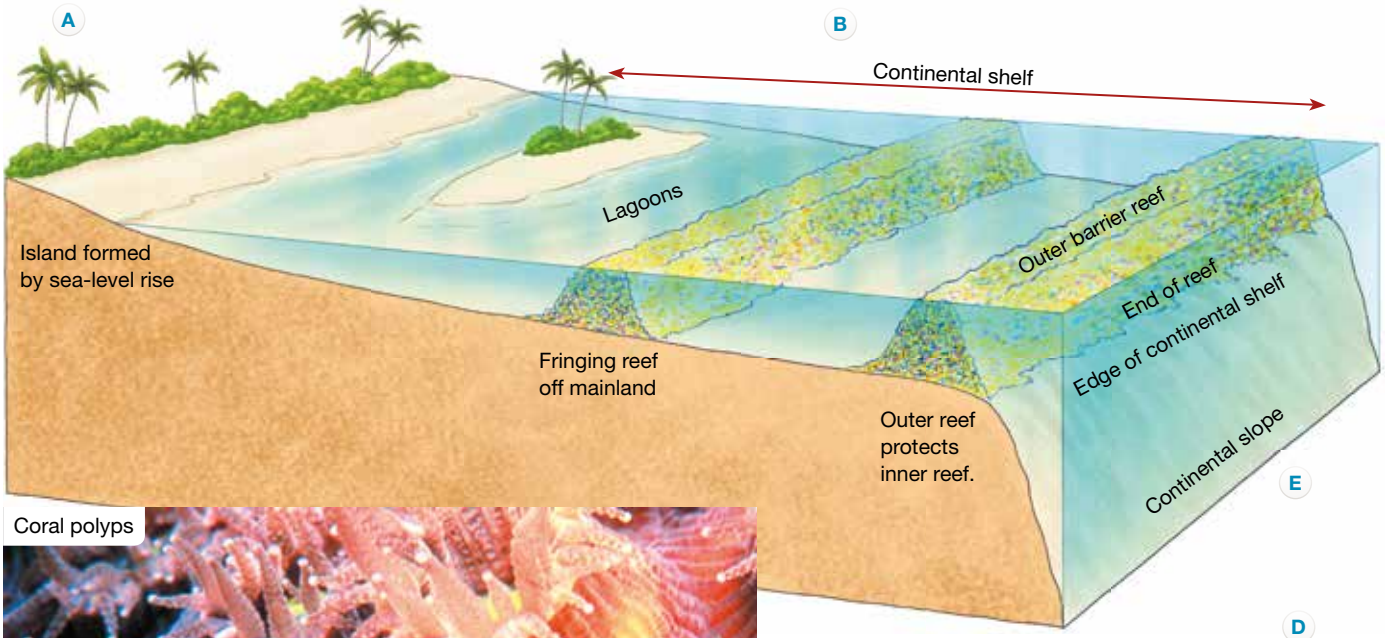
10.7 Why are coral reefs unique?

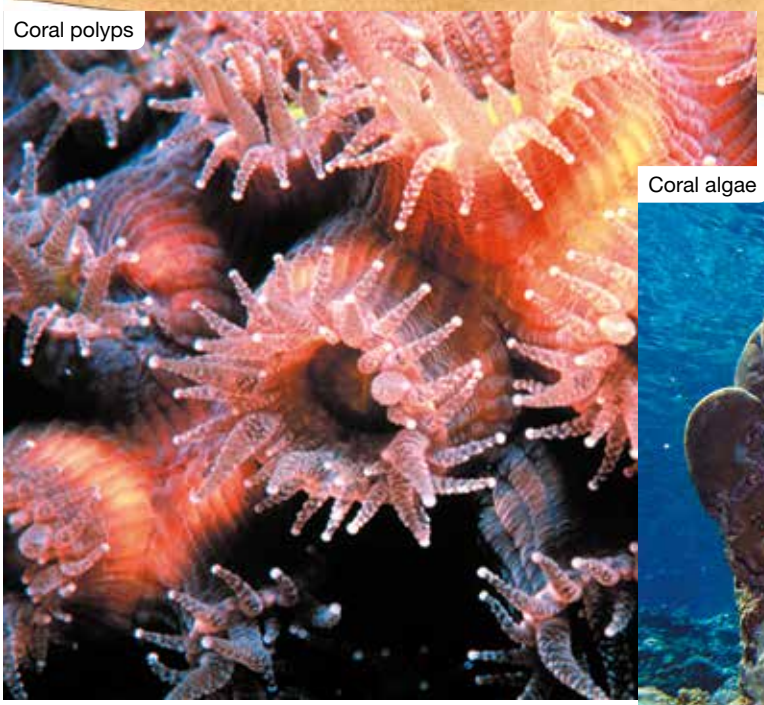
10.7.1 Formation of coral reefs

Coral reefs are found in spaces around tropical and subtropical shores. They require specific temperatures and sea conditions and an area free from sediment. Coral reefs are built by tiny animals called **coral polyps**. The upper layer is alive, growing on the remains of millions of dead coral. Coral reefs are one of the oldest ecosystems on Earth and also one of the most vulnerable to human activity.

Coral reefs are one of the most diverse biomes on Earth and are built by polyps that live in groups. A reef is a layer of living coral growing on the remains of millions of layers of dead coral. There are inner and outer reefs as well as coral cays (small islands of coral) and coral atolls.

FIGURE 1 Anatomy of a coral reef





A Continental island and fringing reef

B
- Corals form in warm shallow salt water where the temperature is between 18 °C and 26 °C.
- Water must be clear, with abundant sunlight and gentle wave action to provide oxygen and distribute nutrients.

C Coral polyps have soft, hollow bodies shaped like a sac with tentacles around the opening. They cover themselves in a limestone skeleton and divide and form new polyps.

D Producers such as algae give coral its colour and provide a food source for marine life such as fish. Coral reefs support at least one-third of all marine species. They are the marine equivalent of the tropical rainforest.

E Beyond the continental shelf, the water is too deep and cold for coral. Sunlight cannot penetrate to allow coral growth.

10.7.2 Benefits of coral reefs

Today, about 500 million people rely on reef systems, either for their livelihood, as a source of food, or as a means of protecting their homes along the coastline. (Coral reefs help break up wave action, so waves have less energy when they reach the shoreline, thus reducing coastal erosion.) It is estimated that coral reefs contribute between US$28.8 billion and US$375 billion to the global economy each year.

Reefs are important to both the fishing and tourism industries. Approximately 2 million people visit Australia's Great Barrier Reef Marine Park alone, generating more than AU$2 billion for the local economy. Nearly one-third of all tourists who visit Australia also visit the Great Barrier Reef.

Coral reefs have been found to contain compounds vital to the development of new medicines.

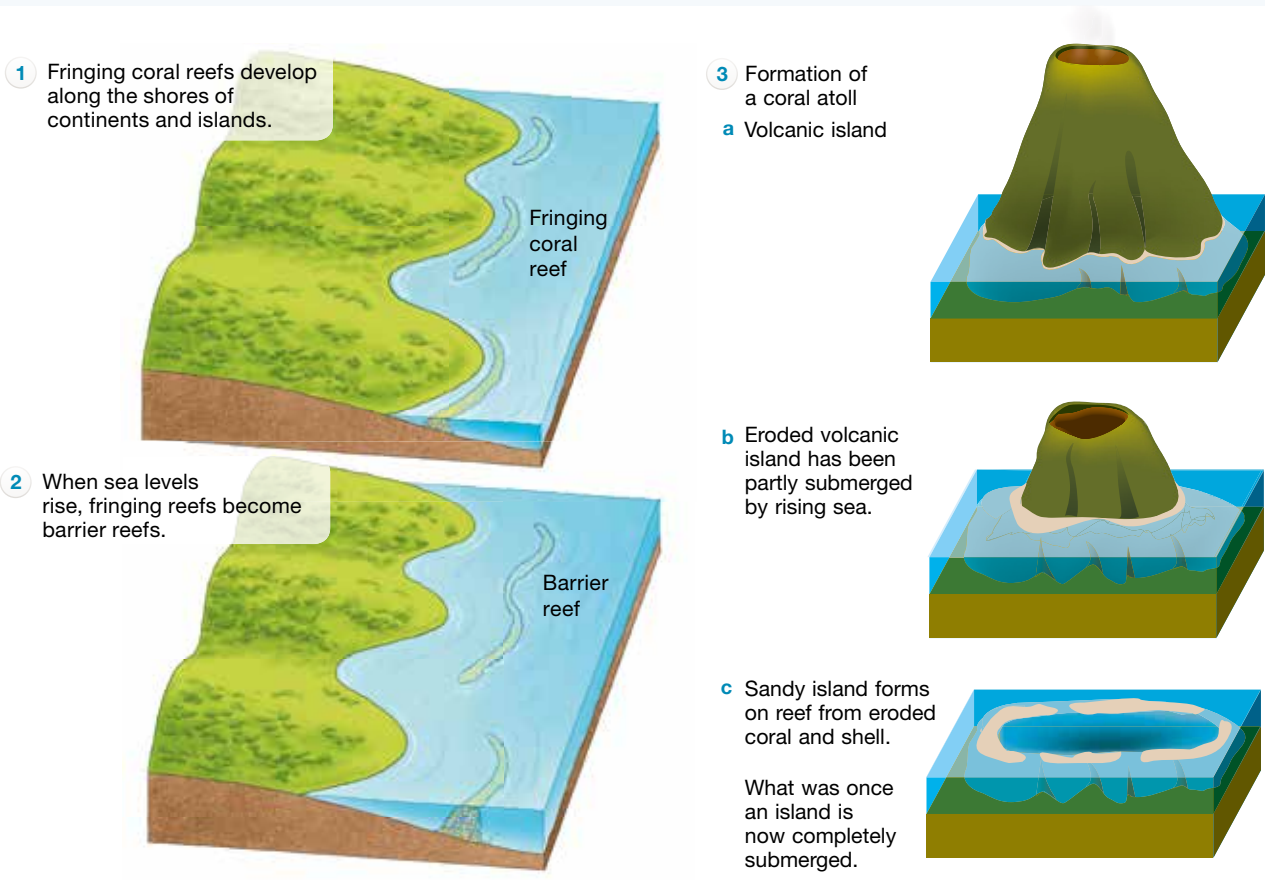
- Painkillers have been developed from the venom of cone shells.
- Some cancer treatments come from algae.
- Treatments for cardiovascular disease and HIV include compounds that were originally found in coral reefs.

10.7.3 Threats to coral reefs

Reefs also face a variety of threats.

- Urban development requires land clearing and wetland drainage, which increases erosion. Sediment washed into water prevents sunlight penetrating the water.
- Contamination by fossil fuels, chemical waste and agricultural fertilisers pollutes the sea.
- Tourism damages coral through boats dropping anchor or tourists directly removing coral or walking on it.
- Global warming increases water temperature, which bleaches the coral, turning it white and destroying the reef system.
- Predators, such as the crown of thorns starfish prey on coral polyps, which affects the whole ecosystem.

FIGURE 2 The formation of fringing reefs, barrier reefs and coral atolls



10.7 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Explain

1. Explain the difference between a fringing reef and a barrier reef.
2. With the aid of a diagram, explain how coral reefs are formed.
3. Why are coral reefs important ***places***?

Discover

4. Investigate two of the threats to coral reefs and prepare an annotated visual display that outlines:
   - the nature of the threat
   - the ***changes*** that will occur or have occurred as a result of this threat
   - the impact of these ***changes*** on the ***environment***, including references to the rate and ***scale*** of the ***changes***
   - a strategy for the long-term ***sustainable*** management of the reef ***environment***.

Predict

5. Coral reefs are highly susceptible to climate ***change***.
   (a) Explain what you understand by the term ***climate change***.
   (b) With the aid of a diagram, explain how you think the coral reef ***environment*** would ***change*** if sea temperatures were to rise by 2 °C.

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
The Great Barrier Reef

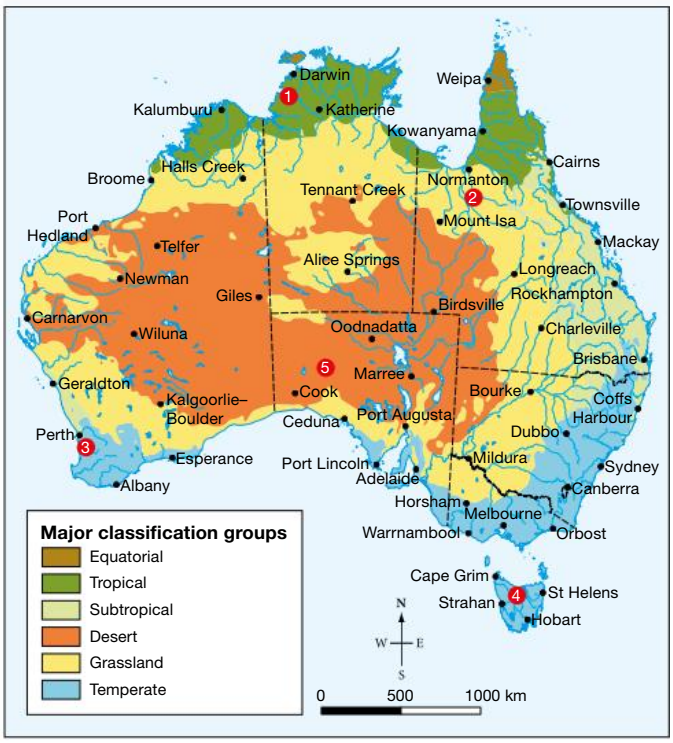
10.8 What are Australia's major biomes?

10.8.1 What factors shape Australian biomes?

Australia is a land of contrasts. Its mountain ranges and river systems are small by world standards. In the north are tropical rainforests and savanna grasslands. In the centre is a wide expanse of desert that is second in area only to the Sahara Desert in Africa. In the south, temperate forests and grasslands dominate. Australia also has vast wetlands and coastal ecosystems.

Before European colonisation, the Australian landscape was shaped largely by natural processes and Aboriginal burning practices. With European occupation came large-scale land clearing, irrigation of the land through water diversion from rivers, and the draining of wetlands. New plant and animal species were introduced to the landscape. However, despite the large-scale changesmade since European occupation, Australia's major biomes are still clearly evident.

FIGURE 1 Climate classification of Australia. Climate plays a major role in the development of biomes.



Source: Data copyright Commonwealth of Australia, 2013 Bureau of Meteorology

1 Wetlands and rivers

In northern Australia, wetlands have been inhabited by Indigenous Australian peoples since the beginning of the Dreaming (more than 50 000 years). These areas provided them with food and water, and they used wetland plants such as river reeds and lily leaves to make fishing traps. Today, wetlands are still important habitats for native and migratory birds. In many parts of Australia, they are under threat, because water is diverted from rivers to produce food crops and cotton.

FIGURE 2 A billabong in Kakadu National Park, part of an extensive wetland system that develops during the wet season

2 Savanna (grasslands)

Grasslands (or savanna) are generally flat, having either few trees and shrubs or very open woodland. For many native species, grasslands provide vital habitat and protection from predators. Many grasslands depend on a regular cycle of burning to germinate their seeds and to revive the land. Periodic burning also prevents trees from gaining dominance in the landscape. Before European occupation, Indigenous Australian peoples hunted the animals in the grasslands. However, since then, grasslands have been used extensively for grazing. These areas often mark the transition between desert and forest, and are a very fragile biome. Without careful management they can quickly change to desert. Less than one per cent of Australia's original native grasslands survive today.

FIGURE 3 Savanna biomes are typically dominated by grasses and scattered trees.

3 Seagrass meadows

Seagrasses are submerged flowering plants that form colonies off long, sandy ocean beaches, creating dense areas that resemble meadows. Of the 60 known species of seagrass, at least half are found in Australia's tropical and temperate waters. Western Australia alone is home to the largest seagrass meadow in the world. Seagrasses provide important habitats for a wide variety of marine creatures, including rock lobsters, dugongs and sea turtles. They also absorb nutrients from coastal run-off, slow water flow, help stabilise sediment, and keep water clear.

FIGURE 4 Seagrass meadows provide food, shelter and breeding grounds for marine life.

4 Old-growth forest

An old-growth forest is one in its oldest growth stage. It is multi-layered, and the trees are of mixed ages. Generally, there are few signs of human disturbance. These forests are biologically diverse, often home to rare or endangered species, and show signs of natural regeneration and decomposition. The trees within some old-growth forests have been felled for their timber and to create paper products. **Logging** can reduce **biodiversity**, affecting not only the forest itself but also the indigenous plant and animal species that rely on the old-growth habitat.

FIGURE 5 Different layers of vegetation can be seen in old-growth forests.

It is estimated that **clearfelling** of Tasmania's old-growth forests would release as much as 650 tonnes of carbon per hectare into the atmosphere. In Victoria, near Melbourne, many old-growth forests lie within protected water supply catchments and help maintain the integrity of the city's water supply.

FIGURE 6 Vegetation in desert biomes has specific adaptations to enable it to survive in the harsh climate.

5 Desert

Australian deserts are places of temperature extremes. During the day, temperatures sometimes exceed 50 °C, but at night this can drop to freezing. Australia's desert regions are often referred to as the outback but they are not all endless plains of sand. Some, such as the Simpson and Great Sandy Deserts, are dominated by sand. The Nullarbor Plain and Barkly Tablelands are mainly smooth and flat, while the Gibson Desert and Sturt Stony Desert contain low, rocky hills. In some areas, the landscape is dominated by spinifex and acacia shrubs.

10.8 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Explain

1. Explain why Australia has such a wide variety of biomes.
2. With the aid of a flow diagram, show how the Australian ***environment changed*** when European occupiers arrived.
3. Explain what you understand by the term ***biodiversity*** and why it is important.
4. What other types of biomes would you expect to find in Australia?

Discover

5. Select one of the climate zones shown in figure 1 and investigate the biomes found within it. Prepare a report on the importance of one of these biomes and how it has ***changed*** over time. What do you think should be done to protect it?
6. (a) Investigate one of the Australian biomes and examine how plants and animals have adapted to survive in it. Create a class collage depicting the way plants and animals have adapted to the Australian ***environment***.
   (b) Explore what this biome is like in another ***place*** on Earth. With the aid of a Venn diagram, compare the two.

Predict

7. (a) Describe the ***interconnection*** between biomes and climate.
   (b) Select one of the biomes discussed in this section. Predict what might happen if it were ***changed***; for example, if the wetlands were drained, or all the old-growth forests were cut down. Include a reference to the effect this would have on biodiversity. Produce a before-and-after snapshot of your chosen biome.

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

Australia's alpine biomes

10.9 Why are biomes different?

10.9.1 Why is climate the major influence on biomes?

Biomes are controlled by climate. In turn, climate is influenced by factors such as distance from the equator; altitude and distance from the sea; the direction of prevailing winds; and the location of mountain ranges. These play a key role in determining a region's climate and soil, which ultimately influence which plants and animals will inhabit it.

Temperature and rainfall patterns across the Earth determine which plant and animal species can survive in a particular biome. For instance, a polar bear could not survive in the hot climate of a desert or a tropical rainforest. Camels would not survive in the polar regions of the Earth, and fish cannot survive without water. The plants and animals of a region have adapted over time to the variations in the region's climate conditions.

10.9.2 What are the major influences on climate?

The major influences on climate are the geographical features of the Earth's surface, such as mountain ranges and **latitude**. Similarities have been found in the adaptations of plant and animal species in mountain regions and those found near the poles.

Landform

The major geographical influence on climate is the location of mountain ranges (see figure 1). Mountain ranges affect the amount of **precipitation** that reaches inland areas, because they pose a barrier to moisture-laden prevailing winds. **Rain shadows** form on the **leeward** side of mountains (opposite to the **windward** side). Deserts often form in rain shadows.

Altitude also plays a significant role in determining climate. Temperatures fall by 0.65 °C for every 100 metres increase in elevation. This can be illustrated by Mt Kilimanjaro (figure 2), which is located on the border of Tanzania and Kenya, in Africa, approximately 3° latitude from the equator. Towering 5895 metres above sea level, Mt Kilimanjaro is the highest mountain in Africa. Depending on the time of the day, the temperature at the base of the mountain ranges from 21 °C to 27 °C. At the summit, temperatures can plummet to –26 °C. As you move from base to summit, variations occur in the landscape as it transitions from rainforest to alpine desert to desert tundra.

Latitude

The sun's rays are more direct at the equator. With more energy focused on that region, it heats up more quickly. At the poles, the sun's rays are spread over a larger area and therefore cannot heat up as effectively. As a result, areas at the poles are much cooler than areas at the equator (see figure 3).

The tilt of the Earth on its axis also has a part to play. When a hemisphere tilts towards

FIGURE 1 The influence of mountains on climate. This illustration shows the pattern typical on the east coast of Australia, where there are warm ocean currents.

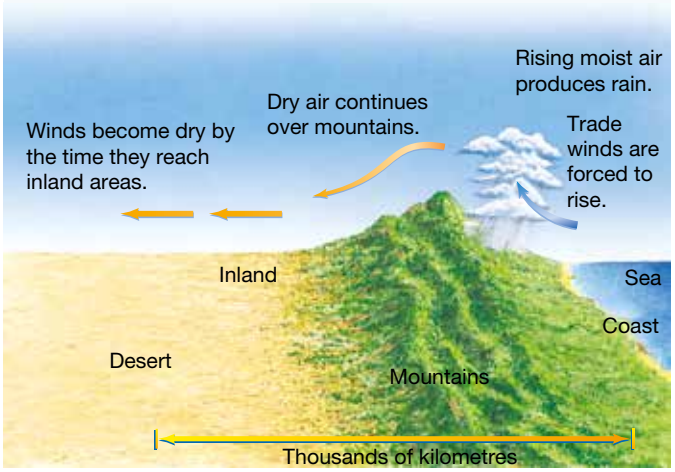
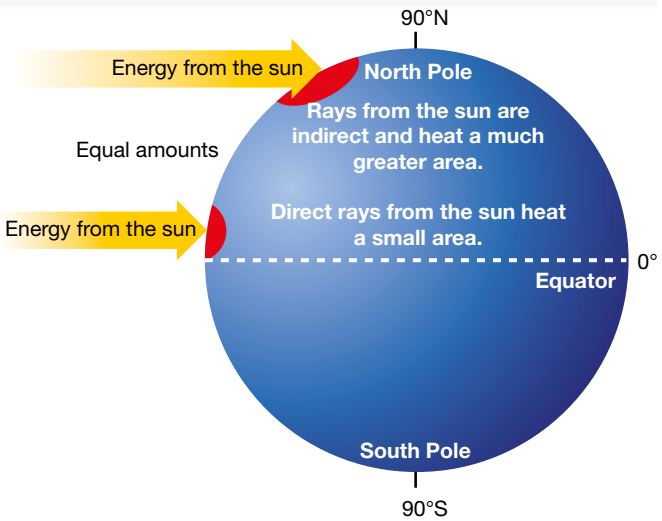


FIGURE 2 Mt Kilimanjaro is only three degrees south of the equator but it is 5895 metres high; its altitude is the reason it has snow on its summit.

FIGURE 3 The influence of latitude on climate. The rotation of the Earth around the sun and the tilt of the Earth on its axis also influence the seasons.



the sun, the sun's rays hit it more directly. This means that a larger space is in more intense sunlight for longer. The days are longer and warmer, and the hemisphere experiences summer. The reverse is true when a hemisphere tilts away from the sun in winter.

Ocean currents and air movement

There are other factors that influence climate and play a role in the development of biomes. Two of these are ocean currents and air movement. In addition, differences also occur when you move from the coast to inland areas.

When cold ocean currents flow close to a warm land mass, a desert is more likely to form. This is because cold ocean currents cool the air above, causing less evaporation and making the air drier. As this air moves over the warm land, it heats up, making it less likely to release any moisture it holds; thus, deserts form. For example, cold ocean currents flow off the coast of Western Australia, while the Pacific Ocean currents are warmer. As a result, Perth on average receives less rainfall than Sydney.

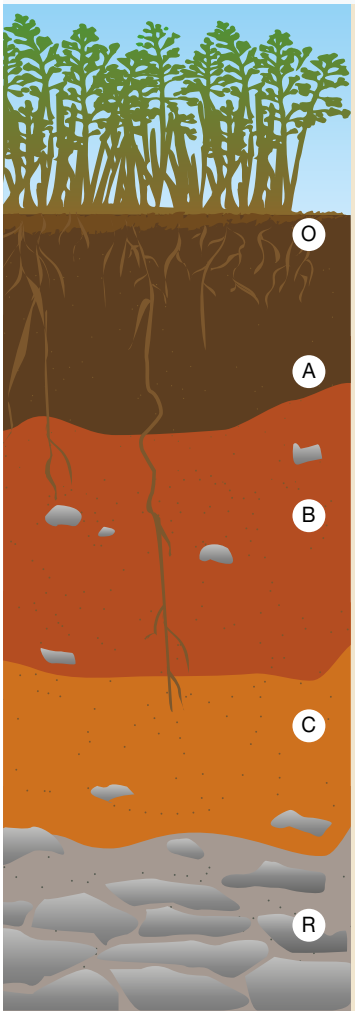
10.9.3 The role of soil in biomes

Soil is important in determining which plants and animals inhabit a particular biome. Soils not only vary around the world but also within regions. The characteristics of soil are determined by:

- temperature
- rainfall
- the rocks and minerals that make up the bedrock, which is the basis of soil development.

The amount of vegetation present also plays an important role in determining the quality of the soil. Figure 4 shows a typical soil profile. The different soil layers are referred to as horizons.

FIGURE 4 A typical soil profile has a number of distinct layers.



Horizon O (organic matter): A thin layer of decomposing matter, humus, and material that has not started to decompose, such as leaf litter

Horizon A (topsoil): The upper layer of soil, nearest the surface. It is rich in nutrients to support plant growth and usually dark in colour. Most plant roots and soil organisms are found in this horizon, which will also contain some minerals. In areas of high rainfall, such as tropical rainforests, minerals will be leached out of this layer. A constant supply of decomposing organic matter is needed to maintain soil fertility.

Horizon B (subsoil): Plant litter is not present in horizon B; as a result, little humus is present. Nutrients leached from horizon A accumulate in this layer, which will be lighter in colour and contain more minerals than the horizon above.

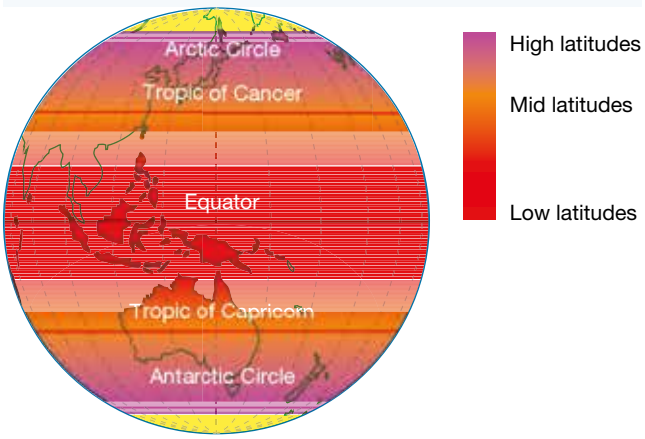
Horizon C (parent material): Weathered rock that has not broken down far enough to be soil. Nutrients leached from horizon A are also found in this layer. It will have a high mineral content; the type is determined by the underlying bedrock.

Horizon R (bedrock): Underlying layer of partly weathered rock

Why do soils differ?

Biomes located in the high latitudes (those farthest from the equator) have lower temperatures and less exposure to sunlight than biomes located in the low latitudes (those close to the equator). There are also variations in the amount of precipitation that biomes receive. This is determined partly by their location in relation to the equator (see figure 5).

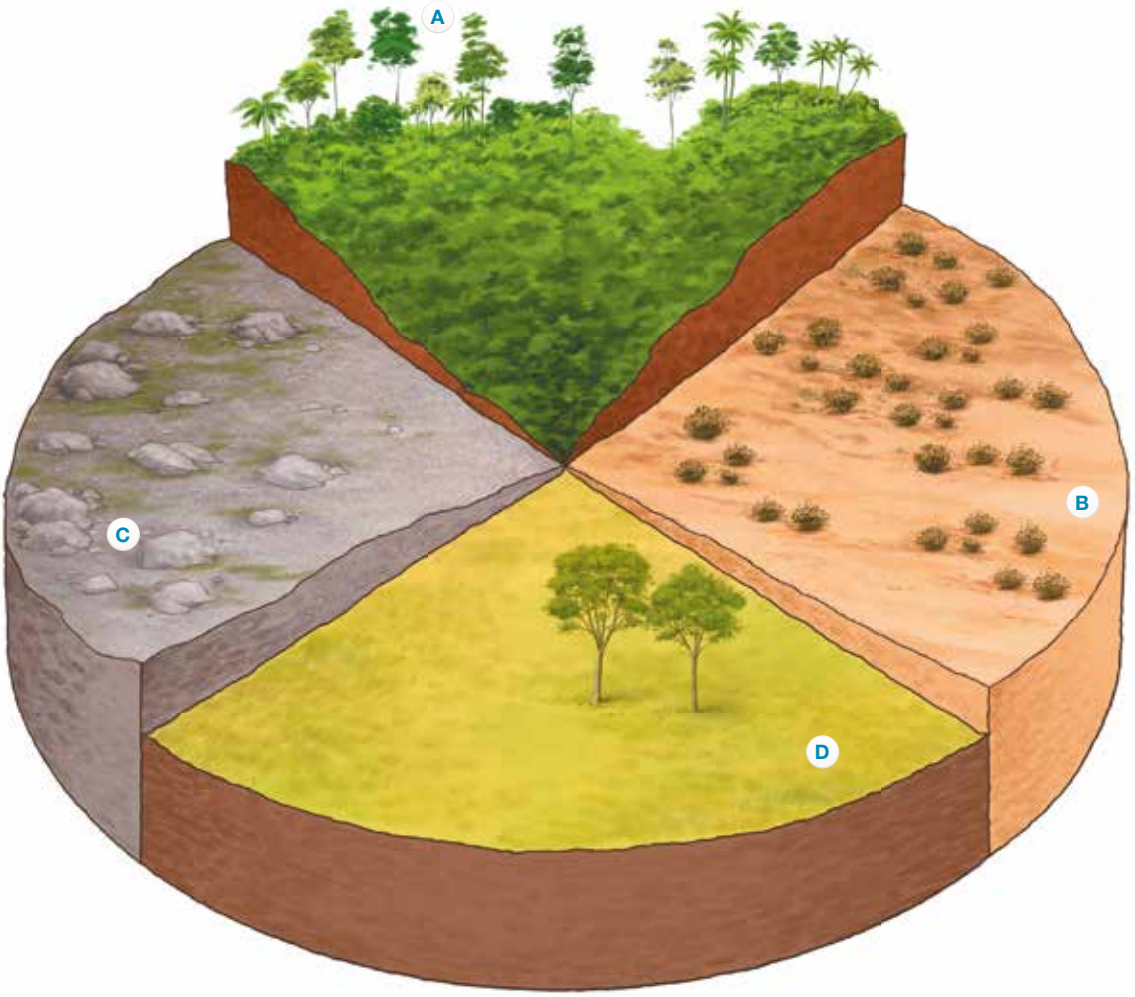
FIGURE 5 Just as there is a link between climate and latitude, there is also a link between soil, climate and latitude.



Temperature and precipitation patterns are important factors in determining the rate of soil development. However, soil moisture, its nutrient content and the length of the growing season also play key roles in soil development and, ultimately, the biodiversity of a biome.

Soil is more abundant in biomes that have both high temperatures and high moisture than in cold, dry regions. This is because erosion of bedrock is more rapid when moisture content is high, and organic material decomposes at a faster rate in high temperatures. The decomposition of organic matter provides the nutrients needed for plant growth, which in turn die and decompose in a continuous cycle. This is further demonstrated in figure 6.

FIGURE 6 Different biomes have different soil and vegetation characteristics.



A Tropical rainforest

- High temperatures cause weathering, or breakdown, of rocks and organic matter.
- High rainfall **leaches** nutrients from the soil.
- Soil is often reddish because of high iron levels.
- Organic matter is often a shallow layer on the surface. Nutrients are constantly recycled, allowing the rainforest to flourish.
- Soil fertility is rapidly lost if trees are removed, as the supply of organic material is no longer present.

B Desert

- Limited vegetation means a limited supply of organic material for soil development.
- High temperatures rapidly break down any organic material.
- Soils are pale in colour rather than dark.
- Lack of rainfall limits plant growth.
- Lack of vegetation makes surface soil unstable and easily blown away.
- Soil does not have time to develop and mature.

C Tundra

- Soil is shallow and poorly developed.
- Includes layers that are frozen for long periods.
- Subsoil may be permanently frozen.
- Is covered by ice and snow for most of the year.
- Growing season may be limited to a few weeks.
- Soil may contain large amounts of organic material but extreme cold means it breaks down very slowly.
- Trees are absent; mosses and stunted grasses dominate.

D Temperate

- Generally brown in colour, soils have distinctive horizons and are generally about one metre deep.
- Ideal soils for agriculture; they are not subjected to the extremes of climate found in high and low latitudes.
- Moderate climate; temperature and rainfall are sufficient for plant growth.
- Dominated by temperate grasslands and deciduous forests.

What else is in the soil?

Soil not only supports the plants and animals that we see on the surface of the land; the soil itself is also home to a variety of life forms such as bacteria, fungi, earthworms and algae.

While most soil organisms are too small to be seen, there are others that are visible. For instance, more than 400 000 earthworms can be found on a hectare of land. Regardless of size, all soil organisms play a vital role in maintaining soil quality and fertility. For example, earthworms:

- compost waste and fertilise the soil
- improve drainage and aeration
- bring subsoil to the surface and mix it with topsoil
- secrete nitrogen and chemicals that help bind the soil.

FIGURE 7 There are more microbes in a teaspoon of soil than there are people on Earth.

10.9 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What are the major influences on the development of biomes?

Explain

2. Explain the difference between the windward and leeward side of a mountain range.
3. Explain why soils vary across biomes.

Predict

4. (a) Use your atlas to locate Rwanda in central Africa. What type of biome would you expect to find in Rwanda? Give reasons for your answer.
   (b) What do you think the soil would be like in Rwanda?
   (c) Use the internet to test your theory.
5. Would you expect to find soil variations within biomes? Give reasons for your answer.
6. Predict the ***changes*** that might occur if earthworms or micro-organisms within the soil were no longer present.

Think

7. (a) What type of climate and biomes would you expect to find at the equator? Why?
   (b) Describe the climate and landscape on Mount Kilimanjaro.
   (c) What are some of the factors that create variations in biomes?

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Try out this interactivity: Why are biomes different? (int-3319)

10.10 How do we protect biomes?

Access this subtopic at **www.jacplus.com.au**

10.11 Review

10.11.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

10.11.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

10.2 SkillBuilder: Describing spatial relationships in thematic maps

10.2.1 Tell me

What are spatial relationships in thematic maps?

A spatial relationship is the interconnection between two or more pieces of information in a thematic map, and the degree to which they influence each other's distribution in space.

Why are spatial relationships in thematic maps useful?

Spatial relationships between features or information in thematic maps are the links between the distribution of those features. Finding these links can help us to see the world in an organised manner. They are useful in helping you, as a student, to understand how one thing affects another.

They are also used by:

- councils, when determining planning permits
- transport authorities, when determining new freeways, rail links and tunnels
- meteorologists, when predicting the weekly weather.

Model

The maps in figures 1a and 1b show that, across Asia, there is a strong interconnection between climate and biomes. In areas of high rainfall throughout the tropics, rainforest biomes dominate. In western India's hot desert and in the cold mountains, desert biomes exist. In central Asia, the cold deserts and semi-deserts are so dry that desert and grassland biomes dominate the environment. There is no interconnection between climate and the wetland biomes of north-east China and Bangladesh's delta region. Overall though, there is a strong spatial relationship in Asia between biomes and climate.

A description of a spatial relationship in thematic maps:

- clearly identifies which features on thematic maps are linked or interconnected
- points out obvious anomalies, where no linkages or interconnections can be observed
- describes the extent of interconnections (for example, as strong or weak).

10.2.2 Show me

How to find and describe a spatial relationship in thematic maps

You will need:

- two thematic maps that can be compared
- an atlas.

Procedure:

STEP 1

Use an atlas to familiarise yourself with the mapped area. Place names are important to use in your writing. In figure 1, identify places such as India and China.

STEP 2

Identify areas on both maps that have a distinct interconnection by looking for similar patterns in similar parts of the maps. In figure 1, biomes are clearly linked to climate, with temperatures, rainfall and other climatic factors having an important role in determining what will grow in an area. Write a few sentences outlining where these strong interconnections occur. For example: 'In central Asia, the cold deserts and semi-deserts are so dry that desert and grasslands biomes dominate the environment'.

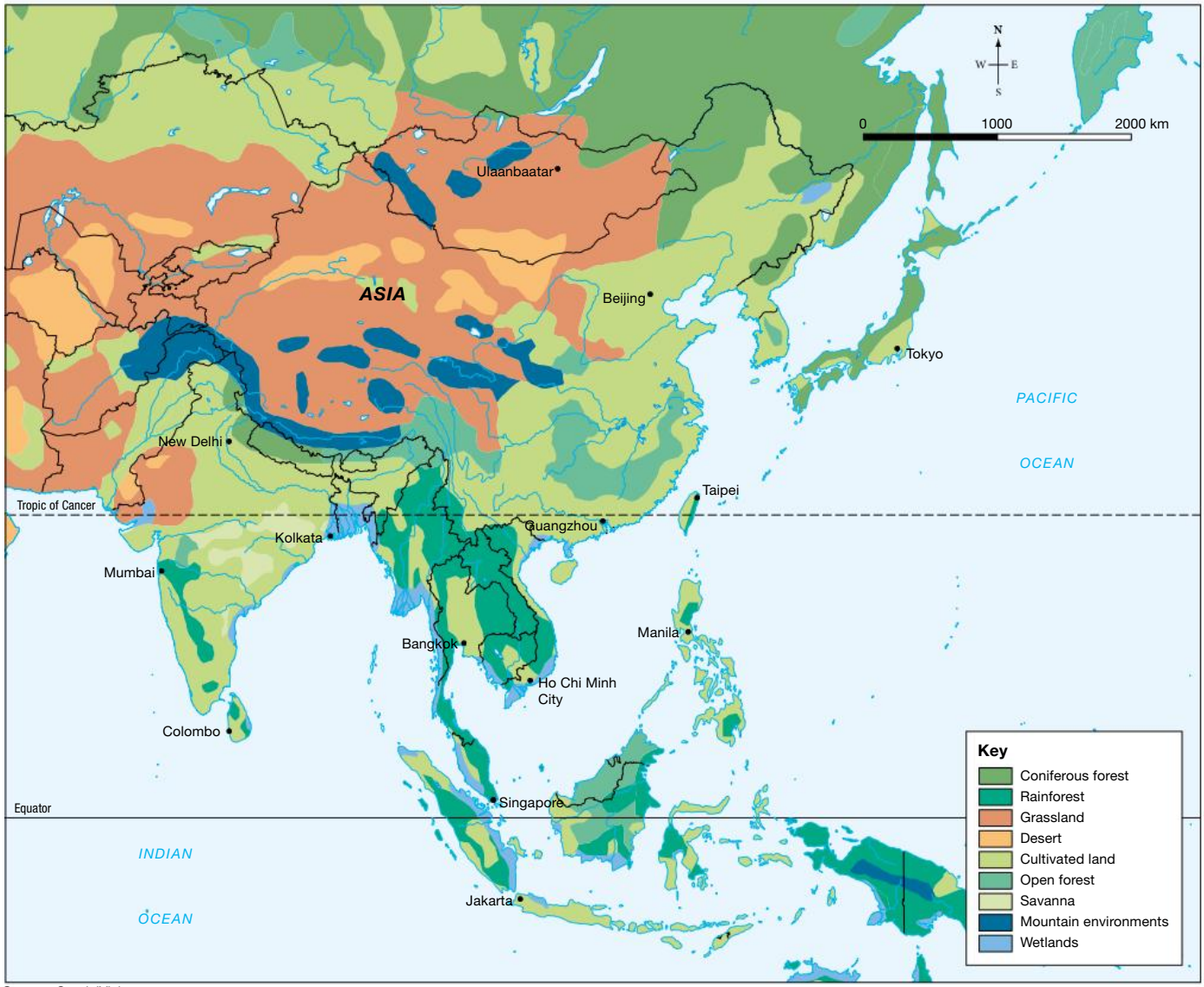
STEP 3

Search the maps carefully and look for any areas where there seem to be no connections between biomes and climate. If necessary, write a few sentences outlining where there are no interconnections. For example: 'The wetland biomes of north-east China and the Bangladesh delta are not linked to climate'.

STEP 4

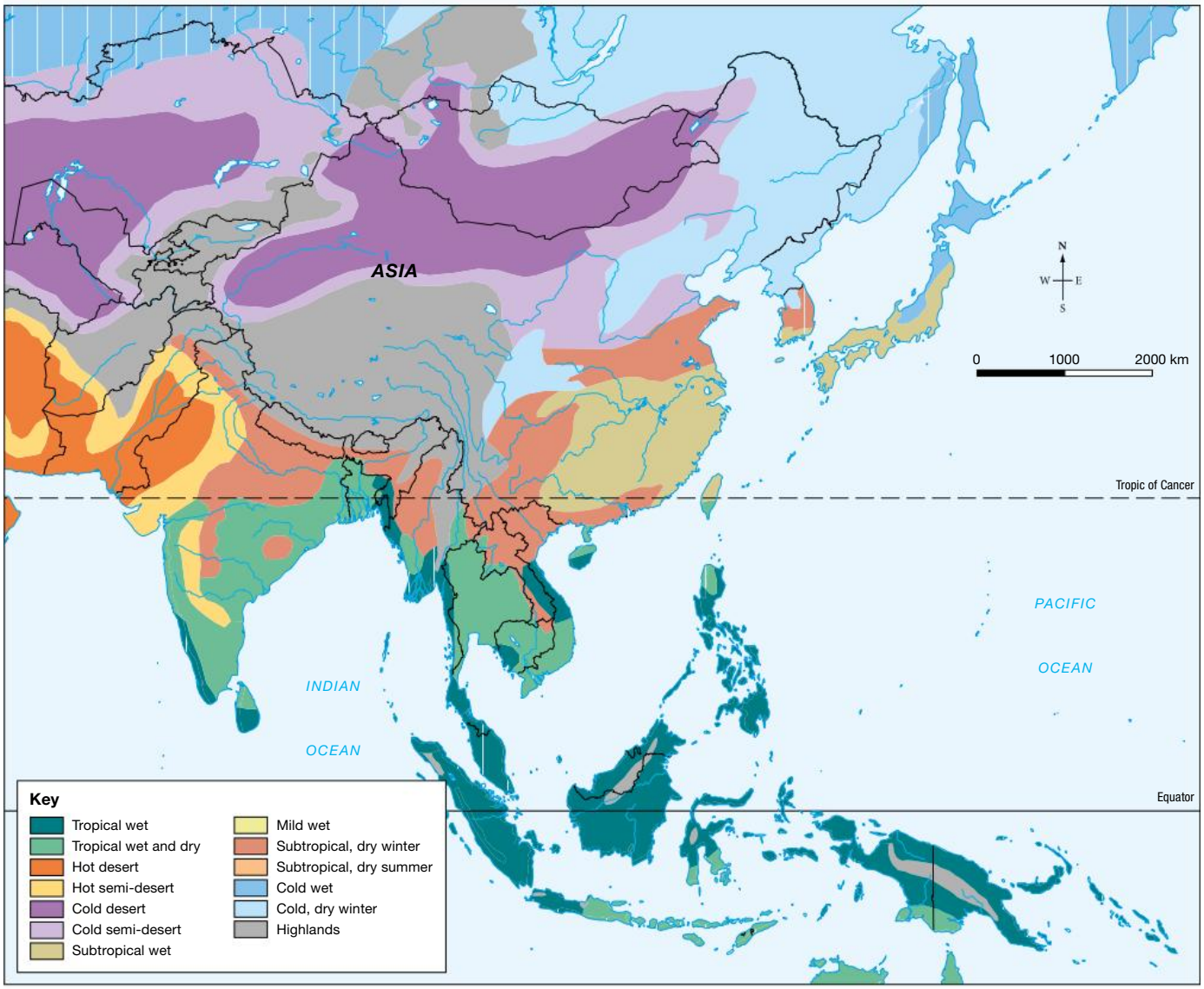
Conclude your paragraph with a final statement about spatial relationships. For example: 'In Asia there is a strong spatial relationship between biomes and climate'.

FIGURE 1a Thematic map of Asia showing biomes



Source: SpatialVision

FIGURE 1b Thematic map of Asia showing climatic zones



Source: Spatial Vision using Natural Earth

10.2.3 Let me do it

Developing my skills

Use the thematic maps for Australia's biomes and climate in your textbook, figure 1 in section 10.3.1 and figure 1 in section 10.8.1. In a paragraph, describe the spatial relationship between biomes and climate in Australia.

Questions

1. Is there a strong relationship between Australia's arid climates and desert biomes? Explain your answer.
2. Is there a ***spatial*** relationship between Australia's tropical rainforests and climate?
3. Is the ***spatial*** relationship between climate and the savanna (grassland) biome strong or weak? Explain your answer.
4. Name the main biome found in Tasmania. Why might there be only one biome on the map?
5. Find one biome that does not occur in Australia. Suggest reasons why this is the case.

Checklist

I have:

- clearly identified which features on thematic maps are linked or interconnected
- pointed out obvious anomalies, where no linkages or interconnections can be observed
- described the extent of interconnections (for example, as strong or weak).

Skills questions

1. Finding the ***spatial*** relationships between thematic maps shows:
   (a) the ***interconnection*** between biomes and climate
   (b) the ***interconnection*** between features
   (c) the importance of a feature
   (d) the distribution of a feature.
2. A ***spatial*** relationship on a thematic map is about:
   (a) slope
   (b) rainfall
   (c) patterns
   (d) colours.
3. Why is it necessary to have two thematic maps when finding ***interconnections*** between features?
4. Why do we look for areas where no ***spatial*** relationship exists — that is, where there is an anomaly?

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Watch this eLesson: Describing spatial relationships in thematic maps (int-1726)

Try out this interactivity: Describing spatial relationships in thematic maps (int-3344)

10.6 SkillBuilder: Constructing and describing a transect on a topographic map

10.6.1 Tell me

What is a transect?

A transect is a cross-section with additional detail which summarises information about the environment. In addition to the shape of the land, a transect shows what is on the ground, including landforms, vegetation, soil types, settlements and infrastructure.

Why are transects useful?

Transects are useful for showing:

- one or more features that occur along a line between two places
- interconnections between features
- change that occurs along the line.

You can use transects to identify changes in landforms, vegetation and land use. They can also help to show the way certain features, such as landforms, influence other features, such as vegetation. They help us to understand interconnections in the environment.

Transects are used by:

- land developers wanting to explore the key features of an environment
- agronomists seeking to record plant species between two points
- journalists wanting to show differences within a country.

Model

The transect reveals that the main vegetation in the southern areas of the Walls of Jerusalem National Park (where the undulating land reaches 1200 metres) is light alpine scrub. This area contains a lake before the scrub changes to dense timber as the land increases in height. The dense timber gives way to native pencil pines as the land gains further height from 1250 metres to 1400 metres. Where the land rises to 1450 metres, the area is described as rugged mountains. All of this area is designated national parkland.

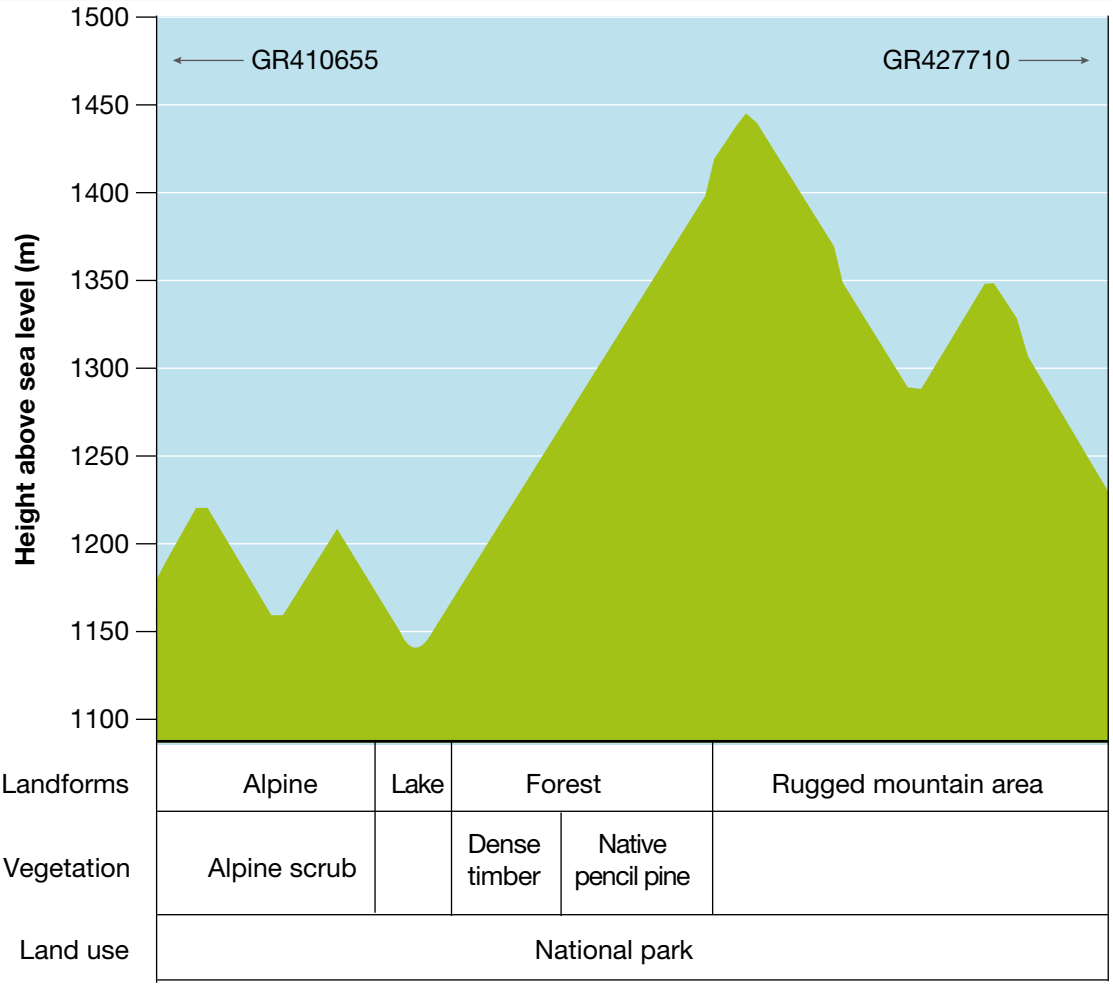
A good transect:

- is drawn in pencil
- has ruled axes
- has labelled axes
- uses small dots
- is drawn with a smooth curve
- identifies key aspects such as slope, landform, vegetation and land use
- includes a title.

A good description of a transect:

- describes the key aspects of slope, landform, vegetation and land use
- identifies interconnections between key features
- notes any anomalies.

FIGURE 1 A transect of the Walls of Jerusalem National Park, Tasmania



10.6.2 Show me

How to construct and interpret a transect

You will need:

- a topographic map of the region being considered
- a piece of paper with a straight edge for marking the contours
- another sheet of paper, or graph paper, to draw the transect on
- a light grey pencil
- a ruler.

Procedure:

To complete a transect, you must have a topographic map of the place you wish to examine. You then need to choose the area you would like to look at and the two points that will give you the best line through that area. Remember that you will be examining the land's shape and features. In figure 1, the two selected points are grid references 410655 and 427710.

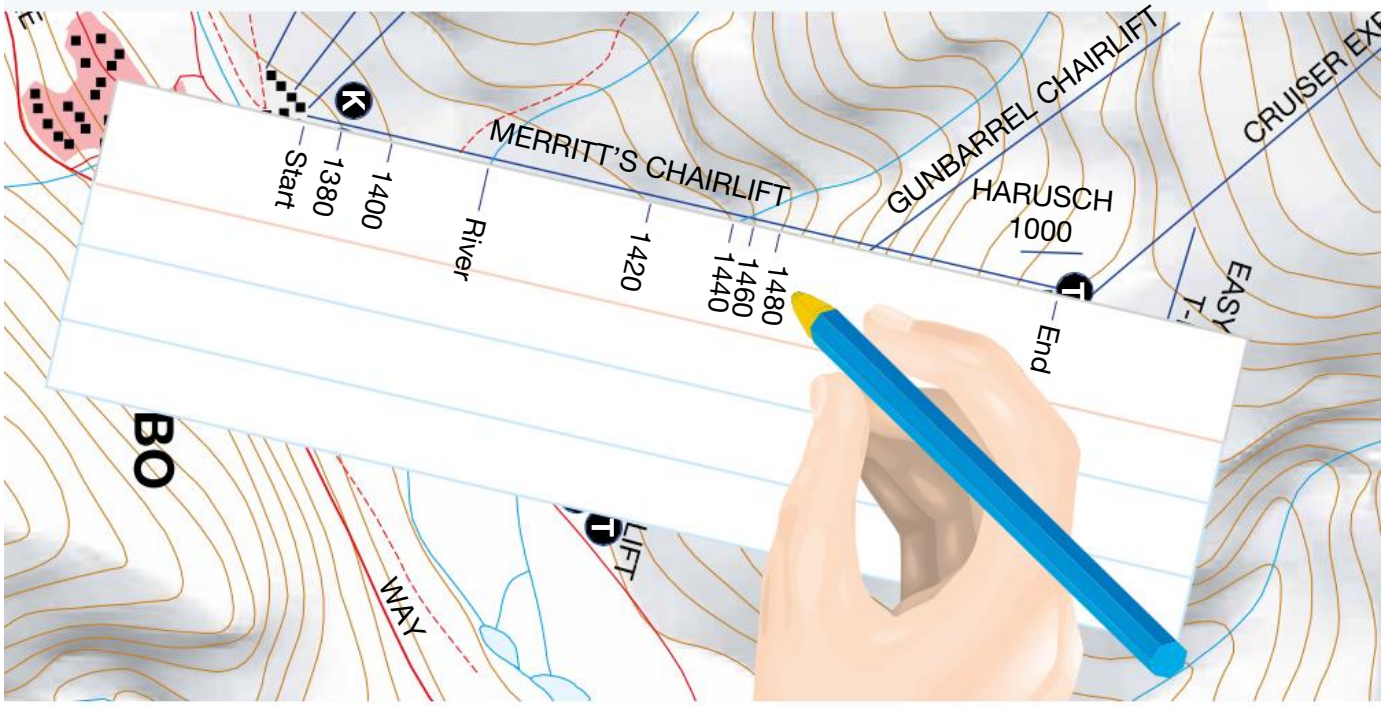
STEP 1

Place the straight edge of a piece of paper between the two points. Mark the two extremities of your transect on the edge. Label these 'Start' and 'Finish' or give them place names or grid references from the map.

STEP 2

Create a mark where each contour line touches the edge of the paper. Beside each mark, write the height of the contour line. (It's a good idea to check the contour interval on the topographic map. This will tell you how many metres the lines increase or decrease by.) It may be necessary to lift the page edge or follow the contour line to find a number. Hold your page firmly and lift the edges to prevent your page moving off the line of the transect. When you have completed all the contour markings, you can lift the page away from the map.

FIGURE 2 Marking the contour lines



STEP 3

On the other sheet of paper, use your ruler to draw a vertical and a horizontal axis. The horizontal base line should be as long as your cross-section from start to finish. The vertical scale needs to give a realistic impression of the slopes and landforms. If you exaggerate the scale too much, you distort the shape of the land and a hilly area can appear mountainous. Although some vertical exaggeration is acceptable, try to choose a vertical scale carefully. For this exercise, use one centimetre to represent 100 metres.

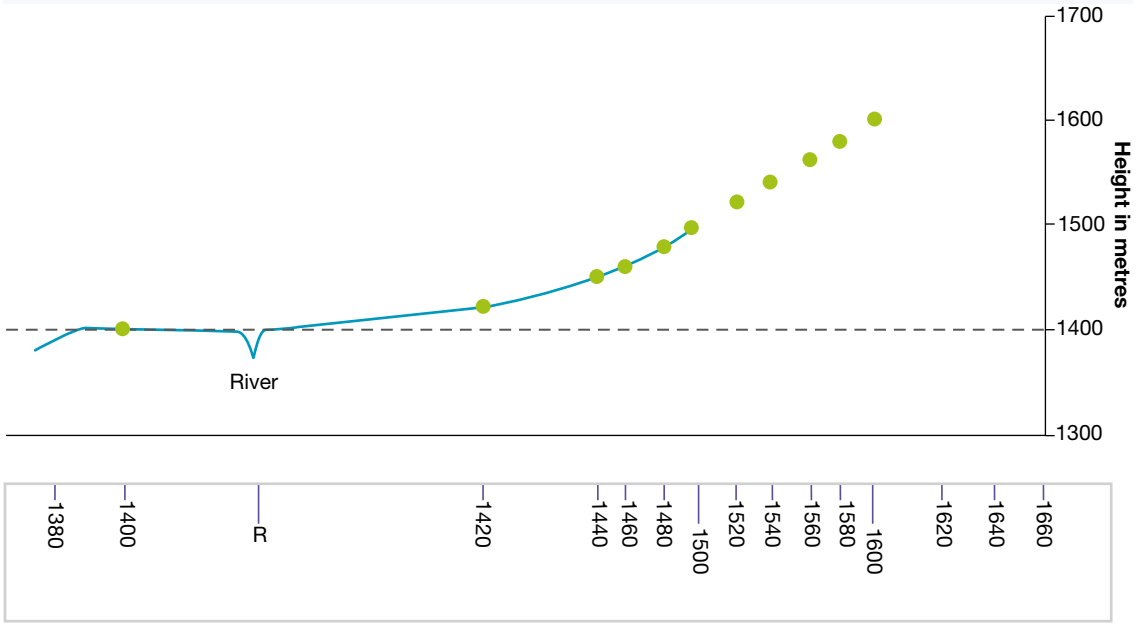
STEP 4

Place the marked edge of the paper along the horizontal axis. At each contour marking, find the matching height on the vertical scale. Put a small dot directly across from that height and above the contour marked on the edge of the paper.

STEP 5

Join the dots with a smooth line to show the slope of the land, as shown in figure 3. Notice that a notch has been used to show a river on the cross-section, and that the river has been labelled. Think about the depth of the river, and keep the notch shallow. Other features can be marked in a similar way when preparing the cross-section.

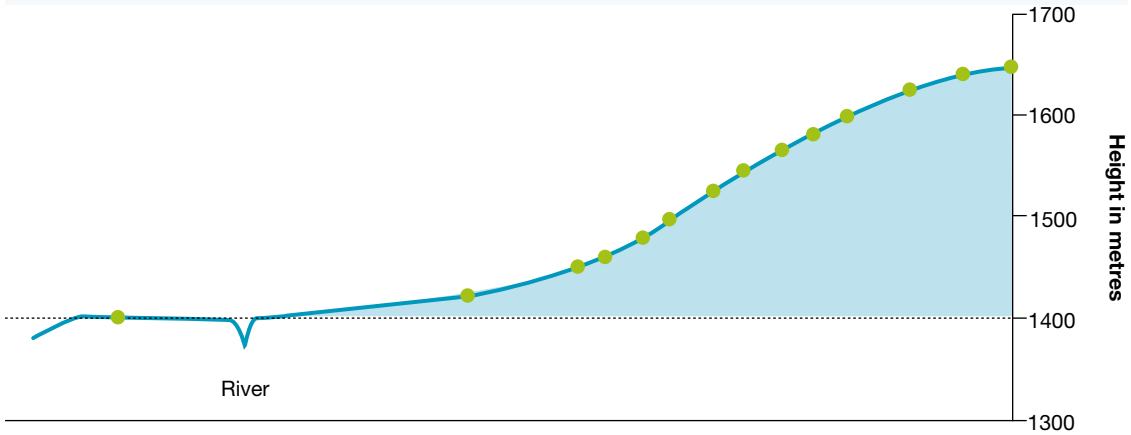
FIGURE 3 Drawing up the shape of the transect



STEP 6

Complete the cross-section with the geographical conventions of a title and labelled axes. Shade the area below the line of your cross-section.

FIGURE 4 The shape of the land is completed.



STEP 7

Beneath your completed cross-section, draw a table, like that in figure 5, to indicate when a feature changes on the transect. Label each category to the left of the vertical axis, as in figure 5. Common categories used here include landforms, vegetation, land use, transport, settlement and sometimes soils, depending on what you would like to show on your transect.

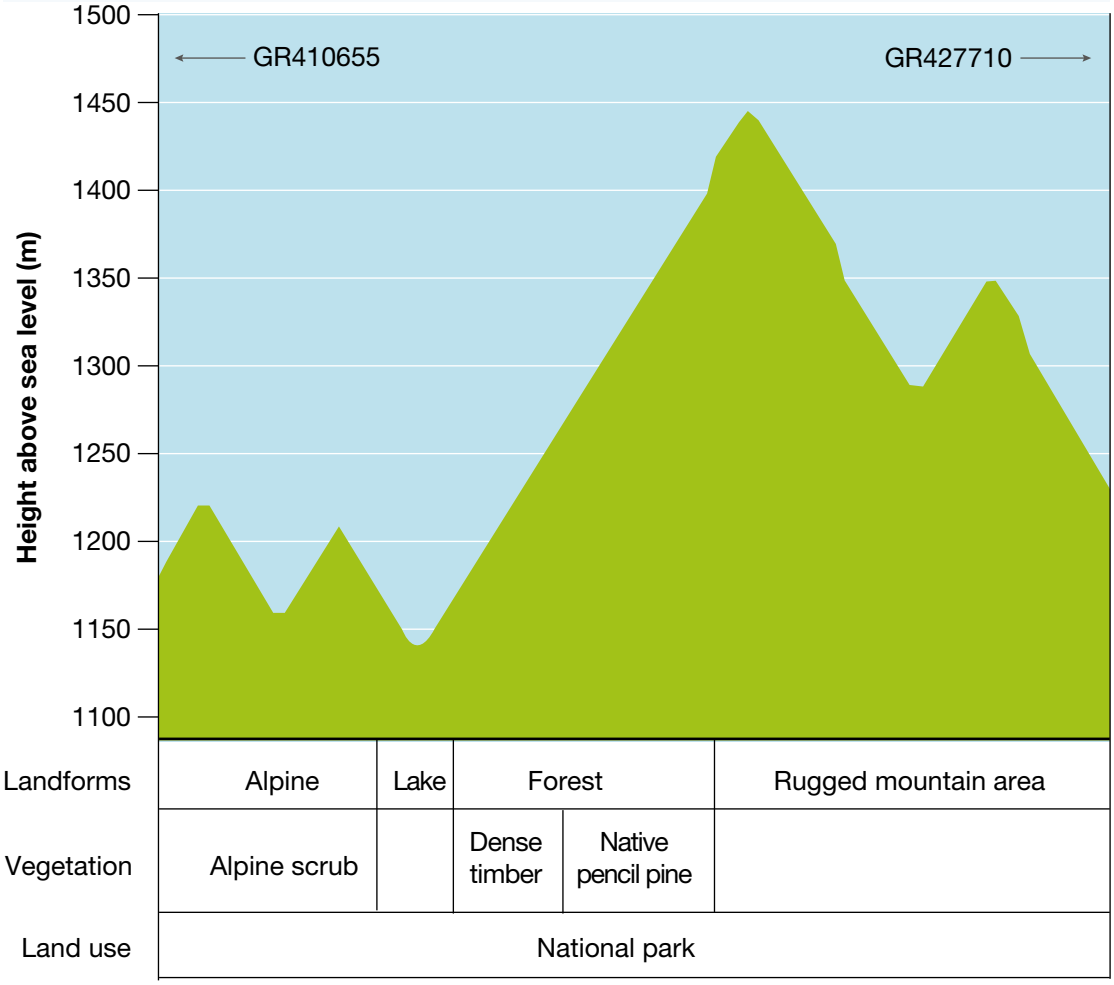
STEP 8

Complete your transect by referring back to the map to determine where a feature occurs, such as native pencil pine in figure 5. Place your paper edge back onto the topographic map to be accurate. Figure 5 shows three categories completed: landforms, vegetation and land use.

STEP 9

Check that the geographical conventions are complete on your transect: include a title and label the axes as 'Height above sea level' and 'Distance'.

FIGURE 5 A transect of the Walls of Jerusalem National Park, Tasmania



STEP 10

Compare your transect with that of a classmate. Are the transects identical shapes? If not, it will be because you have chosen different scales to draw the vertical axis. Land formations can become distorted or misshapen by the choice of scale, and this is referred to as vertical exaggeration. To calculate the vertical exaggeration (VE) of your transect, find the scale bar on your map. In figure 5, the original map had a scale of 1 centimetre to 250 metres, and the transect in figure 5 had a scale of 1 centimetre to approximately 75 metres. The vertical exaggeration of 3.3 is found by dividing the horizontal scale by the vertical scale:

VE = 250/75
= 3.3

This VE is reflected in the shape of the transect, which has sharp, high peaks that are not truly representative of the real world. Ideally, vertical exaggeration should not distort the natural shape too much.

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Watch this eLesson: Constructing and describing a transect on a topographic map (eles-1727)

Try out this interactivity: Constructing and describing a transect on a topographic map (int-3345)

10.6.3 Let me do it

Developing my skills

Using the topographic map for Dalywoi Bay, figure 4 in subtopic 10.5 of your textbook (doc-11565 in the Resources tab), complete a transect from grid reference 017310 to grid reference 080295. Use the categories of landforms, vegetation and land use. Also calculate the vertical exaggeration of your transect.

Questions

1. List the biomes found on your transect.
2. Using the scale, mark the horizontal distance on your transect where the land is affected by water.
3. How is the vegetation interconnected with the shape of the land?
4. How does the landform affect human activities?
5. If you were to build a house on the land shown in your transect, where would you choose to build, and why?

Checklist

In drawing a transect, I have:

- drawn in pencil
- ruled the axes
- labelled the axes
- used small dots
- drawn with a smooth curve
- identified key aspects such as slope, landform, vegetation and land use
- included a title.

In describing a transect, I have:

- described the key aspects of slope, landforms, vegetation and land use
- identified interconnections between the key features
- noted any anomalies.

Skills questions

1. Transects are used to show:
   (a) the height of the land at a ***place***
   (b) the shape of the land
   (c) the contours of an area
   (d) the land's shape and features.
2. A transect is most likely to include information about:
   (a) wind
   (b) history
   (c) vegetation
   (d) rainfall.
3. What is the purpose of including information about landforms, vegetation, land use, transport and settlement?
4. Why is it important to understand vertical exaggeration?

10.10 How do we protect biomes?

10.10.1 Can we recreate what has been lost?

It is important to consider the long-term impact of our actions and ensure that they do not have a negative impact on the environment. In the past, human activity has polluted and degraded the land. However, we are now attempting to learn from our mistakes and repair any damage done.

What is Biosphere 2?

Biosphere 2 (see figures 1 and 2) is a research facility in the Arizona Desert. It has been designed to investigate Earth's life systems. Covering an area of 1.5 hectares and standing almost 28 metres at its highest point, Biosphere 2 is the world's largest ecological laboratory. Its mission is to learn more about how the environment connects with us and how we in turn connect with the environment.

Within the confines of Biosphere 2, five natural environments have been recreated: rainforest, desert, savanna, wetland and ocean (including a coral reef). In addition, agricultural and human living spaces have also been created. More than 3000 living organisms are found across the complex. All systems, including oxygen levels, water supply and climate are managed by complex computer systems within the facility.

While early experiments focused on our ability to artificially recreate the Earth's biosphere and sustain life within it, the emphasis has now moved to investigating the impact of human activity. Scientists are looking at how increased burning of fossil fuels and the destruction of habitats will affect the natural systems that sustain all life on the planet.

The project has helped demonstrate the complexity of the natural processes that occur on Earth and within particular biomes. Constant work, effort and thought is needed to maintain the natural order.

FIGURE 1 Ocean recreated within Biosphere 2

FIGURE 2 Aerial view of Biosphere 2

10.10.2 What is Landcare?

Landcare was born in 1986, when a group of farmers near St Arnaud in central Victoria banded together to find sustainable solutions to their common problem: **land degradation**. The idea has since been adopted by the Australian Government and has spread nationwide. Landcare is about communities working together on environmental projects such as:

- cleaning up polluted creeks and waterways
- planting trees
- restoring beach dune systems
- finding workable solutions to problems such as **salinity** in farming communities
- addressing the growing problem of waste disposal and plastic bags.

FIGURE 3 Clean-up Australia

10.10.3 What lessons can we learn from Indigenous communities?

Long before the arrival of European colonisers, Indigenous Australian peoples practised their own form of agriculture. Rather than being simple hunter-gatherers they used knowledge amassed over thousands of years to manage the native plants and animals they relied on to sustain them. Fire formed the basis of their land management system. A complex system of burning ensured that food supplies were both sustainable and predictable.

Careful planning enabled them to change the landscape to meet their needs. First they created a grassland devoid of trees, the food source for grazing animals. Adjacent to this they cleared out the undergrowth and thinned the trees to create an open forest area that would provide shelter for these same grazing animals. Then they burned the grassland to create the new growth that would encourage the grazers from the shelter of the trees and make hunting easier.

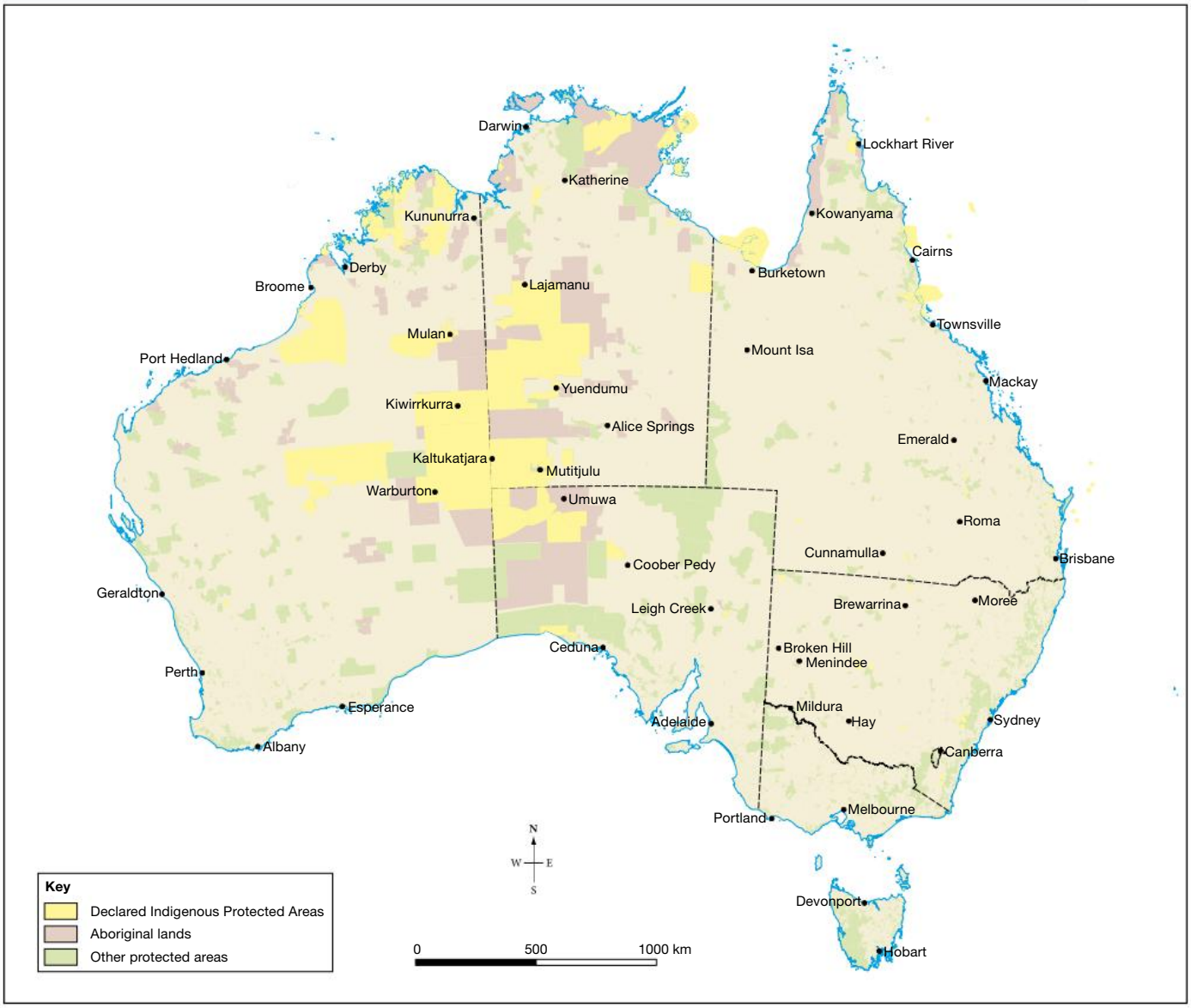
Burning was usually carried out at night time or in the early morning to produce a 'cool fire'. The evening dew helps control the heat produced and makes the fire easier to control. Such fires were also self-extinguishing; once the grass was burned, the fire simply went out.

This was preferable to a 'hot fire' fanned by the flammable oils sweated by plants in the heat of the day, which could easily get out of control.

Indigenous Protected Areas (IPAs)

Indigenous Protected Areas are wholly managed using traditional practices. Generations of knowledge is passed down, ensuring it is preserved for future generations. Approximately 36 per cent of Australia's protected areas are under the control of local Indigenous communities. The first was established at Nantawarrina, about 555 kilometres north of Adelaide, in 1998. The largest is Southern Tanami in the Northern Territory, at 10.16 million hectares, and the smallest is Pulu Islet in the Torres Strait, at about 15 hectares.

FIGURE 4 Map of Indigenous Protected Areas, 2013



Source: © Commonwealth of Australia 2013, Department of Environment

10.10 Activities

Discover

1. Use the internet to learn more about Biosphere 2 and a similar facility, the Eden Project, in England. Display your findings as an annotated visual display.
2. Investigate what projects have been carried out in your local area to restore the natural ***environment***.

Think

3. Do you think projects such as Biosphere 2 serve a useful purpose? Give reasons for your answer.
4. The media is constantly filled with information about the state of the ***environment***. Write a letter to the editor in response to the following statement:
   'Biosphere 2 has done little to increase or improve our understanding of the ***environment***, which continues to deteriorate. Our energies should be directed towards the ***sustainable*** use of the resources we have, rather than being frittered away on such experiments, which are nothing more than expensive toys'.
5. How did Indigenous land management differ from that of European colonisers?
6. Why do you think Indigenous Protected Areas have been established?
7. Each year bushfires cause an enormous amount of damage to biomes.
   (a) Why were uncontrolled fires relatively unknown prior to the arrival of European colonisers?
   (b) Do you think more widespread use of Indigenous land management methods could prevent such widespread destruction? Justify your point of view.
   (c) Investigate what is meant by the terms 'cool fire' and 'hot fire'.
      (i) Use diagrams to demonstrate your understanding of these terms.
      (ii) Explain why a 'cool burn' is used as a form of land management.

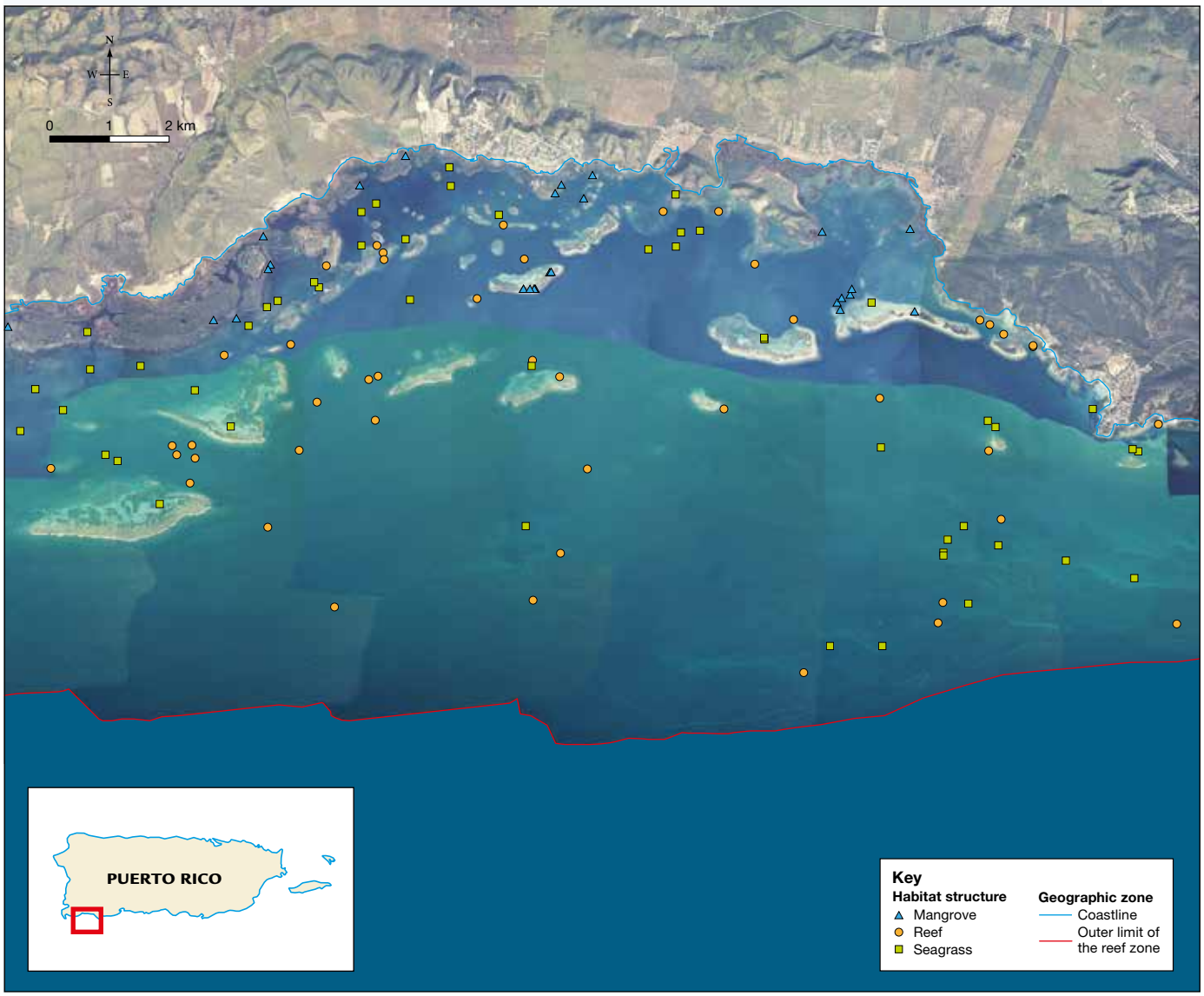
10.11 Review

10.11.1 Review

1. Identify the five major biomes and at least one characteristic that makes each biome unique.
2. In your notebook, draw a circle to represent the Earth, and then annotate it with the following information:
   (a) the major lines of latitude
   (b) the ***interconnection*** between latitude, climate, vegetation and soil development.
3. (a) Make a sketch of the aerial photograph in figure 1. Annotate your sketch to show the following features:
   - a coral reef
   - seagrass meadows
   - tidal flats
   - mangroves.

   (b) Include additional annotations to explain their function within the coastal environment.

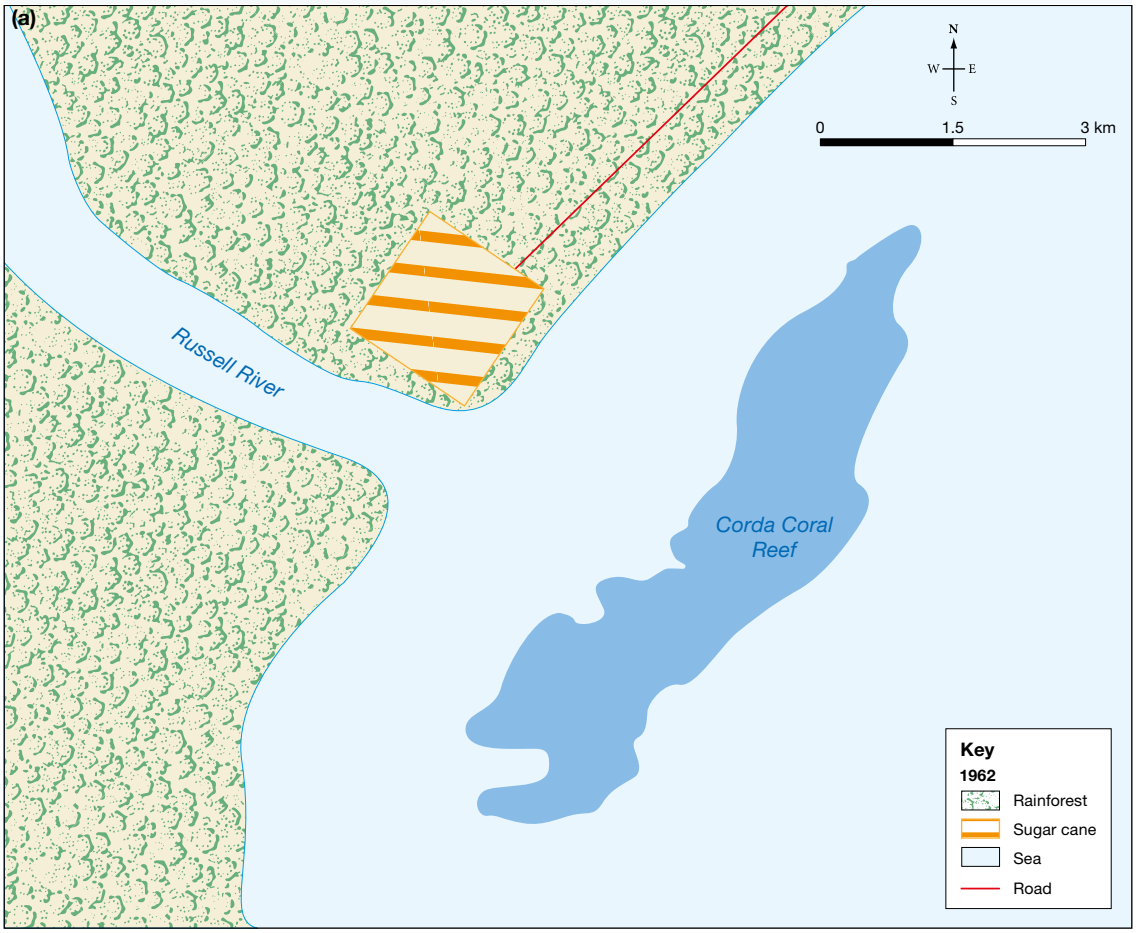
FIGURE 1 Aerial photo and map of the Bay of La Parguera, Puerto Rico



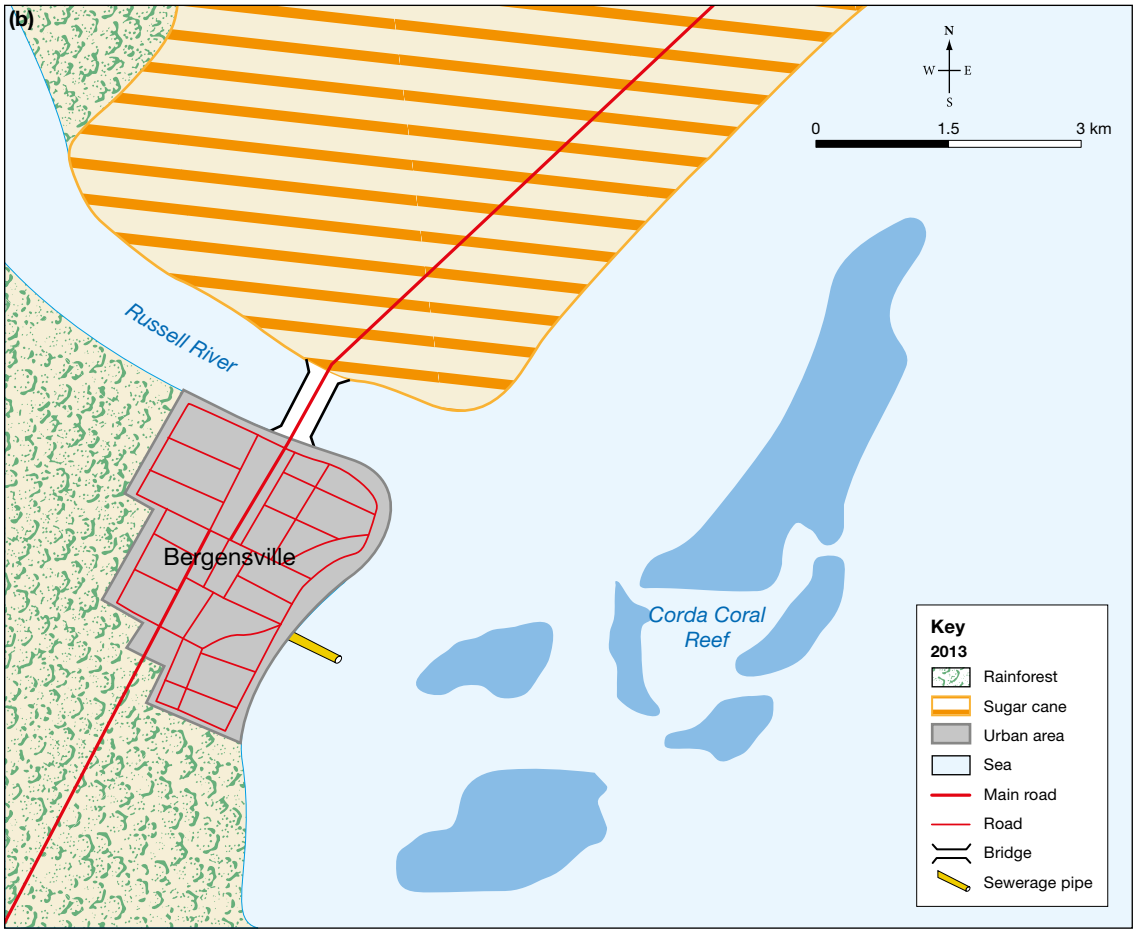
Source: Spatial Vision

4. (a) Using a Venn diagram, compare the world biomes of coral reefs and coastal mangroves.
   (b) Describe the ***interconnection*** between these two ***environments***.
5. Study the two maps in figure 2 and answer the following questions.
   (a) What type of ***environment*** is found in this ***place***?
   (b) Describe the ***changes*** that have taken place in this ***environment*** between 1962 and 2013. Include reference to the ***scale*** of this ***change*** in your response.
   (c) Explain the ***interconnection*** between human activity and the decline of the coral reef ***environment*** in this ***place***.
6. Why would Australia be described as a land of contrasts?
7. (a) Explain why grasslands are important.
   (b) Why are grasslands considered to be the most endangered biomes?
   (c) Where would you find grasslands in Australia?
   (d) Use the internet to find two photographs or maps of a ***place***. The photos or maps should have been taken or created some time apart. Save your photos or maps and digitally annotate them as follows.
   (e) Annotate the first to identify the key features of the ***environment***.
   (f) Annotate the second to explain how the ***environment*** has ***changed*** over time.

FIGURE 2 Maps of Sursum district in (a) 1962 and (b) 2013



Source: Spatial Vision



Source: Spatial Vision

10.11.2 Reflect

No soil? No worries

In the eighteenth century it was discovered that plants could be grown without soil, using a system known as hydroponics. A mineral-rich solution dissolved in water provided all that the plants needed to thrive.

In the 1930s, experiments were conducted on Wake Island — a rocky atoll devoid of soil located in the Pacific Ocean north-east of Australia, and used as a refuelling depot. Scientists proved that it was possible to grow vegetables to meet the needs of airline staff and passengers who used the island. Science fiction took the idea a step further in the 1960s, when the Robinson family, in the television series *Lost in Space*, used hydroponics to meet their needs on remote planets.

Today, a 200-square-metre greenhouse provides an average of 113 kilograms of fruit, vegetables and herbs each month — enough to sustain the 230 research workers at McMurdo Station on Ross Island through the winter months. During the summer months, however, when the community can swell to more than 1000 people, the greenhouse acts as a supplement to the fresh produce flown in from New Zealand. It is all done without soil, the greenhouse has no glass, and night and day are simulated by artificial lights. Lights can also be used to create the heat that is needed for plant growth, and this heat remains trapped within the greenhouse.

It is essential to ensure that any virus or bacteria found in the greenhouse do not contaminate the Antarctic environment. The whole process must be carefully monitored and, at the earliest sign of problems, the contents of the greenhouse have to be destroyed and the interior 'frozen out' — temperatures inside the greenhouse are allowed to drop so low that ice forms on all surfaces.

Experiments in hydroponics are also underway on the International Space Station, as a first step in paving the way for self-sufficient colonies on the moon — part of NASA's space exploration program.

1. What do you understand by the term *hydroponics*?
2. Make a list of the advantages and disadvantages of hydroponics.
3. (a) Work with a partner to brainstorm as many products as you can that come from biomes. Include food, fibres and other commodities.
   (b) Next to each product, suggest where you think it comes from.
   (c) Identify items that you think could not be produced if we did not have a variety of biomes. Select one of these and explain why.
4. Do you think that hydroponics is a ***sustainable*** alternative for meeting our future food needs? Give reasons for your answer.

FIGURE 3 This greenhouse could be anywhere — climate is no longer a factor in plant growth.

FIGURE 4 An artist's impression of a greenhouse on the moon

5. (a) Suggest how an ***environment*** might ***change*** if a virus or bacteria that originated in a greenhouse was released into the ***environment***.
   (b) What do you think the ***scale*** of this ***change*** might be? Justify your opinion.
   (c) Do you think it would be possible to restore or recreate an ***environment***? Why or why not?
6. Are biomes really important? Write a letter to the editor of a newspaper expressing your views on this topic. Make sure you include evidence to support your opinion.
7. Analyse how different values and beliefs contribute to different perspectives on social issues.
8. (a) Few people realise that less than 1 per cent of Australia's native grasslands survive. Why does such a significant loss of grassland biomes not attract the same attention as the loss of other biomes such as our tropical rainforest and coral reefs?
   (b) How would the following groups of people perceive the value of grassland biomes?
   - Graziers (sheep and cattle farmers)
   - City dwellers
   - Environmentalists
9. *Biosphere 2 is just like a theme park for scientists: an expensive research facility that does little to protect world biomes*.
   (a) Follow these steps:
   - In small groups, choose a leader who will report back to the rest of the class and a scribe who is responsible for taking notes.
   - In your group, discuss the quote and come to a decision on your group's viewpoint.
   - Each leader will present the viewpoint to the class.

   (b) Evaluate:
   - your own contribution to the group discussion
   - others' contribution to the group discussion and provide them with feedback
   - the role of the leader and their presentation to the class.

TOPIC 11
How can we feed the world?

11.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

11.1.1 Introduction

Food dominates every person's life. For many people, what to have for breakfast, lunch and dinner can be a constant thought and sometimes a worry.

A local market in a developing nation

Starter questions

1. Have you ever thought about where the food you eat is actually produced? Do you know how much is produced in Australia and how much is imported? Check the labels of various foods in your pantry or fridge to work out the sources of your favourite or most consumed foods.
2. Do you think there is enough food in the world for everybody? Why? How do you know?
3. If you had to, could you grow fruit and vegetables in your home garden? Does your family have a garden and, if so, does your family grow its own food? Conduct a class discussion to establish how many students in your class grow their own food.

INQUIRY SEQUENCE

11.1	Overview		219
11.2	How can we feed the world?		220
11.3	What does the world eat?		223
11.4	How does traditional agriculture produce food?		226
11.5	How did Indigenous people achieve food security?		229
11.6	**SkillBuilder:** Constructing ternary graphs	online only	233
11.7	How have we increased our food?		234
11.8	How are biomes modified for agriculture?		236
11.9	How is food produced in Australia?		239
11.10	What does a farming area look like?		242
11.11	**SkillBuilder:** Describing patterns and correlations on a topographic map	online only	244
11.12	Why is rice an important food crop?	online only	245
11.13	Why is cacao a special food crop?	online only	249
11.14	Daly River: a sustainable ecosystem?	online only	249
11.15	How can aquaculture improve food security for Indigenous people?	online only	249
11.16	**Review**	online only	249

11.2 How can we feed the world?

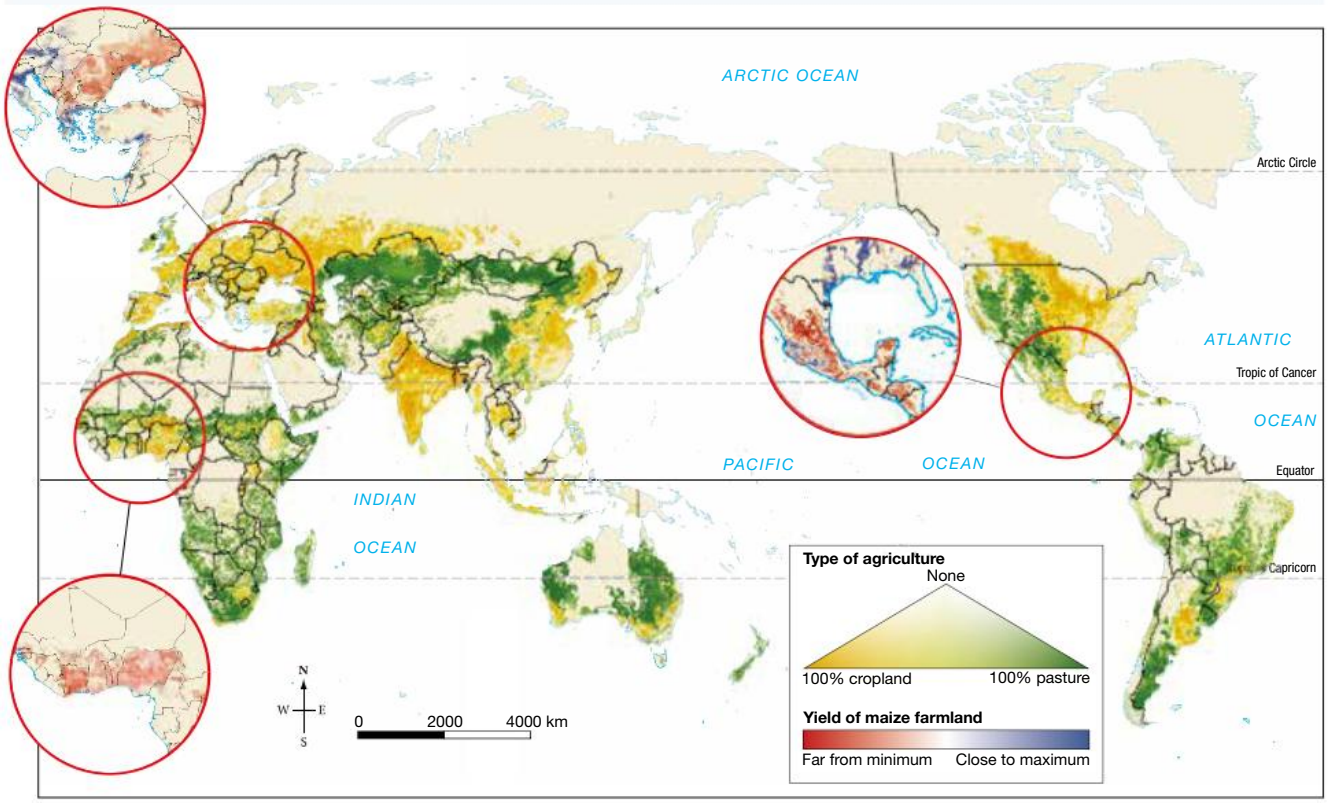
11.2.1 What are our food problems?

At the beginning of the twentieth century, the entire world population was less than 2 billion people. Today, the current world population is more than 7 billion. Earth's population is projected to rise to 9 billion people by 2050, and we all need food. What can we do to ensure there is enough food for everyone?

The map in figure 1 shows that crops occupy half the available agricultural land space. Almost all future population growth will occur in the developing world. This increased population, combined with higher standards of living in developing countries, will create enormous strains on land, water, energy and other natural resources.

There is currently about one-sixth of a hectare of **arable** land **per capita** in East and South Asia. With population growth, and almost no additional land available for agricultural expansion, arable land per capita will continue to decline.

FIGURE 1 World distribution of cropland, pasture and maize. More maize, for example, could be grown if improvements were made to seeds, irrigation, fertiliser and markets.



Source: Spatial Vision

11.2.2 Food production increases

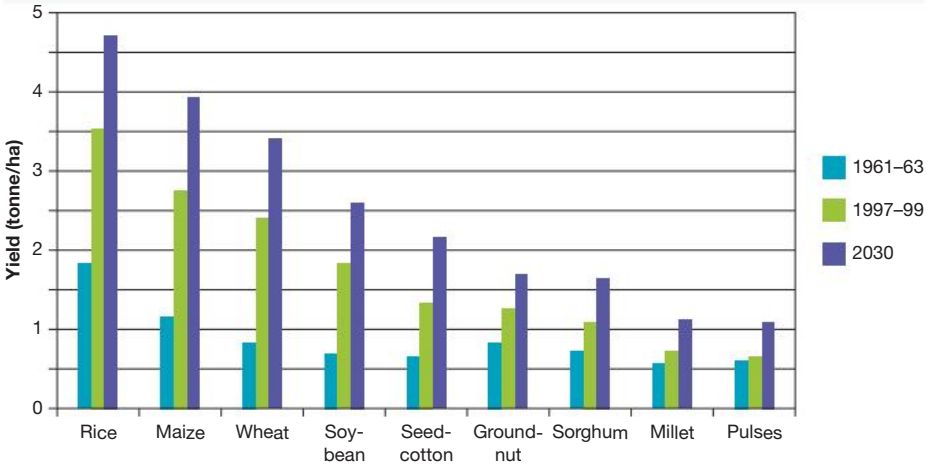
Agricultural yields vary widely around the world owing to climate, management practices and the types of crops grown. Globally, 15 million square kilometres of land are used for growing crops — altogether, that's about the size of South America. Approximately 32 million square kilometres of land around the world are used for pasture — an area about the size of Africa. Across the Earth, most land that is suitable for agriculture is already used for that purpose and, in the past 50 years, we have increased our food production.

According to the Food and Agriculture Organization (FAO), the three main factors that have affected recent increases in world crop food production are:

- increased cropland and rangeland area
- increased yield per unit area
- greater cropping intensity.

Current FAO projections suggest that cereal demand will increase by almost 50 per cent by 2050. This can either be obtained by increasing yields, expanding cropland through conversion of natural habitats, or growing crops more efficiently. Figure 2 shows the

FIGURE 2 Crop yields in developing countries, 1961–2030



growth in crop yields from 1961 to what is proposed in 2030. Rice, maize and wheat have had significant increases in yield.

Agricultural **innovations** have also changed and increased global food production. They have boosted crop yields through advanced seed genetics; agronomic practices (scientific production of food plants); and product innovations that help farmers maximise productivity and quality. In this way, the nutritional content of crops can be increased (see figure 3).

FIGURE 3 Farmers in a village in Kenya examine information on plant diseases using a laptop at a plant health clinic. They can also consult a plant pathologist and show them samples of their crops.

11.2.3 We could do more

It should be possible to get more food out of the land we are already using. Figure 1 shows the places where maize yields could increase and become more **sustainable** by improving nutrient and water management, seed types and markets.

11.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Refer to figure 1 and describe the distribution of ***places*** in the world with pasture and grasslands.
2. How could crop production be increased in ***places*** such as Eastern Europe or Western Africa?

Explain

3. Explain the impact of an increasing population on world ***environments***.
4. Explain why agricultural innovations can ***change*** food production.

Discover

5. Research the reasons why the ***environments*** of Canada, Northern Africa and Central Australia, shown on figure 1, do not produce any crops.
6. Figure 1 shows where more crops could be grown. Investigate how Mexico or a country in West Africa or Eastern Europe could improve the ***sustainability*** of its agriculture.

Predict

7. With reference to specific ***places***, suggest how increasing population densities might influence future crop production.
8. Figure 1 refers to the potential increase in maize crop yields. Suggest how this could be of benefit to a future world population.

Think

9. Should countries in the developed world be supporting those who struggle to produce their own food?
10. Would food production be secure if we grew fewer crops better?
11. Figure 2 refers to crop yields in developing countries over time. Suggest why rice, maize and wheat have the greatest increases in yields. Would these increases be similar in the developed regions of the world? Explain your answer.

11.3 What does the world eat?

11.3.1 The major food staples

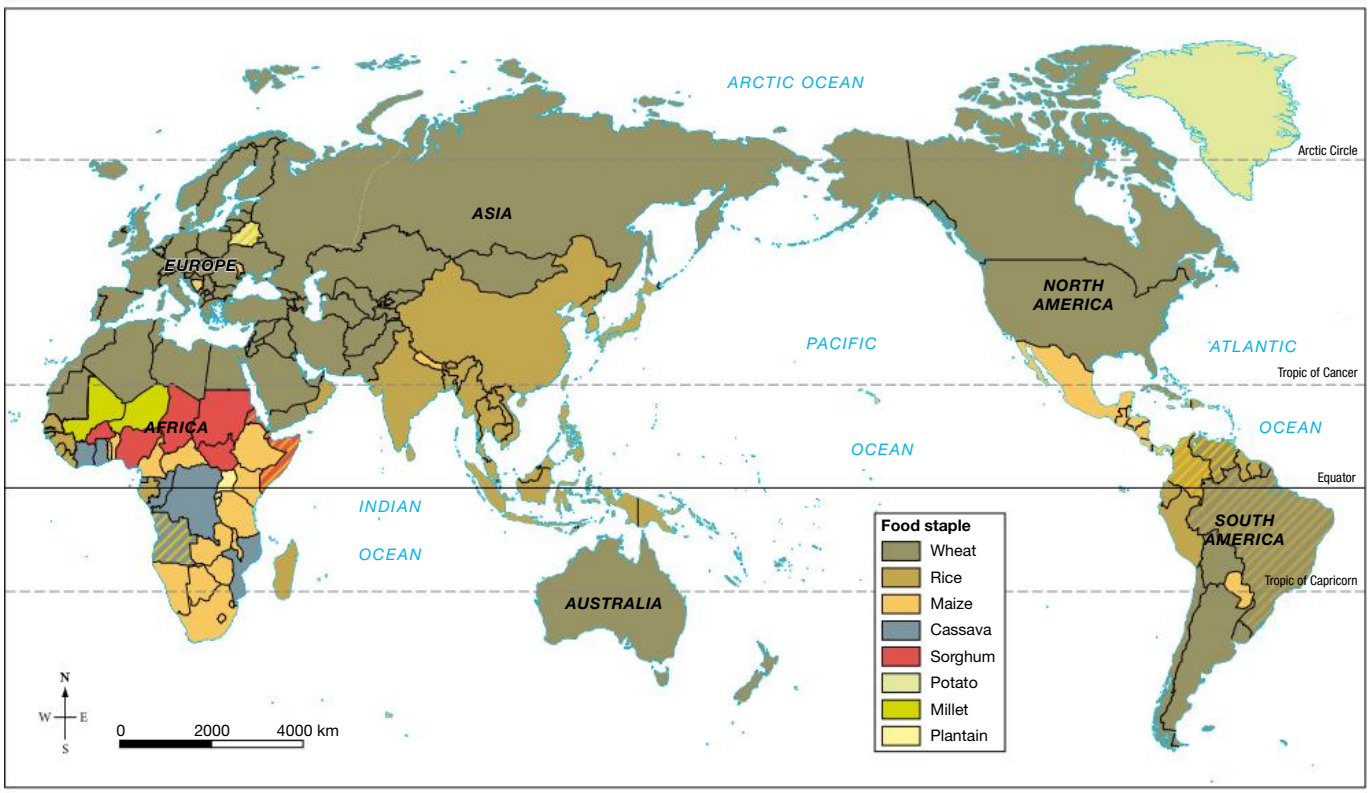
Staple foods are those that are eaten regularly and in such quantities that they constitute a dominant portion of a diet. They form part of the normal, everyday meals of the people living in a particular place or country. They are called staples because they are easy to access and are grown or produced locally.

The world has over 50 000 **edible** plants. Staple foods vary from place to place, but are typically inexpensive or readily available. The staple food of an area is normally interconnected to the climate of that area and the type of land.

Most staple foods are cereals, such as wheat, barley, rye, oats, maize and rice; or root vegetables, such as potatoes, yams, taro and cassava. Rice, maize and wheat provide 60 per cent of the world's food energy intake; 4 billion people rely on them as their staple food.

Other staple foods include legumes, such as soya beans and sago; fruits, such as breadfruit and plantains (a type of banana); and fish.

FIGURE 1 Staple foods around the world



Source: Data from FAO

11.3.2 Wheat, maize and fish

Wheat is a cereal grain that is cultivated across the world. In 2015, world production of wheat was 715.90 million tonnes, making it the third most produced cereal after maize (1018.1 million tonnes) and rice (740.9 million tonnes). World trade in wheat is greater than for all other crops combined. In terms of total production tonnage, it is currently second to rice as the main human food crop and ahead of maize, after allowing for maize's more extensive use as an animal feed.

Wheat was one of the first crops to be easily cultivated on a large scale, and had the added advantage of yielding a harvest that could be stored for a long time. Wheat covers more land area than any other commercial crop, and is the most important staple food for humans.

Maize, or corn, was commonly grown throughout the Americas in the late fifteenth and early sixteenth centuries. Explorers and traders carried maize back to Europe and introduced it to other countries. It then spread to the rest of the world, owing to its ability to grow in different environments. Sugar-rich varieties called sweet corn are usually grown for human consumption, while field corn varieties are used for animal feed and **biofuel**. Maize is the most widely grown grain crop in the Americas, with 361 million metric tonnes grown annually in the United States alone.

FIGURE 2 Wheat is used in a wide variety of foods such as breads, biscuits, cakes, breakfast cereals and pasta.

TABLE 1 Top 10 maize producers, 2014

Country	Production (million tonnes)
United States	361
China	216
Brazil	80
Argentina	33
Ukraine	28
India	24
Mexico	23
Indonesia	19
France	18
South Africa	14

Source: http://www.fao.org/faostat/en/#home

FIGURE 3 Corn cobs drying outside in Serbia

Fish is a staple food in some societies. The oceans provide an irreplaceable, renewable source of food and nutrition essential to good health. According to the United Nations Food and Agriculture Organization, about 75 per cent of fish caught is used for human consumption. The remainder is converted into fishmeal and oil, used mainly for animal feed and farmed fish.

In general, people in developing countries, especially those in coastal areas, are much more dependent on fish as a staple food than those in the developed world. About 1 billion people rely on fish as their primary source of animal protein.

Use the **United Nations Food and Agriculture Organization** weblink in the Resources tab to find out what is being done to promote sustainable aquatic biomes.

FIGURE 4 A fish haul in Bali, Indonesia

11.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Make a list of the main staple foods of the world and the ***places*** (continents) where they are grown.
2. What is biofuel?

Explain

3. Explain why plants, rather than animals, dominate as the major staple foods of the world.
4. Australia is a major exporter of wheat. Why is Australia able to produce such a surplus?

Predict

5. With the increase in world population and greater pressure on fish stocks, what could be done to sustain fish stocks in oceans and lakes?
6. Maize is currently used as a feed for animals, as biofuel and as food for humans. Why might this be an ***unsustainable environmental*** practice in future?

Think

7. Although fish may be seen as a staple food for many people, why is it not possible for fish to be a staple food for everyone?
8. Referring to table 1, why do you think countries other than those in the Americas are producing large quantities of maize?

learnON RESOURCES — ONLINE ONLY

Explore more with this weblink: United Nations Food and Agriculture Organization (UN FAO)

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

- Rice
- **Wheat**

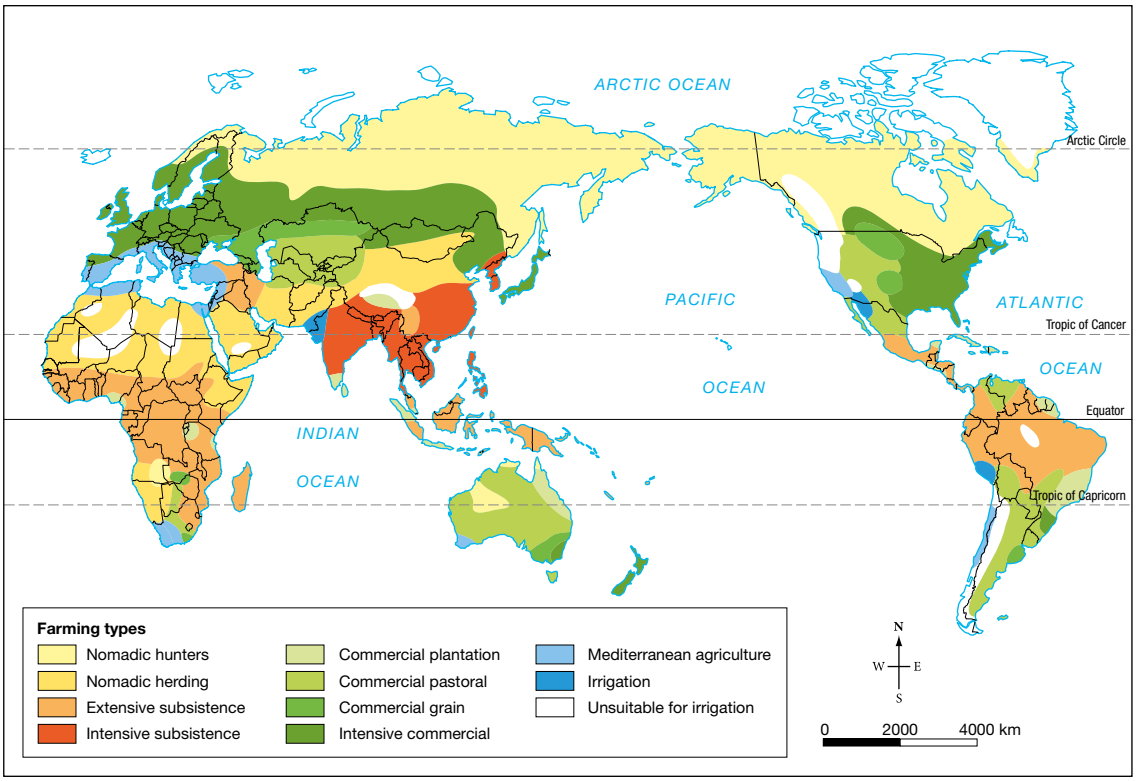
11.4 How does traditional agriculture produce food?

11.4.1 Subsistence agriculture

In the more developed countries of the world, people have easy access to food in stores such as supermarkets. However, many people in developing nations are still tied to **subsistence** agriculture and visits to local markets to buy and exchange food.

For many people, changes in technology and the development of sophisticated agricultural practices have, over millennia, removed the need to hunt and gather food. With modern forms of transport, there is now enormous movement of food stocks around the world. Nevertheless, many people around the world still practise traditional agriculture.

FIGURE 1 World agricultural practices and food production



Source: http://www.S-cool.co.uk.

11.4.2 Hunters and gatherers: the San people

Today, about 50 000 San people (or Kalahari Bushmen) live in the Kalahari Desert in southern Africa. Approximately 6 per cent still live in the traditional way.

Traditionally **nomadic** San people travel in small family groups, roaming over regions of up to 1000 square kilometres. They have no pack animals, and carry few possessions — only spears, bows and arrows, bowls and water bags. The bushmen's San people's clothes are made from animal skins. When needed, they

construct dome-shaped shelters of sticks that are thatched with grass.

The San people are experts at finding water and tracking animals. The men hunt antelope and wildebeest, while the women hunt small game such as lizards, frogs and tortoises, and gather roots, berries and grubs. When the waterholes are full, empty ostrich shells are filled with water, and buried in the sand for times of drought.

FIGURE 2 A San tribesman teaches his son how to use a bow and arrow.

11.4.3 Nomadic herders: the Bedouin people

Bedouin people are nomads who live mainly in Syria, Iraq, Jordan, the countries of the Arabian Peninsula, and the Sahara. Some groups are camel herders who live in the inner desert regions. Others herd sheep and goats on the desert fringes, where more water is available. Unless Bedouin communities find a good piece of grazing land, they rarely stay in one place longer than a week.

Bedouin camel-herding families can survive on as few as 15 camels. The camels provide not only transportation but also milk — the main staple of the Bedouin diet. Camel meat is sometimes eaten, and dried camel dung is used as fuel. Camel hair is collected and woven into rugs and tent cloth.

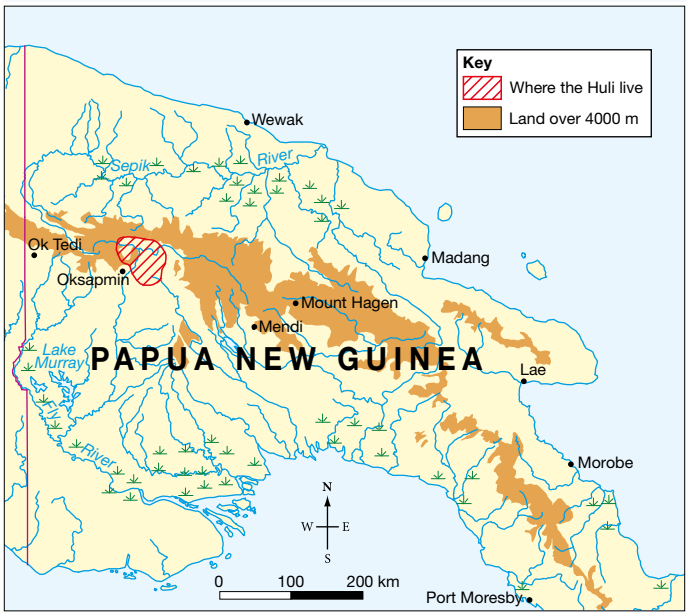
FIGURE 3 A Bedouin camp in Saudi Arabia

11.4.4 Shifting agriculture: the Huli people

The Huli people live in the rainforests of the Papua New Guinea highlands. Many still lead a traditional way of life. The land on which they live has steep hillsides and dense rainforest.

The Huli people today use a farming system known as shifting agriculture. This means that land is used for food production until its fertility declines; it is then abandoned until its fertility returns naturally. The Huli people clear a patch of rainforest and plant crops of sweet potato, sugar cane, corn, taro and green vegetables. It is the role of the women to tend these gardens, and their individual huts are built next to the gardens. The men live together in a communal house.

FIGURE 4 A map showing Huli land, Papua New Guinea



Source: MAPgraphics Pty Ltd, Brisbane

When the soil of the garden no longer produces good crops, a new patch of rainforest is cleared, leaving the old one to recover naturally. The garden crops are supplemented by food that the men have hunted. Wild and domesticated pigs are a common source of meat.

While most Huli people still live in their traditional lands, they wear some items of Western-style clothing, and knives, cooking utensils and mirrors are common.

FIGURE 5 A Huli tribesman, Papua New Guinea

11.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Name three major types of traditional food production.
2. In which ***places*** in the world would you find Bedouin people?

Explain

3. Describe the traditional lifestyle of the San people.
4. Explain the advantages and disadvantages of nomadic herding practices regarding ***sustainability***.

Discover

5. Why do people who live in rainforests need to use their ***environment's*** resources ***sustainably***?
6. Name one impact on people and one impact on the natural ***environment*** if rainforests in the world were to ***change*** by decreasing significantly.

Predict

7. How might modern technology affect the Huli people in the next 25 years with respect to their traditions and food production practices?
8. What ***changes*** may occur to the way of life of nomadic herders in the future?

Think

9. In what ways are the traditional lives of hunters and gatherers and nomadic herders similar and different?
10. Referring to figure 1, explain why food production is concentrated in the ***places*** and ***spaces*** bordering the tropical zones.

11.5 How did Indigenous people achieve food security?

11.5.1 Introduction

Since the beginning of the Dreaming Aboriginal and Torres Strait Islander peoples established management practices of their lands, waterways, lakes and marine environments to ensure food security. At the time of European occupation in 1788 most Aboriginal and Torres Strait Islander peoples were hunters and gatherers. However, some nations had abundant food supplies in their regions and were able to settle in one place. In all cases their deep knowledge and close association with the land allowed for sustainable management of the ecosystems and biomes in which they lived. The 'world view' that describes this sustainable lifestyle is called an 'earth-centred' approach. This means people's interaction with the environment is one of a caring stewardship.

11.5.2 Aboriginal and Torres Strait Islander peoples' food sourcing

Aboriginal and Torres Strait Islander peoples sourced their foods from a wide range of uncultivated plants and wild animals, with some estimates suggesting there were up to 7000 different sources of food. The composition of the food was greatly influenced by both the season and geographic location of the community region.

In Aboriginal and Torres Strait Islander communities there was a division of labour among men, women and children. Food sources based on cereals, fruits and vegetables were collected or gathered daily by women and children. Men were involved more in hunting for game and fishing, as well as wider scale land management using fire.

To ensure food security, communities developed a range of food-gathering techniques that were sustainable. For example, some seeds from gathered plants were left behind to allow for new growth, and a few eggs were always left in nests to hatch. This ensured that species would survive and communities could expect to find food in the same place in the future. See figure 1 for details of food types from both tropical and temperate regions of Australia, including arid and desert regions.

FIGURE 1 A generalised selection of different foods and water resources

What did Aboriginal and Torres Strait Islander peoples use to achieve food (and water) security?

Water: Water was obtained from rivers, lakes, rock holes, soaks, beds of intermittent creeks and dew deposited on surfaces. Moisture obtained from foods such as tree roots and leaves also provided water.

Cereal foods: Grass seeds from the clover fern were ground to form flour for damper. Many other seed types were similarly treated.

Fruit and vegetables: Fruits, berries, orchids and pods were available, depending on the region and seasonal availability (for example, sow thistle, lilly pilly, pigface fruit, kangaroo apple, wild raspberry, quandong and native cherry) as well as wild figs, plums, grapes and gooseberries. Also eaten were plant roots such as bull rushes, yams and bulbs; the heart of the tree fern and the pith of the grass tree; and the blister gum from wattles, native truffles and mushrooms.

Eggs: Emu, duck, pelican and many other birds' eggs were eaten.

Meat: Meats included insects such as the larval stage of the cossid moth or witchetty grub and the Bogong moth, honey ants, native bees and their honey and scale insects; animals such as kangaroos, emus, eels, crocodiles, sea turtles, snakes, goannas and other lizards; and birds such as ducks, gulls and pelicans.

Fish and shellfish: Freshwater fish such as perch, yabbies and mussels in creeks and rock holes as well as saltwater fish of all varieties were caught.

Medicines: Over 120 native plants were used as sedatives, ointments, diarrhoea remedies, and cough and cold palliatives as well as for many other known treatments.

11.5.3 Torres Strait Islander people

Torres Strait Islander peoples' food sources, both historically and today, are based on fishing, horticulture and inter-island trading activities. Torres Strait Islander peoples have a profound understanding of the sea, including its tides and sea life. While their food sources vary from island to island, their lifestyle can be best described as subsistence agriculture with seafood, garden foods and other produce stored and preserved for both local use and trade.

FIGURE 2 Cooking bush food in a traditional Kup Murrie, or ground oven

11.5.4 The use of fire

The use of fire was a significant aspect of the Indigenous Australian peoples' land management. What has been described as the 'park like' landscape of the Australian bush was purposely created by clearing forest in a controlled burn using fire sticks. After the fires, new plant growth with tender shoots attracted all types of birds and animals to the area. The grassland areas that resulted from the controlled burning of the landscape became ideal places to hunt kangaroos. Burning also caused animals to be flushed out into the open where they could be speared

(see figure 3). The Indigenous Australian peoples' use of fire had to be carefully managed as part of their efforts to ensure food security and as such was a sustainable practice based on a sound knowledge of fire control.

FIGURE 3 Using fire for hunting and to manage the land

11.5.5 The arrival of Europeans

Since European occupation, Aboriginal and Torres Strait Islander peoples have been displaced from their lands and traditional methods of sourcing food have mostly ceased. This is because government policies forced Indigenous communities to move to missions and as a consequence there was a denial of access to their lands. However, some methods of food sourcing continued up until recent times in areas the Europeans hadn't yet occupied, including in remote arid and desert areas and in the sparsely settled northern parts of Australia.

Today, many Aboriginal and Torres Strait Islander peoples, particularly in remote areas, are suffering from food insecurity due to the forced move away from nutritious bush tucker and historical government policies. This, among other things, has led to health issues such as low life expectancy, and related issues such as poor education and reduced work opportunities.

More recently, with the introduction of the Native Title Act (1993) and involvement of state governments, members of Indigenous communites have been able to re-establish connections with their lands through collaborative land and water management projects.

11.5.6 The Bogong moth: a past food source

While there were many other sources of food for Indigenous communities that lived near the south-eastern Australian highlands, the Bogong moth was a particularly important seasonal speciality. The Bogong moth, which lived in the ground as larvae in Queensland, migrated in millions to the south-eastern highlands to seek out cool, rocky overhangs and crevices where they could sleep through the long, hot summer

months, surviving off the fat in their bodies (see figure 4).

The Bogong moths were a rich source of fat and protein for Indigenous Australian peoples who lived adjacent to the highlands of Victoria and New South Wales. Many culture groups would migrate from the valleys and foothills into the highlands and set up camps for the feasting ceremony. They would smoke out the moths, which they called 'cori', collecting them by the thousands to be cooked over hot rocks for feasting. In addition to savouring this important seasonal food source, making the annual pilgrimage to the high country presented these groups with an important opportunity to interact socially, participate in ceremonies and to arrange inter-community marriages.

FIGURE 4 Massed Bogong moths on a rock face

11.5.7 Eel farming by the Gunditjmara peoples

The home of the Gunditjmara people, the Budj Bim National Heritage Landscape, is the site of one of Australia's largest ancient aquaculture systems. This area, which is part of the Mount Eccles National Park near Portland in Victoria, shows evidence of a large, permanent settlement of stone huts and channels used for farming and the local trade of eels (see figure 5). The Gunditjmara people managed this landscape by digging channels and constructing weirs to bring water and young eels from Darlot Creek to local ponds and wetlands. Woven baskets placed at the weirs were used to harvest the mature eels. The area provided an abundance of food, ensuring food security for all.

FIGURE 5 Remains of Aboriginal stone eel traps at Lake Condah

Following European occupation of the area in the 1830s, the Gunditjmara people fought for their lands in the Eumerella Wars, which lasted for more than 20 years. By the 1860s the remaining Gunditjmara people were displaced to a government mission at Lake Condah. The mission lands were returned to the Gunditjmara people in 1987 and thereafter the Deen Maar Indigenous Protected Area (IPA) was declared in 1999 and the area was listed on the Australian National Heritage register in 2004.

Today the Gunditjmara people, as part of the Winda-Mara Aboriginal Corporation, manage the 248-hectare Darlots Creek (Killara), which flows from Lake Condah in the Budj Bim National Heritage Landscape. They aim to reinstate the wetlands and manna gum woodlands and re-establish the eel aquaculture industry as a sustainable business prospect. Further works are in progress to control weeds and feral animals and to expand tourism by building visitor boardwalks and information signage.

11.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What was the division of labour for men, women and children when sourcing food?
2. How did Indigenous Australian peoples use fire to source food?
3. Who are the traditional owners of the Budj Bim region of Victoria?

Explain

4. Why did Aboriginal and Torres Strait Islander peoples lose access to 'bush tucker' after European occupation?
5. How did the Indigenous Australian peoples access the Bogong moth as a food source?

Predict

6. How might the re-establishment of eel farming help the economic opportunities of the Gunditjmara people?

Think

7. What lessons could be learned from the way the Budj Bim National Heritage Landscape is managed and applied to a national park with which you are familiar?
8. Which foods that Aboriginal and Torres Strait Islander peoples sourced could be utilised in cooking today? Have you tried any of the wide range of traditional food types? If so, how tasty or appetite satisfying were they to you?

11.6 SkillBuilder: Constructing ternary graphs

online only

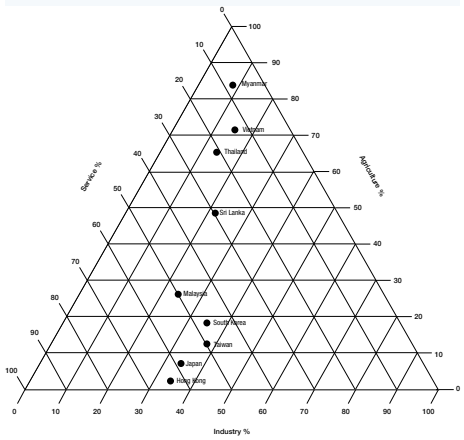
WHAT ARE TERNARY GRAPHS?

Ternary graphs are triangular graphs that show the relationship or interconnection between three features. They are particularly useful when a feature has three components and the three components add up to 100 per cent. Ternary graphs are most often used to show soil types, employment structures and age structures.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 Economic activity in selected countries



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Watch this eLesson: Constructing ternary graphs (eles-1728)

Try out this interactivity: Constructing ternary graphs (int-3346)

11.7 How have we increased our food?

11.7.1 How does food increase come about?

World food production has grown substantially over the past century. Increased fertiliser application and more water usage through irrigation have been responsible for over 70 per cent of crop yield increases. The Second Agricultural Revolution in developed countries after World War II, and the **Green Revolution** in developing countries in the mid 1960s, transformed agricultural practices and raised crop yields dramatically.

Since the 1960s agriculture has been more productive, with world per capita agricultural production increasing by 25 per cent in response to a doubling of the world population.

11.7.2 Environmental factors

In the past, growth in food production resulted mainly from increased crop yields per unit of land and to a lesser extent from expansion of cropland. From the early 1960s, total world cropland increased by only 9 per cent, but total agricultural production grew nearly 60 per cent. Increases in yields of crops, such as sweet potatoes and cereals, were brought about by a combination of:

- increased agricultural inputs
- more intensive use of land
- the spread of improved crop varieties.

In some places, such as parts of Africa and South-East Asia, increases in fisheries (areas where boats are used to catch fish) and expansion of cropland areas were the main reasons for the increase in food supply. In addition, cattle herds became larger. In many regions — such as in the savanna grasslands of Africa, the Andes, and the mountains of Central Asia — livestock is a primary factor in food security today. Fertilisers have increased agricultural outputs and enabled more intensive use of the land. Global fertiliser use is likely to rise to above 200.5 million tonnes in 2018, 25 per cent higher than recorded in 2008.

TABLE 1 Fertiliser use, 1959–60, 1989–90 and 2020

Region/nutrient	Fertiliser user			Annual growth	
	1959/60	1989/90	2020	1960–90	1990–2020
	(million nutrient tonnes)			(per cent)	
Developed countries	24.7	81.3	86.4	4.0	0.2
Developing countries	2.7	62.3	121.6	10.5	2.2
East Asia	1.2	31.4	55.7	10.9	1.9
South Asia	0.4	14.8	33.8	12.0	2.8
West Asia/North Africa	0.3	6.7	11.7	10.4	1.9
Latin America	0.7	8.2	16.2	8.2	2.3
Sub-Saharan Africa	0.1	1.2	4.2	8.3	3.3
World total	27.4	143.6	208.0	5.5	1.2
Nitrogen	9.5	79.2	115.3	7.1	1.3
Phosphate	9.7	37.5	56.0	4.5	1.3
Potash	8.1	26.9	36.7	4.0	1.0

Sources: Bumb, B. and C. Baanante. 1996. World Trends in Fertilizer Use and Projections to 2020. Policy Brief 38, Table 1. Washington, DC: International Food Policy Research Institute http://www.ifpri.org/publication/world-trends-fertilizer-use-and-projections-2020

11.7.3 Trade factors and economic factors

From the 1960s onwards, there has been significant growth of world trade in food and agriculture. Food imports to developing countries have grown, together with imports of fertilisers, thus reducing the likelihood of developing countries suffering from famine.

TABLE 2 Share of crop production increases, 1961–2030

	Arable land expansion (1)		Increases in cropping intensity (2)		Harvested land expansion (1+2)		Yield increases	
	1961–1999	1997/99–2030	1961–1999	1997/99–2030	1961–1999	1997/99–2030	1961–1999	1997/99–2030
All developing countries	23	21	6	12	29	33	71	67
South Asia	6	6	14	13	20	19	80	81
East Asia	26	5	–5	14	21	19	79	81
Near East/North Africa	14	13	14	19	28	32	72	68
Latin America and the Caribbean	46	33	–1	21	45	54	55	46
Sub-Saharan Africa	35	27	31	12	66	39	34	61
World	15		7		22		78	

11.7.4 What was the Green Revolution?

The Green Revolution was a result of the development and planting of new **hybrids** of rice and wheat, which saw greatly increased yields. There have been a number of green revolutions since the 1950s, including those in:

- the United States, Europe and Australia in the 1950s and 1960s
- New Zealand, Mexico and many Asian countries in the late 1960s, 1970s and 1980s.

With its high-yield varieties of cereals, chemical fertilisers and pesticides, and irrigation, the Green Revolution has had a very positive effect on global food production.

FIGURE 1 Spreading fertiliser in the Punjab, India, during the Green Revolution

What happened?

The Green Revolution saw a rapid increase in the output of cereal crops — the main source of calories in developing countries. Farmers in Asia and Latin America widely adopted high-yielding varieties. Governments, especially in Asia, introduced policies that supported agricultural development. In the 2000s, cereal harvests in developing countries were triple those of 40 years earlier, while the population was a little over twice as large. Yield gains accounted for much of the increase in cereal output and calorie availability. Planting of these varieties coincided with expanded irrigation areas and fertiliser use, as seen in figure 1 where fertiliser is being spread in the Punjab.

11.7 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. In the past, what were the two reasons for the increase in food production?
2. Refer to table 1. Describe the trends in the use of fertilisers and irrigated land from 1965 to 2000.

Explain

3. Explain the significance of trade in food production.
4. Discuss the three reasons for improved crop production.

Discover

5. Research the background of the Green Revolution — why it occurred and the key ***places*** involved.
6. Investigate the ***changes*** that came about as a result of the Green Revolution.

Predict

7. Some scientists are suggesting that there will be a new Green Revolution. Investigate current thinking and predict the potential ***scale*** of this possible agricultural ***change***.

Think

8. Were the ***changes*** brought about during the Green Revolution successful? When explaining your decision, refer to the Punjab and other ***places***.

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Try out this interactivity: Growing more! (int-3320)

11.8 How are biomes modified for agriculture?

11.8.1 How do we use technology for food production?

In the twentieth century, rapid global population growth gave rise to serious concerns about the ability of agriculture to feed humanity. However, additional gains to food production have come from newer processes and technology.

Across the world, humans have modified biomes to produce food through the application of innovative technologies. In general, the focus of agriculture is to modify water, climate, soils, land and crops.

11.8.2 How do we modify climate?

Irrigation is the artificial application of water to the land or soil to supplement natural rainfall. It is used to assist in the growing of agricultural crops to increase food production in dry areas and during periods of inadequate rainfall.

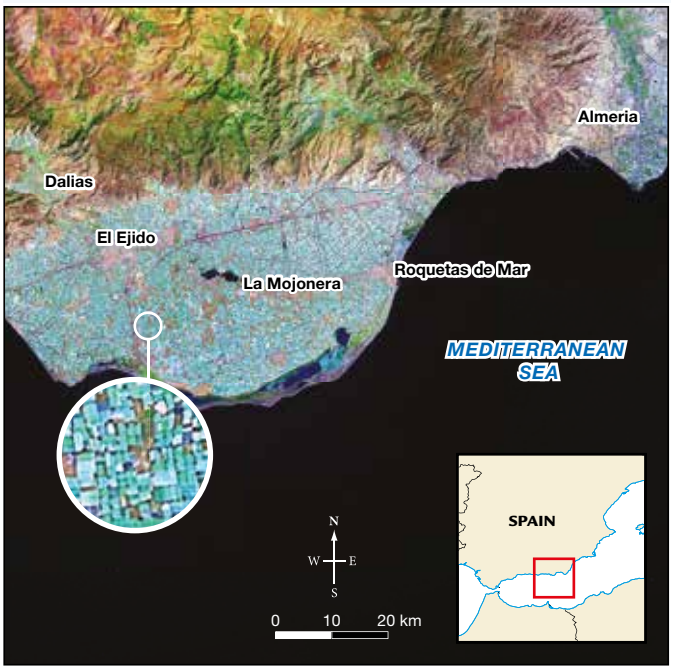
In flood irrigation, water is applied and distributed over the soil surface by gravity. It is by far the most common form of irrigation throughout the world, and has been practised in many areas, virtually unchanged, for thousands of years.

Modern irrigation methods include computer-controlled drip systems that deliver precise amounts of water to a plant's root zone.

Another way of modifying climate is with the use of greenhouses (or glasshouses) used for growing flowers, vegetables, fruits and tobacco (see figure 2). Greenhouses provide an artificial biotic environment to protect crops from heat and cold and to keep out pests. Light and temperature control allows greenhouses to turn non-arable land into arable land, thereby improving food production in marginal environments. Greenhouses allow crops to be grown throughout the year, making them especially important in high-latitude countries.

The largest expanse of plastic greenhouses in the world is around Almeria, in south-east Spain. Here, since the 1970s, semiarid pasture land has been replaced by greenhouse **horticulture** (see figures 1 and 2). Today, Almeria has become Europe's market garden. To grow food all year round, the region has about 26 000 hectares of greenhouses.

FIGURE 1 False-colour satellite image of greenhouses in the Almeria region



Source: American Geophysical Union and Google Maps

FIGURE 2 Inside an Almerian greenhouse

11.8.3 How do we modify soils?

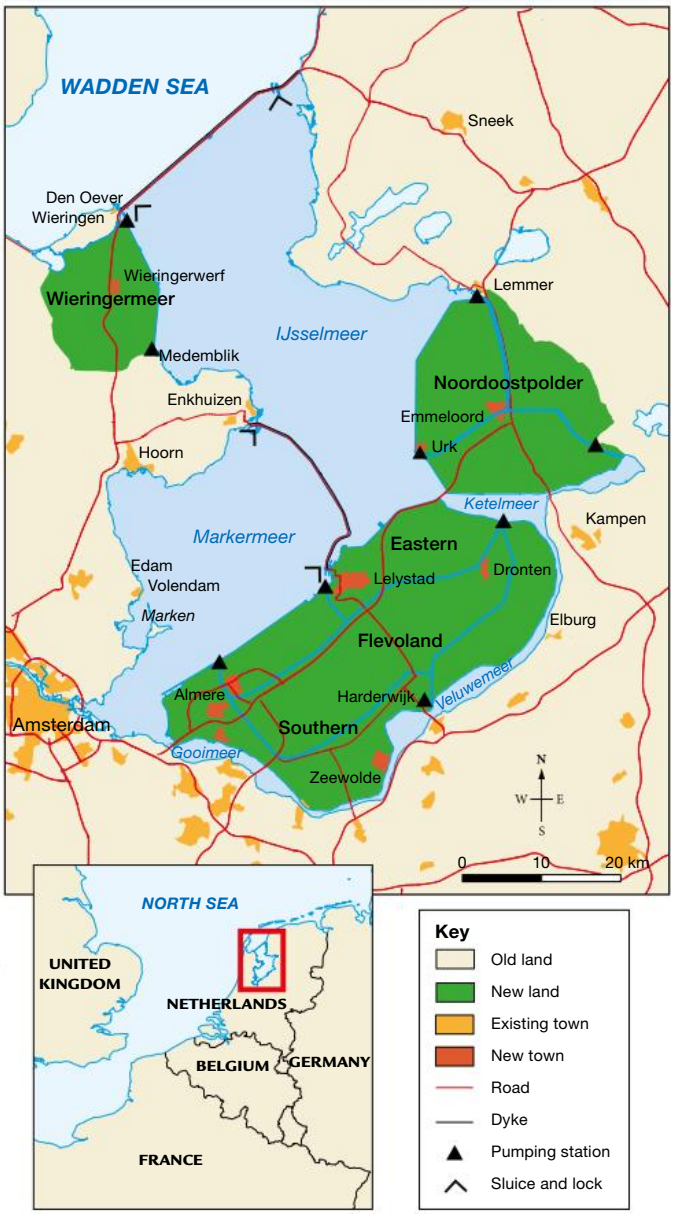
Fertilisers are organic or inorganic materials that are added to soils to supply one or more essential plant nutrients. Fertilisers are essential for high-yield harvests, and it is estimated that about 40 to 60 per cent of crop yields are due to fertiliser use. It is estimated that almost half the people on Earth are currently fed as a result of adding fertiliser to food crops.

11.8.4 How do we modify landscapes?

People change landscapes in order to produce food. **Undulating** land can be flattened, steep slopes terraced, or stepped, and wetlands drained. Land reclamation is the process of creating new land from seas, rivers or lakes. In addition, it can involve turning previously unfarmed land, or degraded land, into arable land by fixing major deficiencies in the soil's structure, drainage or fertility.

In the Netherlands, the Dutch have tackled huge reclamation schemes to add land area to their country. One such scheme is the IJsselmeer (see figure 3), where four large areas (*polders*) have been reclaimed from the sea, adding an extra 1650 square kilometres for cultivation. This has increased the food supply in the Netherlands and created an overspill town for Amsterdam.

FIGURE 3 Land reclamation in the Netherlands



Source: Spatial Vision

11.8 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What ***changes*** to the ***environment*** are made by land reclamation?

Explain

2. Refer to figure 3. Use the ***scale*** to calculate the approximate area of new land created in Flevoland.

Discover

3. How is land that is reclaimed from the sea, such as the Netherlands' polders, made productive for farming and food production?

Predict

4. Refer to figures 1 and 2. How do greenhouses modify ***spaces*** and ***places*** on the Earth's surface?
5. Refer to figure 3. What might be the purpose of the pumping stations?

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Try out this interactivity: How we change environments to produce food (int-3321)

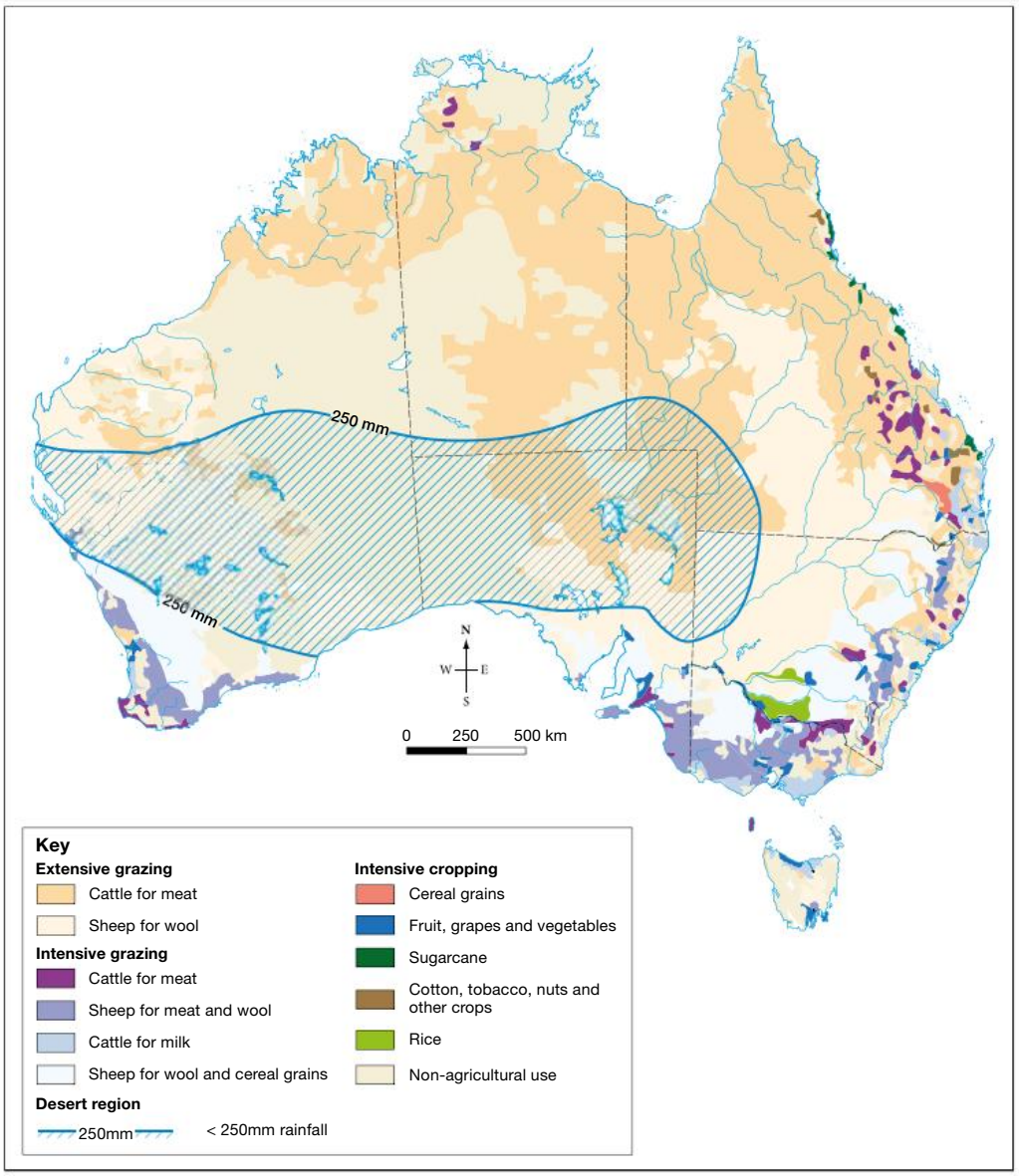
11.9 How is food produced in Australia?

11.9.1 Why are farms found in certain locations?

Modern food production in Australia can be described as commercial agricultural practices that produce food for local and global markets. Farms may produce single crops, such as sugar cane, or they may be mixed farms that produce sheep and cereals, for example. Farms use sophisticated technology, and in many cases are managed by large corporations with an **agribusiness** approach.

There is a wide range of types of agriculture in Australia, as shown in figure 1. These types occupy spaces across all biomes found in Australia, from the tropics to the temperate zones.

FIGURE 1 Types of agriculture in Australia

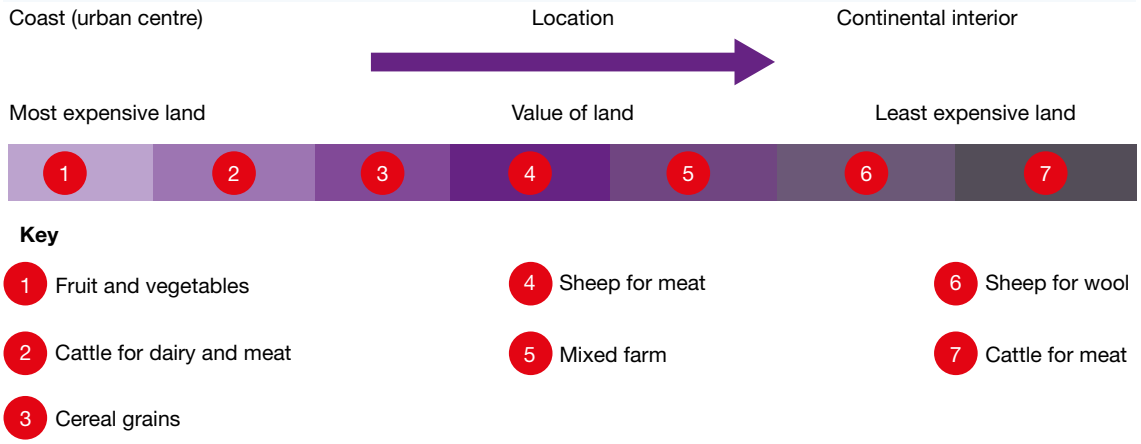


Source: © Commonwealth of Australia (Geoscience Australia) 2013

The location of farms in Australia shows that there is a change in the pattern of farming types, from the well-watered urban coastal regions towards the arid interior. Because much of Australia's inland rainfall is less than 250 millimetres, farm types in these places are limited to open-range cattle and sheep farming.

The pattern of land use and transition of farm types is shown in figure 2. It indicates that **intensive farms**, which produce perishables such as fruit and vegetables, are located on high-cost land close to urban markets. At the other extreme, the **extensive farms**, which manage cattle, sheep and cereals, are found on the less expensive lands distant from the market.

FIGURE 2 Changes in agricultural land use



11.9.2 Some farm types in Australia

Extensive farming of sheep or cattle

Sometimes known as livestock farming or grazing, sheep and cattle stations are found in semi-arid and desert grassland biomes, with rainfall of less than 250 millimetres. In 2015 Australia's 70 million sheep and 27 million cattle were found mainly in Queensland, Victoria and New South Wales. Farms are large in scale, covering hundreds of square kilometres. These days, they have very few employees, and often use helicopters and motor vehicles for mustering. Meat and wool products go to both local and overseas markets for cash returns.

FIGURE 3 Cattle mustering

Wheat farms

About 25000 farms in Australia grow wheat as a major crop, and the average farm size is 910 hectares, or just over 9 square kilometres. Wheat production in Australia for 2015 was estimated at 23 million tonnes. As in other areas of the world, extensive wheat farming is found in mid latitude temperate climates that have warm summers and cool winters, and annual rainfall of approximately 500 mm. In Australia, these conditions occur away from the coast in the semi-arid zone. The biome associated with this form of food production is generally open grassland, **mallee** or savanna that has been cleared for the planting of crops.

FIGURE 4 Wheat farming with a combine harvester

Soils can be improved by the application of fertilisers, and crop yields increased by the use of disease-resistant, fast-growing seed varieties. Wheat farms are highly mechanised, using large machinery for ploughing, planting and harvesting. The farm produce, which can amount to 2 tonnes per hectare, is sold to large corporations in local and international markets.

Mixed farms

Mixed farms combine both grazing and cropping practices. They are located closer to markets in the wetter areas, and are generally small in scale, but operate in much the same way as cattle and sheep farms.

Intensive farming

Intensive farms are close to urban centres, producing dairy, horticulture and market gardening crops. They produce milk, fruit, vegetables and flowers, all of which are perishable, sometimes bulky, and expensive to transport. The market gardens are capital- and labour-intensive, because the cost of land near the city is high, and many workers are required for harvesting.

Plantation farming

This form of agriculture is often found in warm, well-watered tropical places. Plantations produce a wide range of produce such as coffee, sugar cane, cocoa, bananas, rubber, tobacco and palm oil. Farm sizes can be 50 hectares or more in size. Although many such farms in Australia are family owned, in other parts of the world they are often operated by large multinational companies. Biomes that contain plantations are mainly tropical forests or savanna, and require large-scale clearing to allow for farming. Cash returns are high, and markets are both local and global.

FIGURE 5 Strawberries are typically grown in market gardens.

FIGURE 6 A banana plantation near Carnarvon, Western Australia

11.9 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Which type of agricultural land use is closest to urban centres, and which is the furthest away?
2. How does the ***environment*** in the centre of Australia affect farming types?
3. What is the ***interconnection*** between climate and farm type in Australia? (*Hint:* Refer to a climate map in your atlas for other ideas.)

Explain

4. Explain why extensive, large-***scale*** cattle and sheep farms are typically located in remote and arid regions of Australia.
5. Using the map of farm production in Australia, describe and explain the location of:
   (a) wheat farms
   (b) dairy farms.

Discover

6. Investigate which foods are grown closest to you.
7. Collect information on the percentage of land used for the different forms of farming in Australia, and then show this data in a graph. Comment on the details shown in your graph.
8. One of the growing plantation industries is that of palm oil. It often has great impacts on tropical biomes; loss of habitat is one such impact. On a world map, locate major palm oil production areas and explain the implications of loss of habitat in those areas.
9. Various plantations in Queensland (such as pineapple, sugar cane and banana plantations) are associated with fertiliser run-off, which is affecting the Great Barrier Reef. Find out what effects fertiliser has on these aquatic ***environments***.

Predict

10. What would be the impact of flood or drought on any of the commercial methods of food production?
11. Predict the impact of the growth of Australian capital cities on the ***sustainability*** of surrounding market gardens.

Think

12. Why is much of Australia's food production available for export?
13. It used to be said that Australia's economy 'rode on the sheep's back'. What do you think this means, and do you think it is still true today?

11.10 What does a farming area look like?

11.10.1 Creating farmland areas

Modern-day food production relies heavily on technology to create ideal farming conditions. This may involve reshaping the land to allow for large agricultural machinery and for the even distribution and drainage of water. Uneven or unreliable rainfall can be supplemented by irrigation. As a result of such changes, large areas can become important farmland.

CASE STUDY

Griffith

Griffith, located in the Western Riverina of New South Wales, is an important agricultural and food-processing centre for the region, generating more than $1.9 billion dollars' worth of food. It is responsible for 60 per cent of the oranges, 44 per cent of the rice and 51 per cent of the wine produced in New South Wales.

The first European explorer to the area was John Oxley, who described the region as 'uninhabitable and useless to civilised man'. This was largely due to the lack of a suitable water supply. The construction of irrigation canals in 1906 established a reliable source of water that could be used in food production. The region has become an important food centre owing to the large-scale use of irrigation combined with suitable flat land, fertile soils and a mild climate.

To investigate the area in a little more detail, study the topographic map shown in figure 2.

FIGURE 1 Orange trees growing in an orchard near Griffith, New South Wales

FIGURE 2 Topographic map extract, Griffith, New South Wales

Source: Commonwealth of Australia (Geoscience Australia).

SCALE 1:250 000

0 1 2 3 4 5 6 7 8 9 10 15 20 25 30 35 40 kilometres

11.10 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Discover

1. What types of ***environment*** might have existed in the Griffith area when Oxley first arrived?
2. Identify and name a possible source for irrigation water on the map in figure 2.
3. How is water moved around this area? (*Hint:* Follow the blue lines.)
4. Using the contour lines and spot heights in figure 2 as a guide, estimate the average elevation of the map area.
5. What is the importance of topography (the shape of the land) to irrigation?
6. What types of farming are found at the following ***places*** in figure 2?
   (a) GR410195
   (b) GR413220
7. Approximately what percentage of the map in figure 2 area is irrigated?

Explain

8. Are orchards and vineyards an example of intensive or extensive farming? Explain.
9. Compare the pattern of irrigation channels and buildings in AR3919 and AR4220 in figure 2. Suggest a reason for the differences you can see.

Think

10. Within Griffith there are many factories that process raw materials, such as rice mills, wineries and juice factories. What would be the advantages and disadvantages of locating processing factories close to growing areas?

11.11 SkillBuilder: Describing patterns and correlations on a topographic map

WHAT ARE PATTERNS AND CORRELATIONS ON A TOPOGRAPHIC MAP?

online only

A pattern is the way in which features are distributed or spread. A correlation shows how two or more features are interconnected—that is, the relationship between the features. Patterns and correlations in a topographic map can show us cause-and-effect connections.

FIGURE 1 Topographic map extract showing the Clare Valley, South Australia

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

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Watch this eLesson: Describing patterns and correlations on a topographic map (eles-1729)

Try out this interactivity: Describing patterns and correlations on a topographic map (int-3347)

11.12 Why is rice an important food crop?

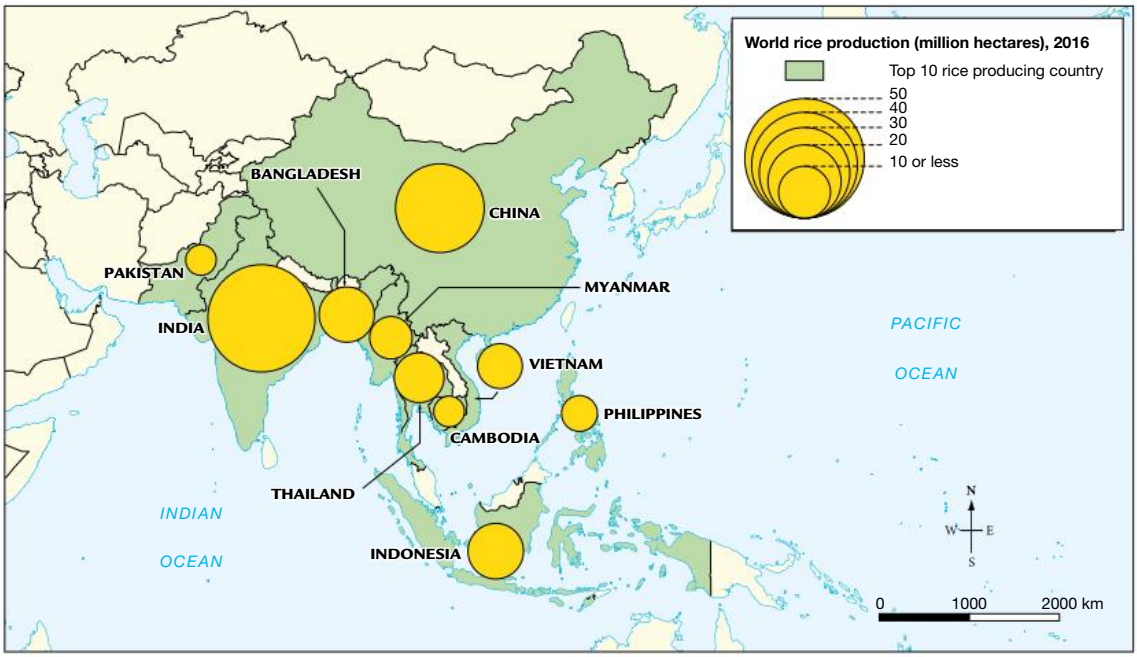
11.12.1 The importance of rice

Rice is the seed of a semi-aquatic grass. In warm climates, in more than 100 countries, it is cultivated extensively for its edible grain. Rice is one of the most important staple foods of more than half of the world's population, and it influences the livelihoods and economies of several billion people. In Asia, rice provides about 49 per cent of the calories and 39 per cent of the protein in people's diet. In 2010, approximately 154 million hectares of rice were harvested worldwide, and 95 kilograms were produced for each person on Earth.

Figure 1 shows that the largest concentration of rice is grown in Asia. About 132 million hectares are cultivated with this crop, producing 88 per cent of the world's rice. Of this, 48 million hectares and 31 per cent of the global rice crop are in South-East Asia alone.

Countries with the largest areas under rice cultivation are India, China, Indonesia, Bangladesh, Thailand, Vietnam, Myanmar (Burma) and the Philippines, with 80 per cent of the total rice area.

FIGURE 1 Top 10 rice-producing countries



Source: WorldAtlas.com, http://www.worldatlas.com/articles/the-countries-producing-the-most-rice-in-the-world.html

11.12.2 Factors affecting rice production in Asia

Climate and topography

Rice can be grown in a range of environments that are hot or cool, wet or dry. It can be grown at sea level on coastal plains and at high altitudes in the Himalayas. However, ideal conditions in South-East Asia are high temperatures, large amounts of water, flat land and fertile soil.

In Yunnan Province, China, the mountain slopes have been cultivated in terraced rice paddies by the Hani people for at least 1300 years (see figure 2). The terraces stop erosion and surface run-off.

FIGURE 2 Spectacular rice terraces in Yunnan Province, China. These terraces are at an elevation of 1570 metres.

Irrigation

Traditional rice cultivation involves flooding the paddy fields (*padi* meaning 'rice plant' in Malay) for part of the year. These fields are small, and earth embankments (*bunds*) surround them. Rice farmers usually plant the seeds first in little seedbeds and transfer them into flooded paddy fields, which are already ploughed. Canals carry water to and from the fields. Houses and settlements are often located on embankments or raised islands near the rice fields.

Approximately 45 per cent of the rice area in South-East Asia is irrigated, with the largest areas being found in Indonesia, Vietnam, the Philippines and Thailand. High-yielding areas of irrigated rice can also be found in China, Japan and the Republic of Korea. Because water is available for most of the year in these places, farmers can grow rice all year long. This intensive scale of farming can produce two and sometimes three crops a year.

Upland rice is grown where there is not enough moisture to nurture the crops; an example of such cultivation takes place in Laos. This method produces fewer rice varieties, since only a small amount of nutrients are available compared to rice grown in paddy fields.

FIGURE 3 Planting rice in paddy fields in north-east Thailand

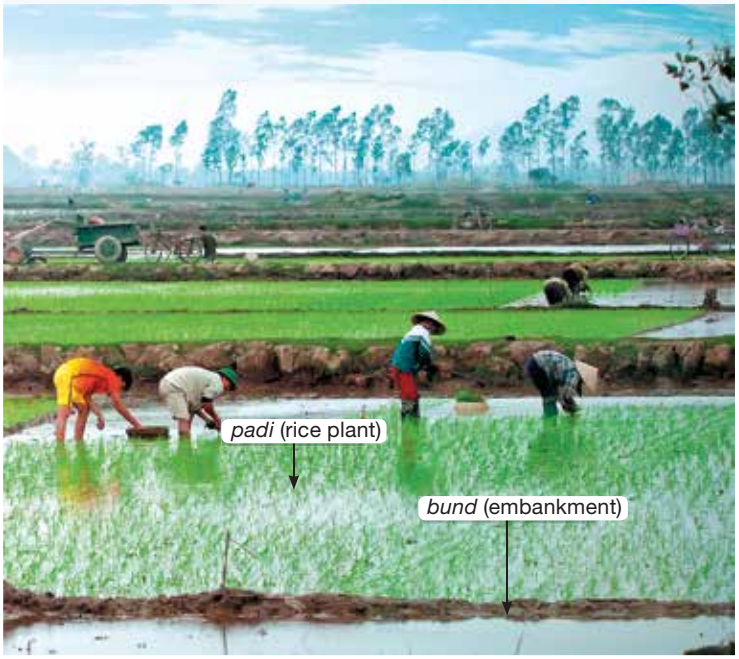


FIGURE 4 Rice demonstration plots at the International Rice Research Institute in the Philippines

Pests and diseases

Rice yields can be limited if any of the following conditions exist:

- poor production management
- losses caused by weeds (biotic factor)
- pests and diseases (biotic factor)
- inadequate land formation and irrigation water
- inadequate drainage that leads to a build-up of salinity and alkalinity.

Technology

Agricultural biotechnology, especially in China, has produced rice that is resistant to pests. There are also genes for herbicide resistance, disease resistance, salt and drought tolerance, grain quality and photosynthetic efficiency. Genetic engineering may be the way of the future in rice cultivation in some parts of the world.

However, in the Philippines, a new strain of rice has been developed that grows well in soils lacking phosphorus. This could change crop yields considerably, and has been a result of cross breeding rather than genetic engineering.

Environmental issues

Increasing temperatures, due to global warming, may be causing a drop in rice production in Asia, where more than 90 per cent of the world's rice is produced and consumed. The Food and Agriculture Organization of the United Nations (FAO) has found that in six of Asia's most important rice-producing countries — China, India, Indonesia, the Philippines, Thailand and Vietnam — rising temperatures over the past 25 years have led to a 10–20 per cent decline in rice output.

Scientists state that if rice production methods cannot be changed, or if new rice strains able to withstand higher temperatures cannot be developed, there will be a loss in rice production over the next few decades as days and nights get hotter. People may need to turn to a new staple crop.

Rice growing is eco-friendly and has a positive impact on the environment. Rice fields create a wetland habitat for many species of birds, mammals and reptiles. Without rice farming, wetland environments created by flooded rice fields would be vastly reduced.

11.12.3 Factors affecting rice production in Australia

Climate and topography

Eighty per cent of rice produced in Australia consists of temperate varieties that suit climates with high summer temperatures and low humidity. Rice is grown in the Murrumbidgee valleys of New South Wales and the Murray valleys of New South Wales and Victoria. The scale of production is sophisticated.

Sowing and irrigation

In Australia, rice grows as an irrigated summer crop from September to March. Most of it is sown by aircraft rather than planted by hand. Experienced agricultural pilots use satellite guidance technology to broadcast seed accurately over the fields.

Before sowing, the seed is soaked for 24 hours and drained for 24 hours, leaving a tiny shoot visible on the seed. Once sown, it slowly settles in the soft mud, and within three to four days each plant develops a substantial root system and leaf shoot. After planting, fresh water is released from irrigation supply channels to flow across each paddy field until the rice plants are well established.

Most countries grow rice as a **monoculture**, whereas Australian rice grows as part of a unique farming system. Farmers use a **crop rotation** cycle across the whole farm over four to five years. This means that the growers have other agricultural enterprises on the farm as well as rice. This system, designed for efficiency, sustainability and safety, means Australian growers maintain water savings, and have increased soil nutrients, higher yields and much healthier crops.

Once Australian rice growers harvest their rice, they use the subsoil moisture remaining in the soil to plant another crop — either a wheat crop or pasture for animals. This form of rotation is the most efficient in natural resource use and agricultural terms.

FIGURE 5 Murrumbidgee irrigation area rice fields

Pests and diseases

Rice bays (areas contained by embankments — see figure 5) are treated with a chemical application, which prevents damage by pests and weeds. Without this treatment, crop losses would be extensive. In the last 100 days before harvesting, the rice plant has no chemical applications, so that when it is harvested, it is virtually chemical free.

Technology

Most farms use laser-guided land levelling techniques to prepare the ground for production. This gives farmers precise control over the flow of water on and off the land. Such measurement strategies have contributed to a 60 per cent improvement in water efficiency. Most of the equipment used on rice farms is fitted with computer-aided devices, such as GPS (global positioning systems), CAD (computerised whole farm design), GIS (geographical information systems) and remote sensing. Australian rice growers are the most efficient and productive in the world.

FIGURE 6 Harvesting rice near Griffith, New South Wales

Environmental issues

The rice industry encourages **biodiversity** enhancement and greenhouse gas reduction strategies. Some farms in southern New South Wales are avoiding the use of chemical fertilisers and pesticides by converting farms to biodynamic practices, and have avoided salinity by planting red gums.

11.12 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Refer to figure 1. Which countries produce most of the world's rice?
2. What is meant by the term *monoculture*?

Explain

3. Explain why ***places*** in Asia are ideally suited to rice growing.
4. Use the internet to help you explain how the terraced rice fields shown in figure 2 have been formed.
5. Explain the ***environmental*** issues that may affect future rice production.
6. Describe and explain the similarities and differences between the rice cultivation methods used in Asia and Australia.

Discover

7. Investigate two different rice growing ***places*** in Asia and describe the reasons for the different ***environments***.
8. Investigate an example of an Australian rice farm and outline its yearly rice-growing cycle.
9. Research the ***interconnection*** between rice-growing and the Murray River for ensuring a ***sustainable environment***.

Predict

10. Predict how technology will influence ***changes*** to rice cultivation in both Asia and Australia.

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: How rice is cultivated in different places (int-3322)

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

› **Rice**

11.13 Why is cacao a special food crop?

online only

Access this subtopic at **www.jacplus.com.au**

11.14 Daly River: a sustainable ecosystem?

online only

Access this subtopic at **www.jacplus.com.au**

11.15 How can aquaculture improve food security for Indigenous people?

online only

Access this subtopic at **www.jacplus.com.au**

11.16 Review

online only

11.16.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

11.16.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

11.6 SkillBuilder: Constructing ternary graphs

11.6.1 Tell me

What are ternary graphs?

Ternary graphs are triangular graphs that show the relationship or interconnection between three features. Most graphs you have seen show the relationship between two features, not three.

Why are ternary graphs useful?

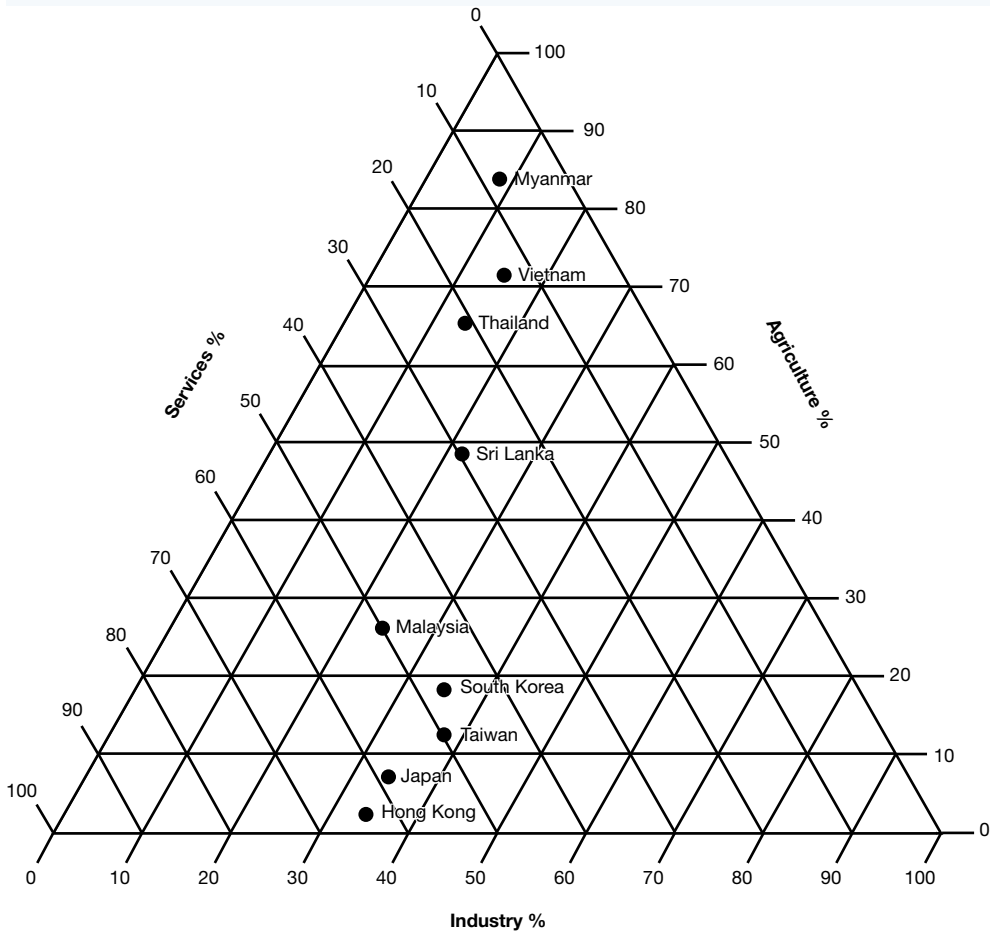
Ternary graphs are particularly useful when a feature has three components, and the three components add up to 100 per cent. Ternary graphs are most often used to show soil types, employment structures and age structures. They allow us to clearly see the interconnection between features. For example, with soil types, three different properties can be identified — clay, sand and silt. They can be graphed according to the proportion of each within a soil type, such as clay loam, sandy clay loam or silty clay loam.

Ternary graphs are useful for:

- economists comparing three economic features
- demographers considering population structures
- agriculturalists considering soil types.

Model

FIGURE 1 Economic activity in selected countries



A good ternary graph:

- is constructed as an equilateral triangle
- has each side of the triangle divided into 10 lines

- has lines drawn across the triangle that always total 100 per cent
- contains accurately plotted data
- has labelled axes
- includes a clear title.

11.6.2 Show me

How to construct a ternary graph

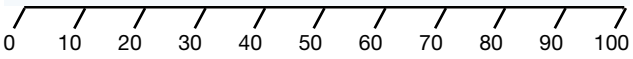
You will need:

- data on three features expressed as percentages and totalling 100 per cent
- a pencil
- a ruler
- an eraser.

Procedure:

STEP 1

FIGURE 2 Horizontal line with 10 markings 1 centimetre apart

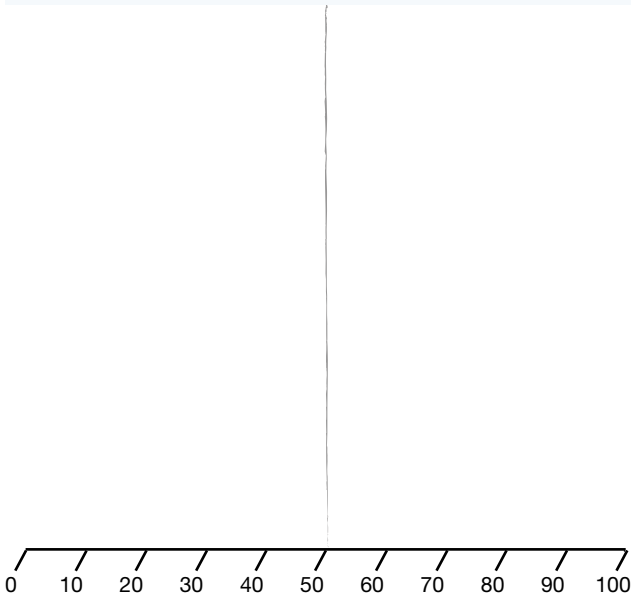


First you have to create an equilateral triangle — all three sides are equal and all three internal angles are 60°. Each side of the triangle becomes an axis on the graph. Begin by drawing a 10-centimetre horizontal line, and draw 10 marks that are one centimetre apart. Label these 0 to 10, with 0 on the left-hand side of your line and 100 at the right-hand side. Angle these marks to the left at 60°.

STEP 2

At the 50 per cent point, draw a faint vertical line of about 9 centimetres, which will help you to draw the other two axes. Later, you can rub this line out.

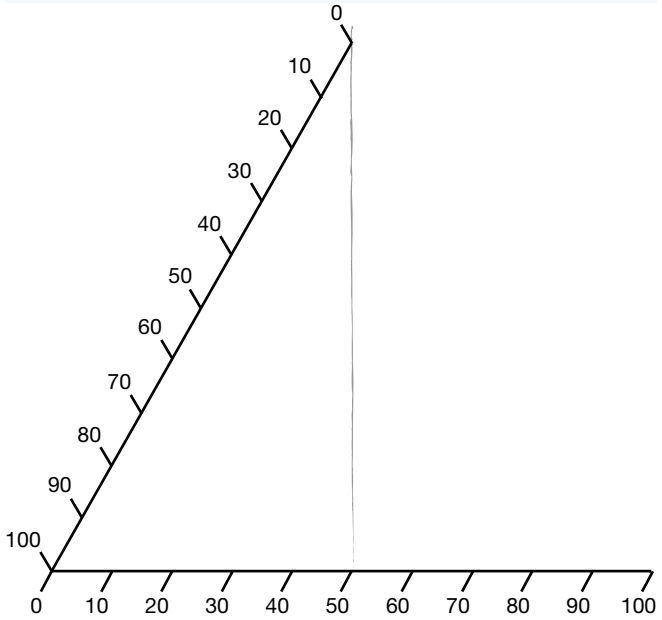
FIGURE 3 Forming the equilateral triangle



STEP 3

Now from the 0 per cent point, draw a diagonal line that is 10 centimetres long and intersects with the vertical line shown in figure 3. (It will intersect a few millimetres below the top of the vertical line.) Draw 10 marks that are one centimetre apart along this diagonal axis. However, this time, mark 100 per cent at the bottom of the line and 0 at the top.

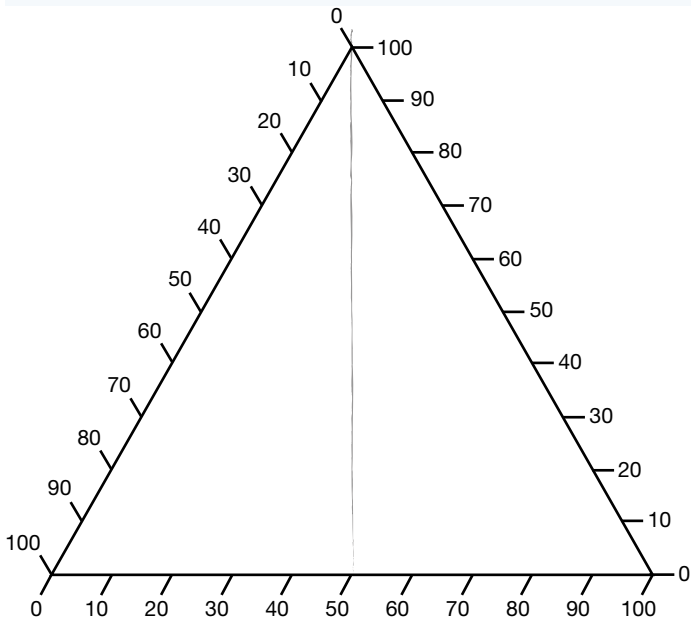
FIGURE 4 Creating a second axis



STEP 4

Repeat this step on the other side of the vertical line to complete the triangle, but reverse the markings, so 0 is at the bottom of the line and 100 is at the top. Your base graph should show a flow of 0 to 100 per cent around the graph, as in figure 5.

FIGURE 5 A ternary graph outline



STEP 5

Erase the vertical line that you drew to centre your graph.

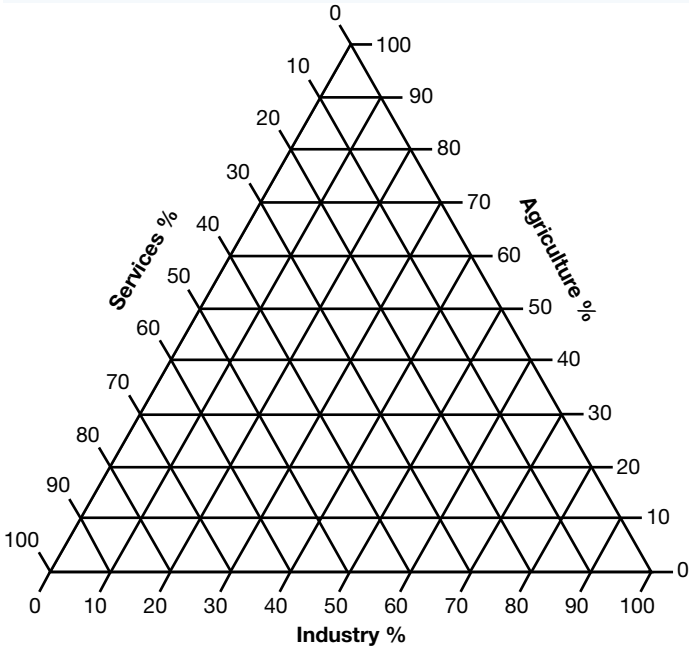
STEP 6

Now you need to use a ruler and carefully join points across the triangle that add to 100 per cent. This will provide a grid on which you can plot data.

STEP 7

Label the axes with the three features that you are going to plot. For figure 1, this is Services, Industry and Agriculture. Put the percentage symbol (%) after each label.

FIGURE 6 A ternary graph with its grid completed and axes labelled



STEP 8

Sample data for figure 1 would appear in a table like table 1.

FIGURE 7 Reading the grid

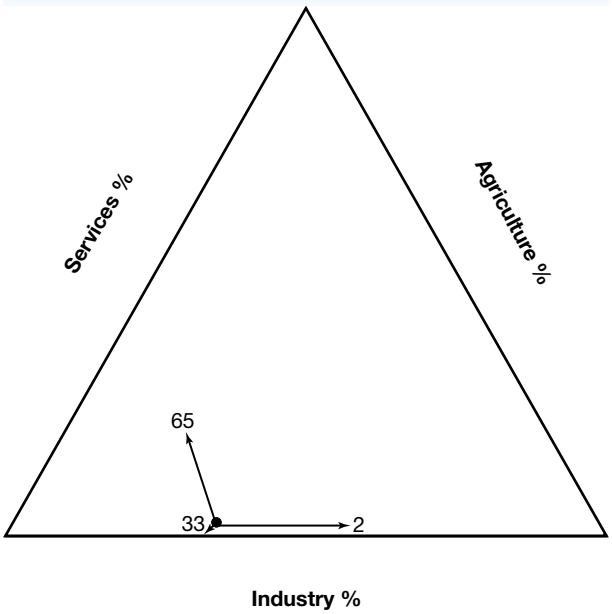


TABLE 1 Sample data on economic activity for selected countries in figure 1

Country	Agriculture %	Industry %	Services %
Hong Kong	2	33	65
Myanmar	84	8	8
Sri Lanka	49	21	30

To plot data, you need to find the point where the percentages for the three features intersect.

Plotting and reading ternary graphs needs concentration. You need to follow the diagonal lines sloping down from left to right (\) from the left-hand axis, the diagonal lines sloping up from left to right (/) from the bottom axis, and the horizontal lines from the right-hand axis. Look at the patterns outlined in figure 7 to make sure you read the grid in the correct manner. (Correctly angling the markers that fall outside the triangle will help you in plotting and reading the graph.)

When plotting country data, find the spot represented by the three sets of data and draw a small dot. Label it with the country name. Check that you can find the three countries in table 1 on your ternary graph.

STEP 9

Complete the graph with an appropriate title. In this case, the graph shows economic activity in selected countries.

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Watch this eLesson: Constructing ternary graphs (eles-1728)

Try out this interactivity: Constructing ternary graphs (int-3346)

11.6.3 Let me do it

Developing my skills

Use the following set of data to construct a ternary graph on labour force by occupation, 2011–12, in selected countries.

TABLE 2 Labour force by occupation, 2011–12, selected countries

Country	Agriculture %	Manufacturing %	Services %
Australia	4	21	75
Colombia	18	14	68
Finland	4	24	74
Germany	2	24	74
India	53	19	28
Indonesia	38	13	49
Italy	4	28	68
Sri Lanka	32	26	42
South Korea	6	24	70
Thailand	41	13	46
Venezuela	7	22	71
Vietnam	48	22	30

Questions

1. Which country has the greatest percentage of its population employed in agriculture?
2. Which country has the greatest percentage of its people employed in services?
3. Which countries have the lowest percentage of people employed in manufacturing?
4. Which country has the most even distribution across the three areas of employment?
5. Onto your graph, plot where you think the following countries would be placed: the United States, Gambia and Argentina. Explain your answer.

Checklist

I have:

- constructed an equilateral triangle
- divided each side of the triangle into 10
- drawn lines across the triangle that always total 100 per cent
- accurately plotted the data
- labelled the axes
- provided a clear title.

Skills questions

1. Ternary graphs are used to show:
   (a) the ***interconnection*** between features
   (b) cause and effect
   (c) the distribution of one aspect
   (d) the pattern of features.
2. Ternary graphs show the percentages of:
   (a) one component
   (b) two components
   (c) three components
   (d) four components.
3. Why is 100 per cent a key element of the ternary graph?
4. Why is care required when reading a ternary graph?

11.11 SkillBuilder: Describing patterns and correlations on a topographic map

11.11.1 Tell me

What are patterns and correlations on a topographic map?

A pattern is the way in which features are distributed or spread. A correlation shows how two or more features are interconnected — that is, the relationship between the features.

Why are patterns and correlations in topographic maps useful?

Patterns and correlations in a topographic map can show us cause-and-effect connections. A feature may be seen to occur at a place on a map and, when we ask why, other features on the topographic map help to explain the answer.

Topographic maps are useful for showing:

- landforms and land use connections
- water features and flooding for emergency services
- vegetation cover and slopes for fire authorities
- landforms and settlements for urban developers.

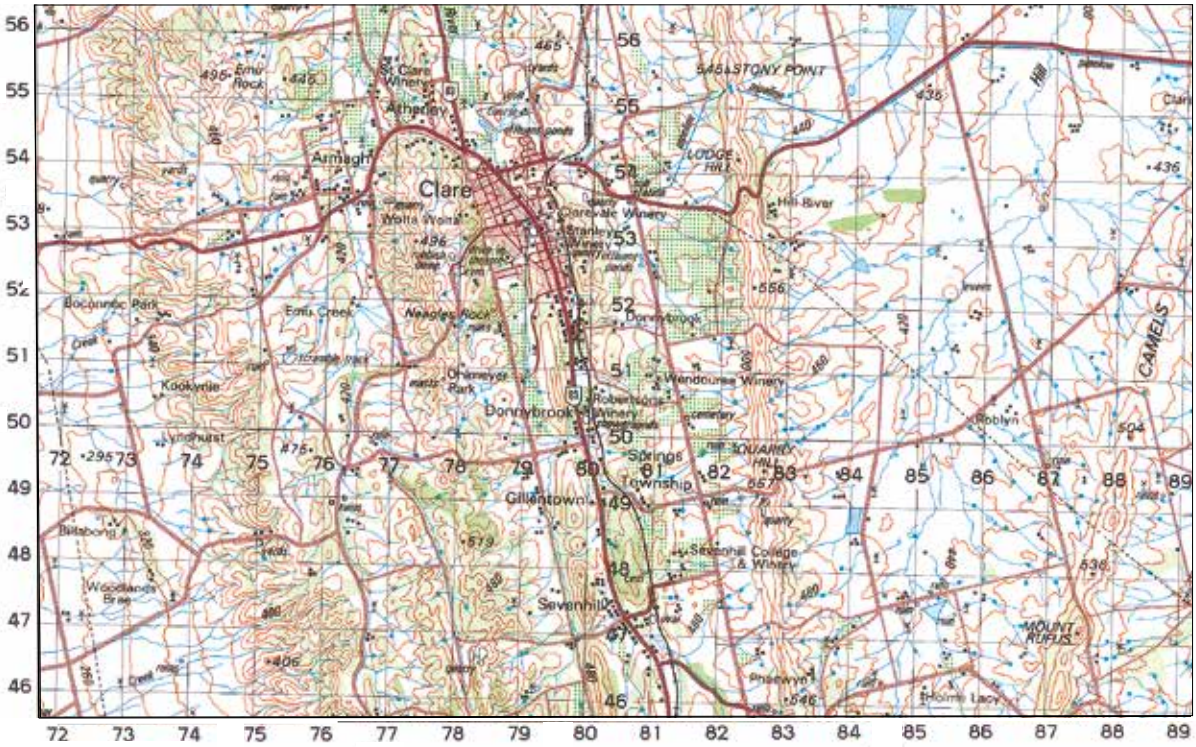
Model

In the environs of the township of Clare, South Australia, the eastern ridge slopes are used extensively for grape growing. Roads run parallel to the ridge and, owing to the steepness of the land, it is possible to drive over the ridge at only a few points, such as at Hughes Park (GR 800405). Settlements follow the ridge road along North Road. Streams that have their source on the ridge tend to flow west and form larger streams. Those streams flowing to the east are often dammed. Windmills throughout the flatter areas suggest water is needed for animal pasture in the drier months of the year. Spring Gully Conservation Park is a treed area on the steepest part of the ridge. The vineyards to the north at White Hut and Stanley Flat are not on sloped land, suggesting that the types of grapes grown there differ from those across most of the area. The Clare Valley region is an important vineyard area, adding significantly to the agricultural output of South Australia.

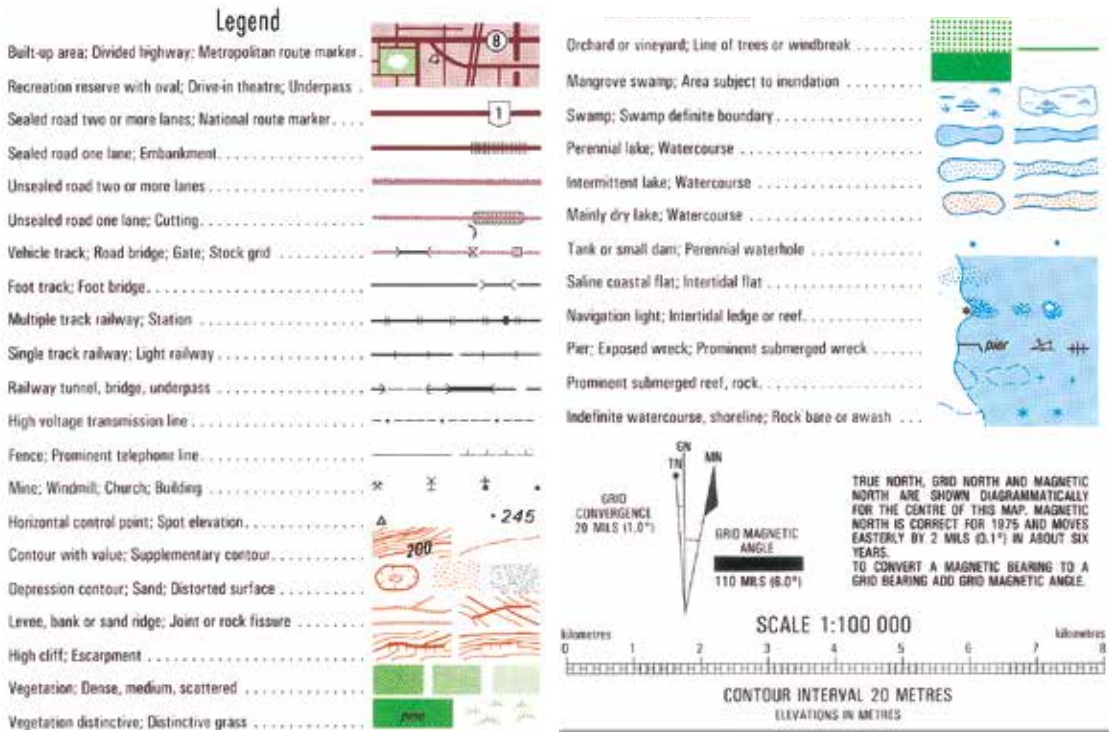
A good description of patterns and correlations in a topographic map:

- uses place names
- mentions distances
- identifies regions
- identifies connections
- notes anomalies
- is written in paragraphs, and includes an introduction that identifies the place and a conclusion that summarises the key findings.

FIGURE 1 Topographic map extract showing the Clare Valley, South Australia



Source: Spatial Vision



11.11.2 Show me

How to describe patterns and correlations in a topographic map

You will need:

- a topographic map of the place being considered.

Procedure:

STEP 1

Take the time to carefully analyse the topographic map, particularly its legend. Visualise the landforms and land use of the mapped place.

STEP 2

Now systematically look for connections between features, beginning with places that have strong connections. Try this list of connections that can be applied to most topographic maps:

- landforms and water or drainage
- landforms and vegetation types
- landforms and settlement
- landforms and agricultural use
- water and vegetation
- settlement and agricultural uses.

After you have identified these connections, write a few sentences describing any connections that are obvious. Begin by introducing the place being discussed, as in the paragraph under the heading 'Model' in section 11.11.1, which opens with 'In the environs of the township of Clare, South Australia . . .' An example of a connection found in figure 1 is that there is a strong link between land slope and vineyards.

STEP 3

Now systematically look for any anomalies that are evident. You are looking for things that seem unusual or show no connections. For example, in figure 1, the wineries at White Hut and Stanley Flat are not on east-facing slopes.

STEP 4

Complete your description with a concluding statement about the place. The paragraph under the heading 'Model' in section 11.11.1 concludes with the statement: 'The Clare Valley region is an important vineyard area, adding significantly to the agricultural output of South Australia.'

11.11.3 Let me do it

Developing my skills

Using the topographic map of the Griffith area, figure 2 in subtopic 11.10 of your text book (doc-11566 in the Resources tab), write a paragraph identifying any patterns and correlations that are evident.

Questions

1. Why are the water channels straight? Is there an interconnection between slope and water resources? Explain your answer.
2. To what extent is there a correlation between orchards and slope? Explain your answer.
3. Describe the direction of development of Griffith township. Suggest why it has developed in this way.
4. How do we know that the irrigated orchards are smallholdings?
5. Is there a correlation between land slope and agricultural land use?

Checklist

I have:

- used place names
- mentioned distances
- identified regions
- identified connections
- noted anomalies
- written in paragraphs and included an introduction that identifies the place and a conclusion that summarises the key findings.

Skills questions

1. Patterns and correlations in topographic maps are used to show:
   (a) the shape of the land between two ***places***
   (b) cause and effect
   (c) the distribution of one aspect
   (d) types of animals.
2. Patterns and correlations in topographic maps do not include information about:
   (a) settlements
   (b) numbers of cattle
   (c) slope
   (d) landforms.
3. Why should you include a statement of the location?
4. Why is it important to conclude your paragraph of writing?

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Watch this eLesson: Describing patterns and correlations on a topographic map (eles-1729)

Try out this interactivity: Describing patterns and correlations on a topographic map (eles-3347)

11.13 Why is cacao a special food crop?

11.13.1 Where is cacao grown?

Where does chocolate come from? Chocolate is made from the beans of the cacao plant. The chocolate that is produced from these beans might come from cacao grown in Ghana, Mexico, Malaysia or Indonesia. Look on the wrapper next time you eat a chocolate bar!

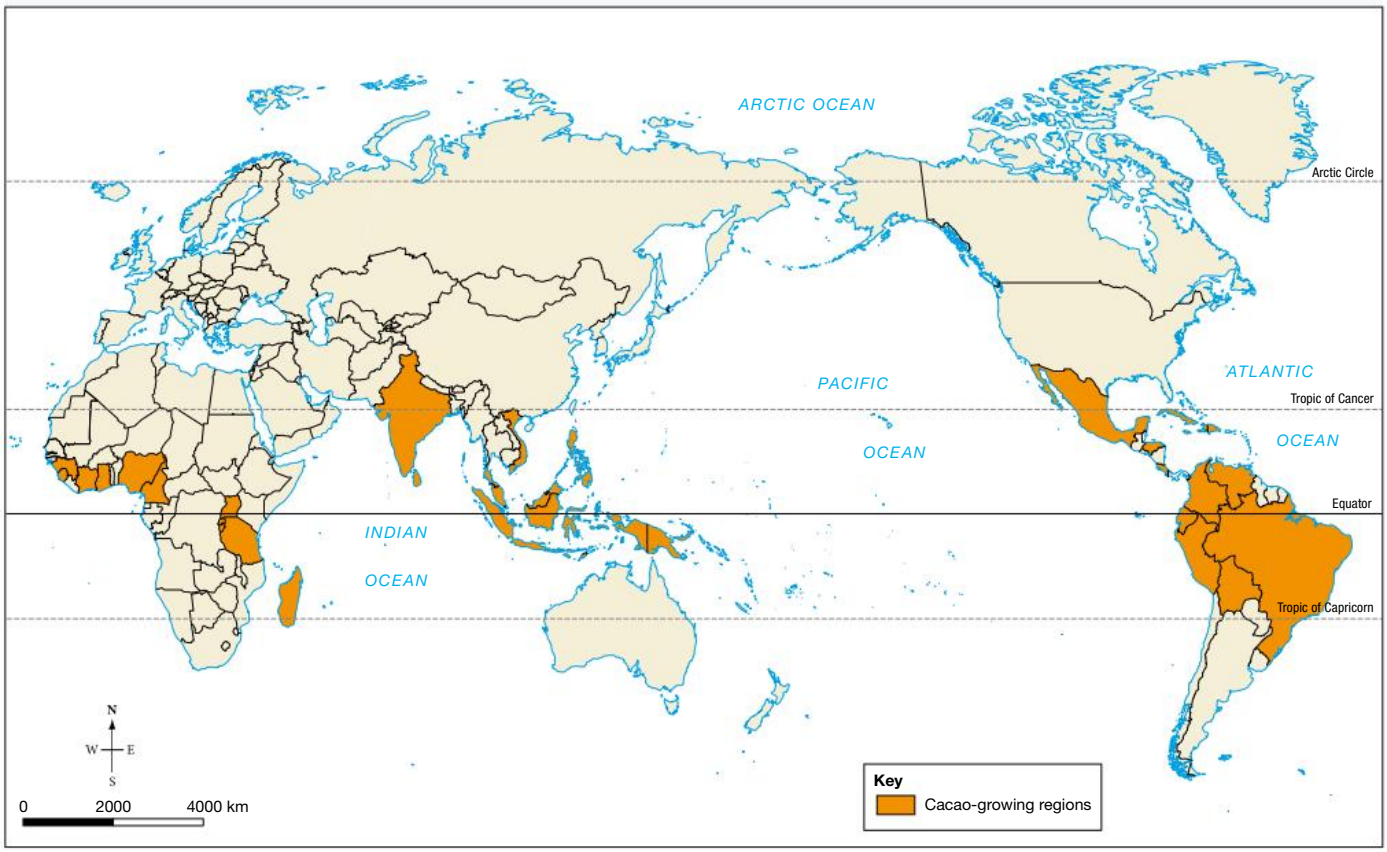
Chocolate has been eaten or drunk by people for 4000 years. A recent study showed that today, 91 per cent of females and 87 per cent of males consume chocolate products in places such as Great Britain, Australia, Switzerland, China and the United States. However, rising disposable incomes and changing tastes will continue to change the scale of production, both overseas and locally; people in India and China are now eating more chocolate.

The cacao tree is a native of the Amazon Basin and other tropical areas of South and Central America, where wild varieties still grow in the forests. Many countries now grow cacao, but the main places are:

- West Africa — Ghana, Nigeria and Cote D'Ivoire
- South America — Brazil and Ecuador
- Asia — Malaysia and Indonesia.

Malaysia and Indonesia, where cacao is a relatively new crop, are becoming increasingly important growing areas.

FIGURE 1 The main cacao-growing regions of the world



Source: Spatial Vision

11.13.2 What influences the growth and production of cacao?

Environmental factors

Most of the world's cacao is grown in a narrow belt between 10 degrees north and 10 degrees south of the equator. Cacao trees grow well in humid tropical climates with regular rainfall and a short dry season. The trees need temperatures between 21° and 23° C and rainfall of 1000 to 2500 millimetres per year. The soil must drain well but have good moisture-holding capacity. The trees cannot tolerate tropical sun and must be grown in the shade of other trees, such as banana trees, palms and rubber plants. Although cacao plants can reach a height of 12 metres, most are only six to seven metres tall. Growth is very fast, and the plant can flower and fruit two to three years after planting.

FIGURE 2 A cacao bean and seeds

FIGURE 3 A cacao farmer from Ghana carrying cacao pods

Economic factors

Around the world, six million cacao farmers — and 40 million to 50 million people in total — depend on cacao for their livelihood. For the past century, demand has grown by three per cent per year.

Cacao beans are an important export for West African nations such as Ghana and the Cote d'Ivoire. These countries are the source of more than 70 per cent of the world's cocoa.

Cacao beans are traded on the world market and their price can change daily, depending on supply and demand around the world. For example, too many beans on the world market can cause prices to drop, leaving farmers without the cash they need to cultivate their crops, and this ultimately lowers the supply. Adverse weather or tree disease can shrink supply as well.

Cacao is a **cash crop**, grown mostly in an **agroforestry** system, allowing for biodiversity and **income diversity** for families.

Labour

Cacao is one of the world's most labour-intensive crops. Much of the work is done by hand on a daily basis. The flowers are often pollinated by hand and defective pods are removed to allow the plant to put more energy into good ones.

Cultural factors

In Australia, chocolate Santas and Easter bunnies feature on special occasions. In many cacao-farming villages in other countries, drying the beans is done as a collective effort, with farming families gathering to turn the beans and visit with one another. In Oaxaca, Mexico, traditional healers called *curanderos* give chocolate drinks to cure bronchitis. They also plant cacao beans in the earth to ward off evil forces and heal those who have *espanto* — sickness caused by fright. Children drink chocolate for breakfast to ward off stings from scorpions or bees.

What is the future for chocolate?

Consumer demand for chocolate is on the rise, but the cacao tree is under threat from pests, fungal infections, climate change, and farmers' lack of access to fertilisers and other products that enhance yields. In West Africa, there are efforts to train farmers in organic, sustainable farming practices.

Global consumption is increasing, especially for darker, more cocoa-heavy varieties. Research is underway to develop hardier trees that can produce bigger yields while still making tasty chocolate. Fairtrade arrangements are improving the lives of farmers, increasing their income and helping them replace old trees and equipment.

11.13 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. On a world map, label and name the ***places*** where cacao is grown.
2. What ***environmental*** factors suit cacao growing in the Daintree region of North Queensland?

Explain

3. Explain how world cacao bean prices can affect a cacao farmer's income.
4. Explain the significance of chocolate in different cultures throughout the world.

Discover

5. Research an example of a ***sustainable*** growing method, such as shade cacao farming.
6. Investigate the industry assistance being given to cacao farmers, such as the Farmer Field Schools and the Cocoa Livelihoods Program.

7. Research the phenomenon of Fairtrade and how this operation has enabled the ***sustainability*** of cacao in many ***places*** in the world.

Think

8. Open Google Earth and select the Fairtrade Certified checkbox within the Global Awareness layer.
   (a) Investigate a number of cocoa cooperatives on different continents.
   (b) Describe the ***scale*** of these cooperatives and their importance to their countries. Where is their cocoa sold?
   (c) The idea of Fairtrade can benefit both farmers and the ***environment*** by promoting ***sustainable*** farming. After reading about the work of the cooperatives, consider whether the prices that farmers sell their cocoa for are fair.
9. Should money be spent on research to produce hardier cacao trees with bigger yields just to satisfy the chocolate desires of the Western world? It has been suggested that there could be a crisis in chocolate production by 2020, with chocolate becoming rare and very expensive. Should money be spent on other types of agriculture?

11.14 Daly River: a sustainable ecosystem?

11.14.1 Contrasting approaches to the land

Indigenous Australian peoples have been in Australia since the beginning of the Dreamings (more than 50 000 years by European estimates). Their perception of the land was that it provided sufficient resources to ensure their survival and wellbeing. Their interaction with the environment was sustainable and had a relatively low impact on the various biomes and associated ecosystems.

When Europeans colonised Australia, they thought that much of the continent was uninhabitable. They considered the land to be barren, hostile and unable to provide enough resources to ensure adequate food supplies and human survival.

Indigenous Australian peoples practiced seasonal land occupation travelling over very large areas in small groups, although in coastal and well-watered regions where food supplies were more abundant, a more sedentary lifestyle was adopted. They carried very little — usually just weapons and a few tools made of wood, stone or bone. They would seek shade under trees during the hottest part of the day and used campfires and blankets of tree bark to keep warm at night. Their hunting and gathering skills ensured an abundant supply of food and water. Aboriginal peoples divided their year into seasons that were determined by the weather and the available food resources associated with that weather. Use the **Daly River food calendar** weblink in the Resources tab to learn more about how Aboriginal peoples managed food supplies based on seasonally available resources in the Daly River area of the Northern Territory.

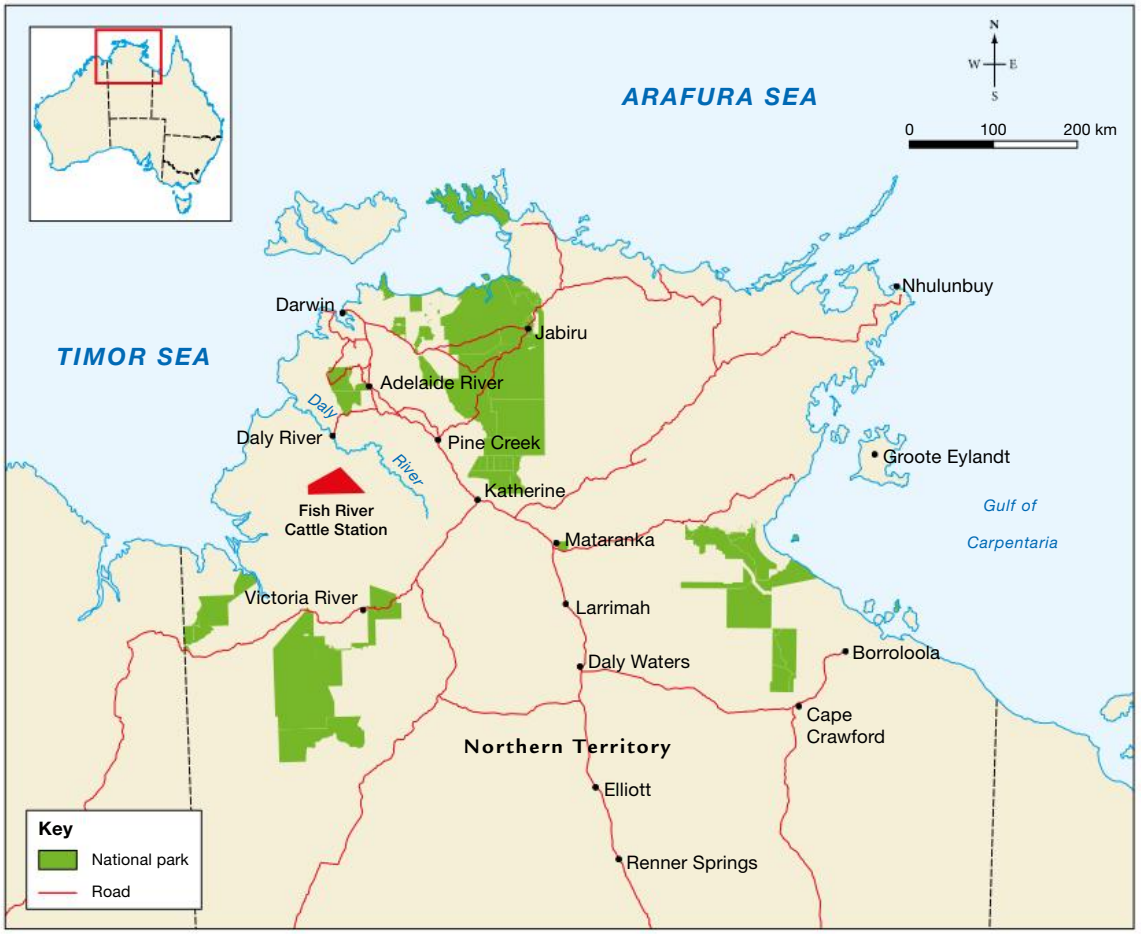
The Daly River area

Before European occupation, the Malak Malak Aboriginal people used Daly River as a traditional meeting place for trade and ceremonies. The Malak Malak were strong defenders of their country and hunted and gathered across the whole area.

Contact with the Europeans came late to this region when the Europeans occupied the area and made attempts in the 1880s to establish agriculture, pastoralism and mining.

FIGURE 1 Daly River in the wet season

FIGURE 2 Daly River is the name of a river and a town in the Northern Territory.



Source: Spatial Vision

However, by the 1920s, the vision of crops of peanuts and tobacco came to nothing, owing to pests, native grasses, acidic soil and flooding in the wet season, all of which made farming impossible. This was compounded by poor communication links and transport, and the fact that farm labourers were difficult to secure, unreliable and inexperienced. In 1967, the Tipperary Land Corporation cleared large tracts of land around the settlement and started growing sorghum, but their plans also came to nothing, with the whole operation being closed down in 1973. Most Aboriginal people worked on particular farms and worked as labourers or in fishing and crocodile-shooting enterprises. Many moved to nearby towns and communities.

Fish River Station

The Fish River cattle station (180 000 hectares) is on the Northern Territory's Daly River. Its isolation had previously made ranching difficult, and the local biomes, habitats and ecosystems were largely untouched.

The station was acquired by the Indigenous Land Council in 2011 along with environment groups and a department of the Federal Government, and was handed back to the traditional owners to foster cultural and sustainable economic development. The Indigenous owners (the Wagiman, Labarganyan, Malak Malak and Kamu peoples) will be able to generate income through programs such as fencing, cultural site protection, weed eradication, plant and animal surveys, feral animal eradication, soil conservation, and regeneration of threatened flora and fauna species. The plan will combine science with traditional knowledge to encourage biodiversity and will find ways to pass this knowledge to future generations.

FIGURE 3 Fish River Station rangers Desmond Daly and Jeff Long patrol 178 000 hectares of land.

11.14 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. When did the Europeans begin to occupy the Daly River area of the Northern Territory?
2. Why was the Fish River Station handed back to the traditional Aboriginal owners?

Explain

3. Describe the practice of seasonal land occupation by the Indigenous Australian peoples. How does it differ from your way of life?
4. Why would the seasonal ***changes*** in availability of food be an important part of Indigenous peoples knowledge of their land and its food supplies?

Discover

5. What are the features of the biomes found in the Daly River area? Describe some of their characteristics.
6. Litchfield National Park is close to the Daly River. Find out why this park has been set up in that area.

Predict

7. How might the re-establishment of native flora and fauna improve the ecosystems of the Daly River area and enhance their ***sustainability***?
8. How could tourism on the Fish River Station help with its economic development?

Think

9. Use the **Daly River food calendar** weblink in the Resources tab. What are the similarities and differences between modern food consumption and that shown in the Daly River seasonal calendar?
10. The United Nations has established a body called the Food and Agriculture Organization. Explain why this organisation would be important in managing agriculture now and in the future.
11. Find out more about the Indigenous Land Corporation, Northern Land Council and the Pew Environment Group.
12. Use the **United Nations Food and Agriculture Organization** weblink in the Resources tab to investigate the idea of biodiversity through sustainable food production.

learnON RESOURCES — ONLINE ONLY

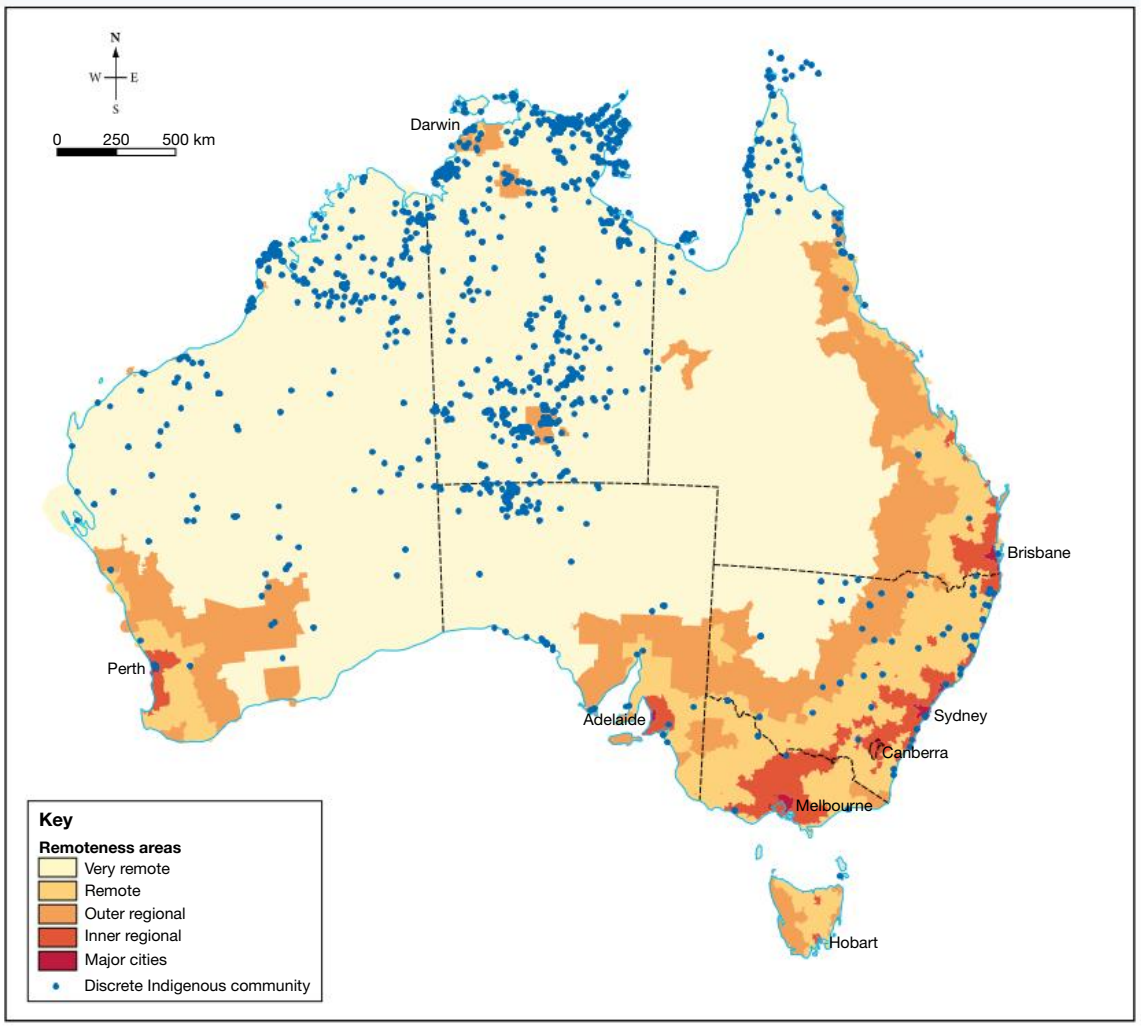
Explore more with these weblinks: Daly River food calendar, United Nations Food and Agriculture Organization (UN FAO)

11.15 How can aquaculture improve food security for Indigenous people?

11.15.1 Introduction

Aboriginal and Torres Strait Islander peoples reside in various locations around Australia, but they are more likely to live in remote locations than are non-Indigenous Australians (see figure 1).

FIGURE 1 Distribution of remote Aboriginal and Torres Strait Islander communities



Source: Australian Bureau of Statistics

Access to affordable and nutritious food is an ongoing problem in remote communities. These remote areas have a high cost of living and suffer from a general unavailability of fresh fruit and vegetables as well as other high-quality foods. As the main source of food is often limited to the local general store or takeaway outlet there are ongoing risks of food insecurity and consequent health issues related to limited choices of diet. The National Workforce Action Plan Report identified that 31 per cent of Aboriginal and Torres Strait Islander peoples living in remote areas were likely to be in households that had run out of food or could not afford to buy food, compared to 20 per cent for non-Indigenous people.

In these remote communities food is often the first thing to go when there is not enough money. Going without food, or more particularly going without costly nutritious food, has consequences for the general community and more particularly for disabled or chronically ill people as it compounds health issues.

11.15.2 Why is food security difficult in remote communities?

Aboriginal and Torres Strait Islander peoples living in these remote locations are not exposed to the same economic opportunities as people who live in large centres. As well as the high cost of living, limited educational outcomes, insufficient social services and work opportunities, and economic insecurity are often prevalent. This includes a lack of access to infrastructure that supports the development of various business ventures that could lead to financial and employment opportunities for the local community.

FIGURE 2 Some fresh fruit and vegetables that will ensure food security

Historically, Aboriginal and Torres Strait Islander peoples managed their food and water resources carefully to prevent food insecurity by living on their lands sustainably. However, after European occupation they were denied access to their lands and natural resources. This loss of traditional hunting and fishing areas played a role in limiting their access to nutritious and fresh sources of food.

To help alleviate food insecurity, the Federal Government, in conjunction with state and territory governments, has implemented programs aimed at improving food availability and access across various industries that relate to Indigenous Australian peoples' connection to land and place. **Aquaculture** has been identified as one of these industries.

Aquaculture ventures could provide an independent source of food and a source of revenue for further community development, employment and training opportunities. It could also provide a sense of community pride and prospects for future generations, and is in keeping with Indigenous peoples' role as caretakers and traditional custodians of the land.

11.15.3 The mud crab aquaculture venture at Kulaluk near Darwin

The aim of this venture was to establish a long-term sustainable Aboriginal-owned and operated mud crab aquaculture venture on land owned by the Gwalwa Daraniki Association at Kulaluk near Darwin in the Northern Territory.

Mud crabs have always been a traditional food source for Indigenous Australian peoples in coastal regions. The aquaculture farm established by this venture at Kulaluk aims to provide economic and social development opportunities for the local Indigenous community as well as food security for not only local people but the broader communities.

The mud crabs from the farm will primarily be sold directly to restaurants and wholesalers in the local Darwin market to keep transport costs to a minimum. Some produce, however, will be sent directly to other Australian capital cities using air freight (see figure 4).

FIGURE 3 Mud crabs raised at a government aquaculture centre in Darwin

FIGURE 4 Live mud crabs are tied and packed to be flown to Sydney, Melbourne, Perth, Adelaide and Brisbane.

11.15.4 How will the farm promote food security?

The farm will focus on providing development opportunities for people from the Aboriginal community located on Kulaluk land and other Indigenous peoples located in the Darwin area. These opportunities include:

- education and training for the Indigenous community, such as undertaking courses in aquaculture and business management at Charles Darwin University
- employment options working for a commercial aquaculture venture, such as research assistants, farm hands and office workers
- building community capacity for the Indigenous community, such as allocating revenue to support other Indigenous businesses or community development initiatives identified under the community development plan.

Recent government initiatives to improve food security in remote Indigenous communities have supported this mud crab aquaculture venture because it builds demand for healthy food.

Ultimately, the mud crabs venture will promote healthy eating by building, training and supporting a sustainable workforce in remote communities and reduce food insecurity.

11.15 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Identify two issues faced by Indigenous Australian communities living in remote locations.
2. Identify four benefits aquaculture production will provide for Aboriginal and Torres Strait Islander communities.

Explain

3. Explain what we mean when we say 'Indigenous peoples' role as caretakers and traditional custodians of the land'.

Discover

4. Examine figure 1, the map showing the distribution of remote Aboriginal and Torres Strait Islander communities. Describe this distribution.
5. Find out what diseases fresh food and vegetables help to alleviate.

Predict

6. How will aquaculture help to provide food security through economic security for Indigenous Australian peoples and other Australian people?

Think

7. Why is aquaculture suitable as an economic venture to overcome food insecurity in remote and near city areas of Australia?

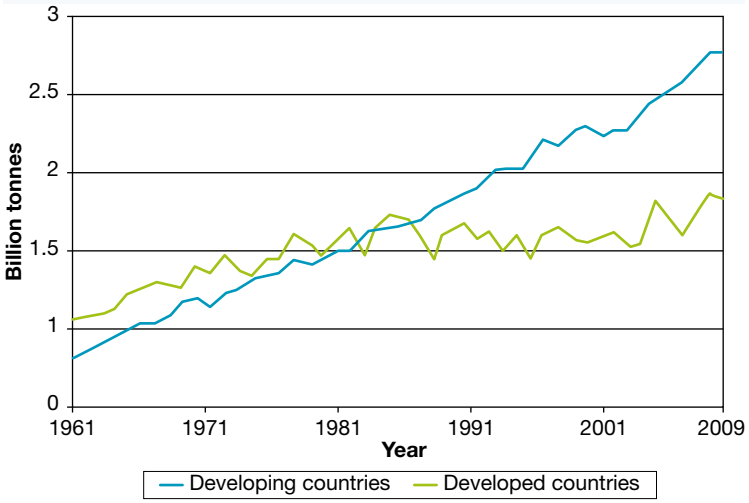
11.16 Review

11.16.1 Review

Global food crops

1. Refer to figure 1. Describe how the production of food crops has ***changed*** over time for developing and developed places in the world. Suggest why the production level is higher in the developing regions.
2. 'The intensification of crop production in the developed world began with the Green Revolution'. Discuss this comment with reference to specific examples.
3. Refer to figure 1. If food production were to increase in the future, suggest the ***places*** that might experience this expansion. Use researched examples to suggest the ***scale*** of the impact this may have on the ***environment***.
4. Rice can be grown under a number of environmental conditions, so why is it not grown in the rest of the world to the extent it is in Asian regions?

FIGURE 1 World production of major crops, 1961–2009



Source: FAO

5. ***Environmentally***, cacao grows well in north Queensland. If cacao production was to be increased in this region, there could be costs to cacao farmers in other countries. Suggest examples of economic costs these farmers might face.
6. Cacao trees must be grown in the shade of other trees, such as banana trees, palms and rubber plants. What might be the advantages and disadvantages of this to a cacao farmer?
7. Explain why, with a choice of 50 000 edible plants, people have come to rely on only a small group of staple food crops. Refer to subtopic 11.3 to help you.
8. Keep a diary of the food that you have eaten for a week and identify where these food items might have been grown in Australia. Refer to subtopic 11.9 for additional information about farm types in Australia.

Griffith case study

Refer to subtopic 11.10 to answer the following questions.

9. What aspects of the Australian ***environment*** would John Oxley have found different from the English countryside?
10. What has been the key to the agricultural success of the Griffith region?
11. Refer to figure 2 in subtopic 11.10 (see doc-11566 in the Resources tab). In what ways has the environment been modified for farming in this area?
    (a) What is the highest point on this map? Give the grid reference and elevation.
    (b) What is the main land use at higher elevations?
    (c) Why is this area not used for farming?
12. What are the requirements needed for growing (a) grapes and (b) oranges? Conduct research to find the types of irrigation methods used and why.
13. Why is the Griffith region suitable for rice farming?

11.16.2 Reflect

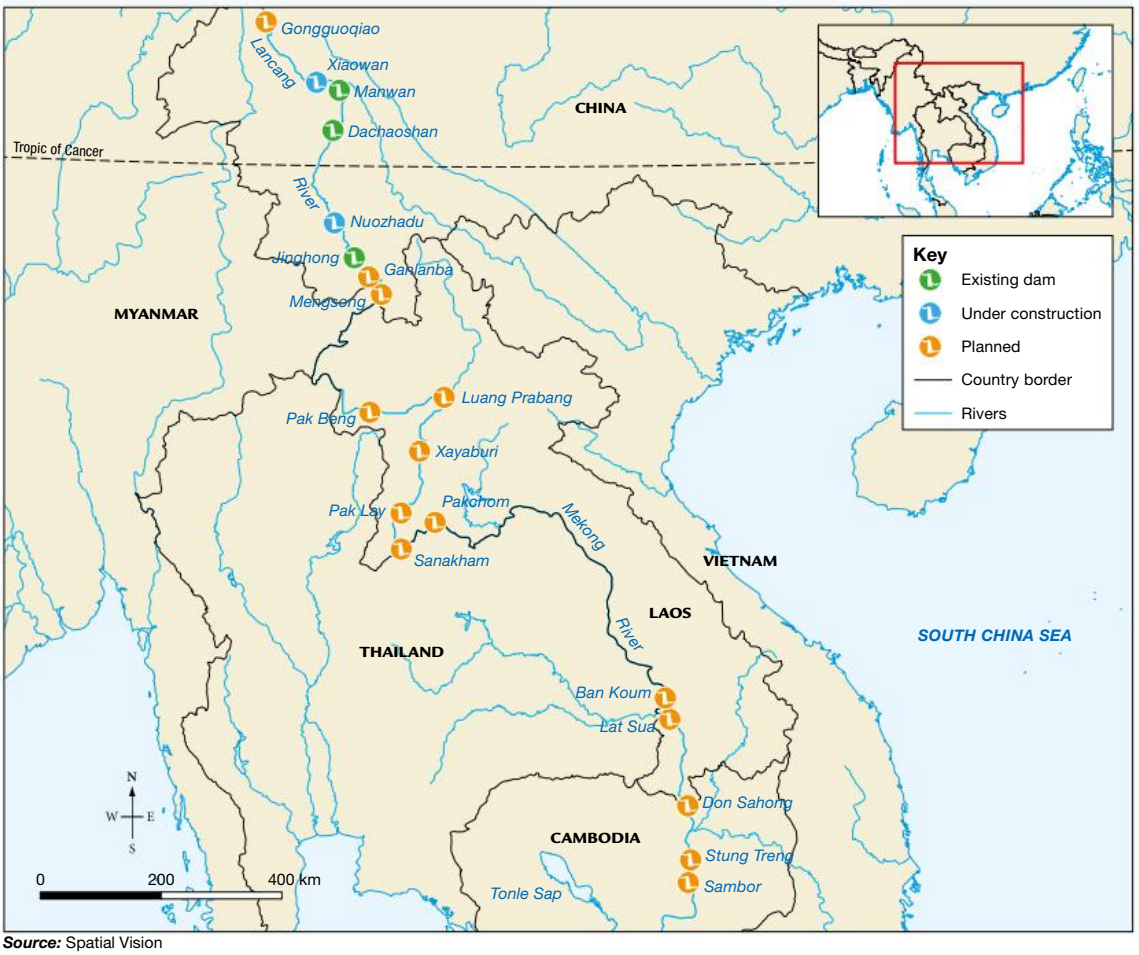
Tonle Sap lake and floodplains

Tonle Sap of Cambodia is classified as a Biosphere Reserve, and is the largest freshwater body in South-East Asia. It is home to one of the world's largest freshwater fisheries and, when combined with associated rice fields, it provides most of the staple food of Cambodia. The lake produces over 400 000 tonnes of fish — two-thirds of Cambodia's annual fish catch. Rich biodiversity, abundant sediments and nutrient inflows from the Mekong River makes Tonle Sap and its floodplain biome one of the most productive inland fisheries and rice-producing areas in the world.

However, in the past decade, the fish catch at Tonle Sap has dwindled significantly. It is feared that the lake is losing its attributes due to overfishing and changes to the river floodplain biome. Over 70 per cent of Tonle Sap's water comes from the Mekong River, and it is possible that this inflow is being compromised by the construction of dams.

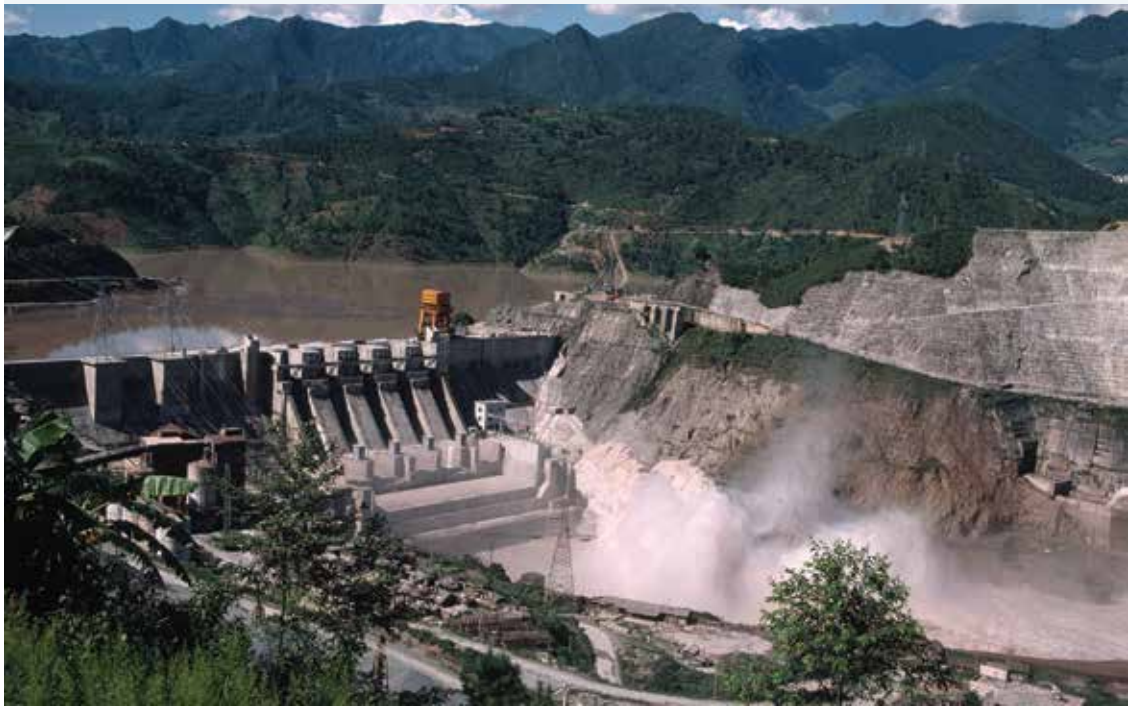
14. A number of dams have been planned or have already been built on the Mekong River as shown in figure 2. Use the **International Rivers** and **Mekong Times** weblinks in the Resources tab to find out more about the dams on the Mekong River and answer the following questions.
    (a) What ***changes*** to the availability of water for Tonle Sap would result from the dams on the Mekong River?
    (b) The Mekong River flows through China, Laos, Cambodia and Vietnam. What issues between nations could arise with respect to dams and water distribution?
    (c) Why might Cambodia and Vietnam have the 'worst deal' in gaining water from the Mekong River?

FIGURE 2 Dams on the Mekong River



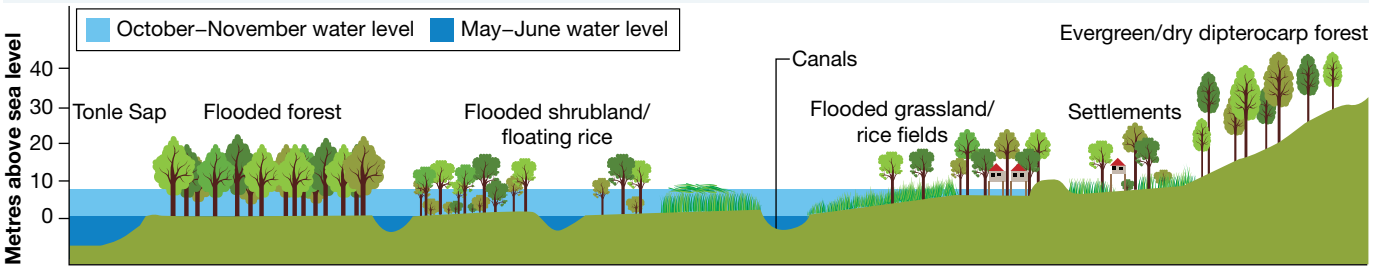
Source: Spatial Vision

FIGURE 3 Manwan Dam, China



15. Study the diagram in figure 4, showing the Tonle Sap floodplain biome, ecosystem and general ***environment***.
    (a) Describe the vegetation and crop structure from the lake to the evergreen/dry forest, and give reasons for the location of the settlements and the rice fields.
    (b) The floodplain adjacent to the lake is an important breeding ground for fish and crustaceans in the wet season. What ***changes*** occur to the breeding grounds for fish and to the rice-producing areas when waters from the Mekong River arrive? How would this ***change*** or help in the production of food sources from fisheries and rice crops?
    (c) What parts of the Tonle Sap floodplain biome would ***change*** if water from the Mekong River was lost due to dam construction? How would this affect seasonal production from rice fields and fisheries and their general ***sustainability*** as a form of agriculture?

FIGURE 4 Diagram illustrating the Tonle Sap floodplain



Global food crops

16. Should we be concerned about future food crop supplies, or is this a problem for future generations?
17. Should farmers planting food crops be concerned about the ***sustainability*** of the ***environment***, or only about economic factors?
18. *The Green Revolution was responsible for producing higher-yielding varieties of wheat, rice and maize. It relied on crops being grown with high levels of irrigation, fertilisers and pesticides. These often replaced natural resources; for example, fertilisers replaced soil quality management, while herbicides provided an alternative to crop rotations as a means of controlling weeds*.
    Evaluate these ideas, suggesting whether these strategies would be implemented if the Green Revolution had been introduced in the twenty-first century.
19. In the cacao industry, children often contribute positively to the household income by helping out on the family farm in appropriate work that does not jeopardise their health or education. Unfortunately, also, child labour remains widespread in the cacao sector, with a quarter of children aged between 5 and 17 living in cacao-growing regions involved in its production, mainly on family farms or working with parents. Most of these children are exposed to hazardous conditions, using dangerous tools and carrying heavy loads, with 51 per cent reporting injuries while at work. Should we, in Australia, be concerned about this? What could we do? How is Fairtrade helping to ***change*** this child labour market?
20. Is it the duty of nations with food surplus to be responsible for feeding the world? Think carefully about the consequences if food aid to nations with food shortages does not occur.
21. What can we learn from the agricultural practices of indigenous people around the world in the way they produce their food (for example: Aboriginal and Torres Strait Islander peoples, the San people and Bedouin people)?

TOPIC 12
What are the impacts of feeding our world?

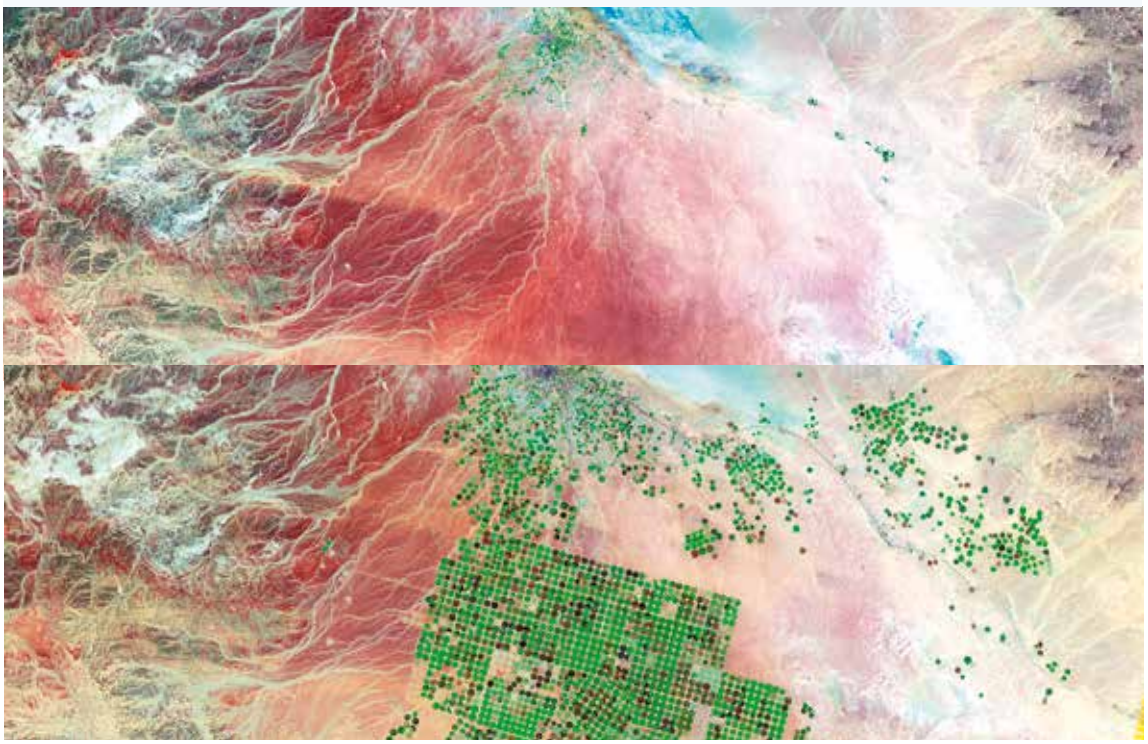
12.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

12.1.1 Introduction

The world's biomes support human life. We depend on these biomes for food, water, fibres, fuel and wood. We also rely on the services they provide, such as purifying air, regulating climate and providing spiritual and aesthetic comfort. However, our ecosystems are under considerable threat, largely as a result of our activities. Increasing population and demand for food have altered many of our biomes. There have been positive benefits, such as improved standards of living, although this has not been consistent across the globe. At the same time, there has been a significant decline in species biodiversity. Unless many of these problems are addressed, there is a growing concern that we may not be able to enjoy food security in future.

False-colour satellite images of the Wadi As-Sirhan Basin, Saudi Arabia, in 1987 (top) and 2012 (bottom). Large-scale irrigation in desert regions to maintain such agricultural fields consumes large quantities of groundwater.



Starter questions

1. How can feeding the world be destroying the world?
2. Do you know where your food comes from?
3. What food items do you eat most of within a typical day? Are they animal-based, plant-based or fish-based?
4. Do you or your family grow any of your own food?
5. Looking at the images on the previous page, how might this irrigation farming affect the desert biome?

INQUIRY SEQUENCE

12.1	Overview		250
12.2	How does producing food affect biomes?		251
12.3	Where have all the trees gone?		253
12.4	**SkillBuilder:** GIS — deconstructing a map	online only	256
12.5	Paper profits, global losses?	online only	257
12.6	Should we farm fish?		257
12.7	**SkillBuilder:** Interpreting a geographical cartoon	online only	262
12.8	How do we lose land?		263
12.9	Irrigation: success or failure?		265
12.10	Does farming use too much water?	online only	267
12.11	Why is global biodiversity diminishing?		267
12.12	Does farming cause global warming?	online only	270
12.13	**Review**	online only	270

12.2 How does producing food affect biomes?

12.2.1 What is our biophysical world?

Food is essential to human life, and over the past centuries we have been able to produce more and more food to feed our growing population. While technology has enabled us to increase production, it has come at a price. Large-scale clearing of our forests, the overfishing of our oceans, and the constant overuse of soils has resulted in a significant decline in our biophysical world.

Planet Earth is made up of four spheres: the atmosphere, lithosphere, hydrosphere and biosphere (see figure 1).

All these spheres are interconnected and make up our biophysical or natural environment. For example, rain falling from a cloud (atmosphere) may soak into the soil (lithosphere) or flow into a river (hydrosphere) before being taken up by a plant or animal (biosphere) where it may be evaporated and returned to the atmosphere.

Natural events, such as storms or earthquakes, or human activities can create changes to one or all of these spheres. The production of food, whether from the land or sea, has the potential to change the natural environment and, in doing so, increases the likelihood of food insecurity. Table 1 shows how food production can affect the biophysical world.

FIGURE 1 The Earth's four spheres

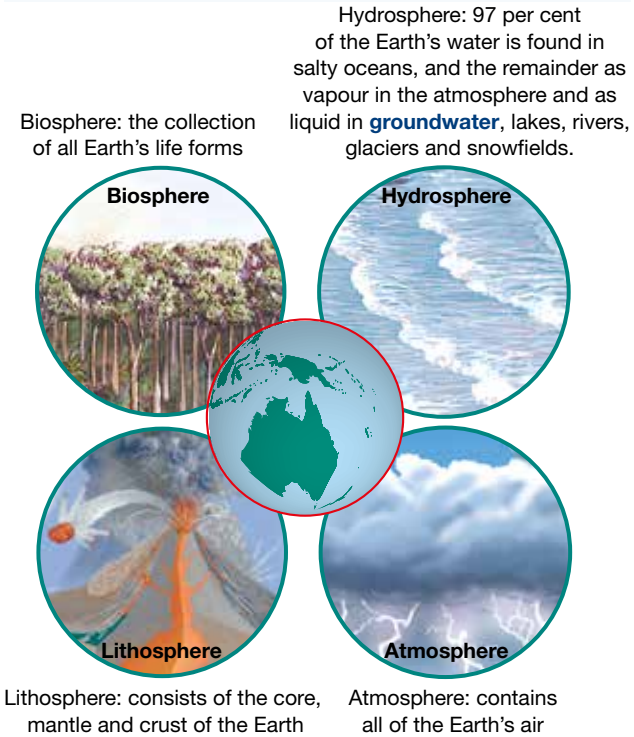


TABLE 1 How food production affects the biophysical world

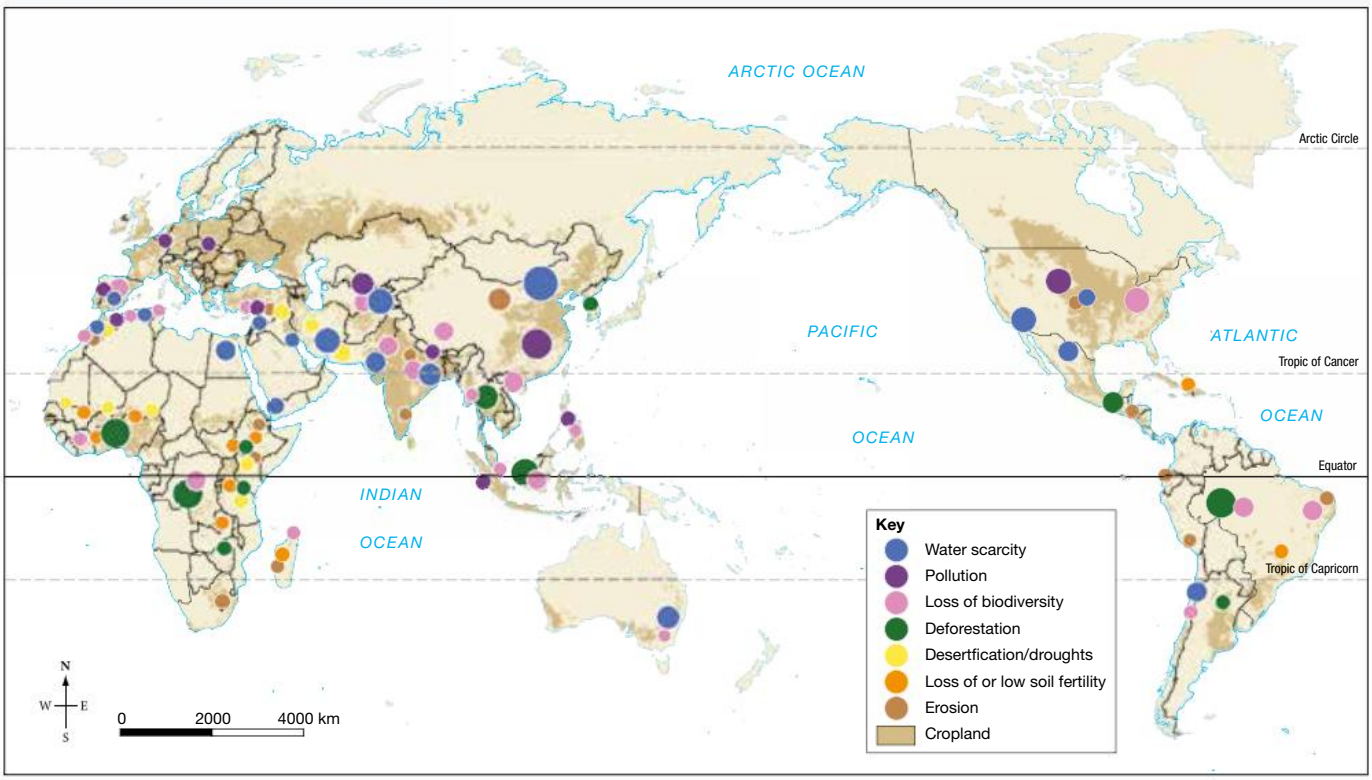
Activities	Atmosphere	Lithosphere	Biosphere	Hydrosphere
Clearing of native vegetation for agriculture	x	x	x	x
Overgrazing animals		x	x	x
Overusing irrigation water, causing saline soils		x	x	x
Burning forests to clear land for cultivation	x	x	x	x
Run-off of pesticides and fertilisers into streams		x	x	x
Producing greenhouse gases by grazing animals and rice farming	x			
Changing from native vegetation to cropping		x	x	x
Withdrawing water from rivers and lakes for irrigation	x	x	x	x
Overcropping soils		x	x	x
Overfishing some species			x	

12.2.2 What has happened to our biophysical world?

Currently, the world produces enough food to feed all 7 billion people. We produce 17 per cent more food per person than was produced 30 years ago, and the rate of food production has been greater than the population growth. This has been the result of improved farming methods; the increased use of fertilisers and pesticides; large-scale irrigation; and the development of new technologies, ranging from farm machinery to better quality seeds.

There have been many benefits associated with this change, especially in terms of human wellbeing and economic development. However, at the same time, humans have changed the Earth's biomes more rapidly and more extensively than in any other time period. The loss of **biodiversity** and **degradation** of land and water (which are essential to agriculture) is not sustainable. With an expected population of 9.7 billion in 2050, it has been estimated that food production will need to increase by approximately 70 per cent. The global distribution of environmental risks associated with food production can be seen in figure 2.

FIGURE 2 State of the world's land and water resources for food and agriculture



Source: Spatial Vision

12.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Describe the **biophysical environment** of your local area.
2. Why has food production increased so rapidly over time?

Explain

3. Explain, with the use of figure 1 how a bird might ***interconnect*** with the four Earth spheres.
4. Select one example from table 1. Describe how human activity can ***change*** the biophysical world.
5. Refer to figure 2 and your atlas.
   (a) What are the main ***environmental*** issues facing Australia's food production?
   (b) In which ***places*** in the world is deforestation a major concern?
   (c) Which continents suffer from water scarcity?
   (d) What do you notice about the location and distribution of regions that do not have ***environmental*** problems relating to food production?

Discover

6. Select one agricultural product in Australia and conduct research to find data on how much is produced and how this has ***changed*** over time.

Think

7. Use the following labels to create a flow diagram showing how the clearing of native vegetation can affect all four of the Earth's spheres.
   – Soil left bare and exposed to wind and water erosion
   – Less evaporation of water from vegetation
   – Loss of habitat for birds, animals and insects
   – Increased water runs off from exposed land
   – Increased sediment builds up in streams
8. Refer to figure 2.
   (a) How would you rank these environmental impacts on a scale from the least to the most serious of impacts?
   (b) What criteria could you use to help make this decision?

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: Impacts of agriculture around the world (int-3323)

12.3 Where have all the trees gone?

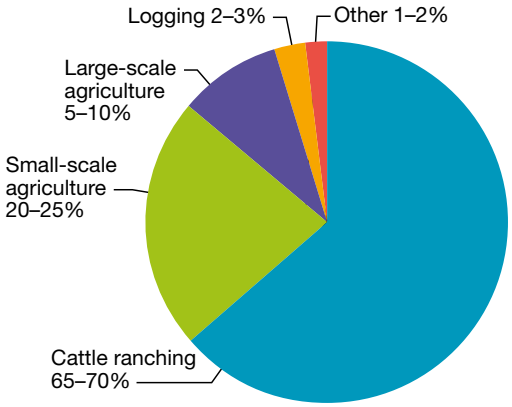
12.3.1 Why are forests important?

Thirty per cent of the world's land surface is covered in forest. This is nearly one-third less than existed in prehistoric times, when humans did not have the technology to fell trees in large numbers. Large-scale deforestation has occurred as the need for timber products and land for food has increased over time. In the decade from 2000 to 2010, over 13 million hectares of forest was cleared each year. Cultivated land now covers one-quarter of the Earth's land surface.

Forest biomes offer us many goods and services, ranging from wood and food products, to supporting biological diversity. They provide habitat for a wide range of animals, plants and insects. Forests contribute to soil and water conservation, and they absorb **greenhouse gases**.

12.3.2 Why do we clear forests?

FIGURE 1 Main causes of deforestation in the Brazilian Amazon, 2000–2005



By clearing forests, valuable trees can be harvested for timber and paper production, while mining ores and minerals can be accessed below the Earth's surface. Sometimes, forests are flooded rather than cleared in order to construct dams for hydroelectricity. Forests may also be cleared for food production, such as small-scale **subsistence** farming, large-scale cattle grazing, and for **plantations** and crop cultivation. Figure 1 illustrates the main causes of **deforestation** in the Amazon rainforest during the peak period of deforestation. In recent years, the scale of deforestation in the Brazilian Amazon has been reduced due to an improved economy and the growing awareness of the value of preserving forests.

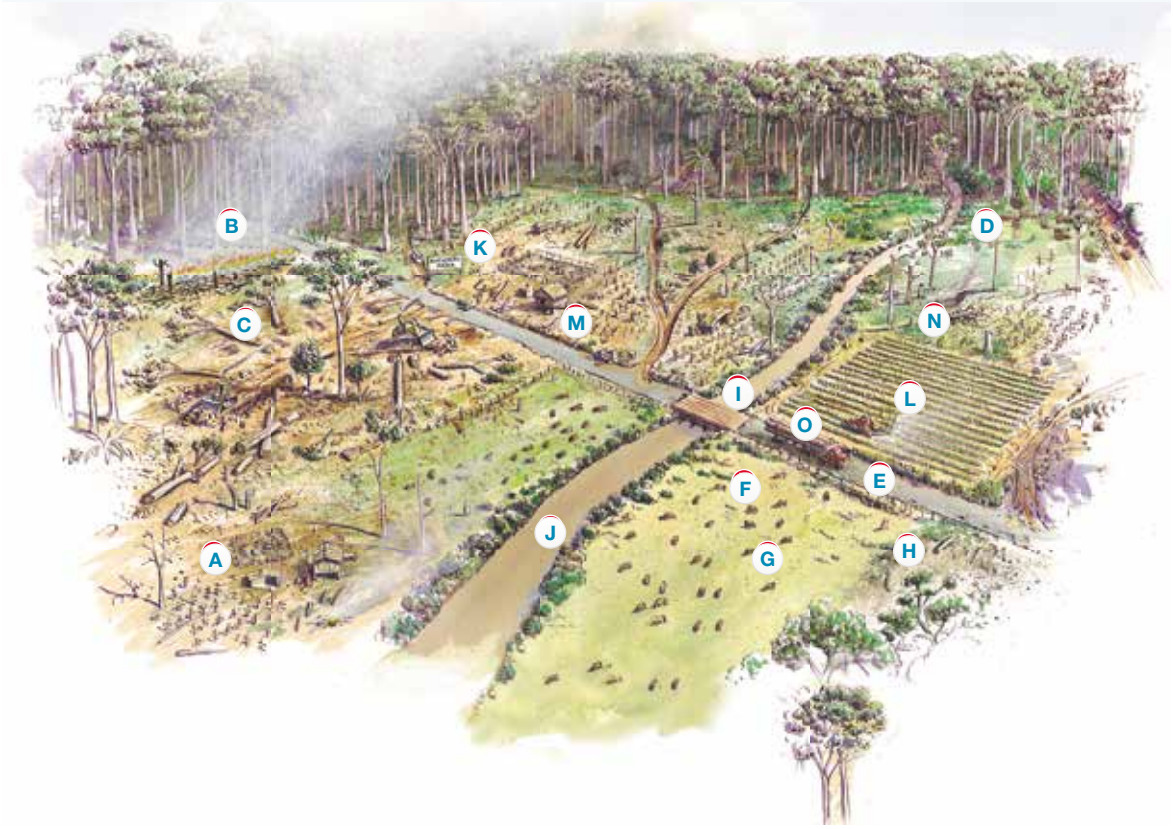
Road construction, usually funded by governments, also plays a part in changing rainforest environments (see figure 2). Roads help to improve access and make more land available, especially to the landless poor. They also reduce population pressures elsewhere by encouraging people to move to new places. At the same time, businesses benefit from improved access to mine resources and forest timbers, and are better able to establish large cattle ranches and farms.

FIGURE 2 The effects of road building in the Amazon. Settlements tend to follow a linear pattern along the roads and then gradually move inland, opening up the forests.

12.3.3 What happens when forests are cleared?

Figure 3 illustrates some changes that forest clearing in the Amazon can have on the environment.

FIGURE 3 Impacts of clearing the Amazon rainforest



A New farmland with mixed crops established
B Smoke from clearing and burning
C Newly cleared land, trees cut down and burned. This is called slash-and-burn agriculture.
D Weeds and exotic species invade edges of remaining forest
E New road gives access to more settlers and to animal poachers
F Large cattle ranch
G Introduced cattle erode the fragile topsoil with their hard hooves.
H Erosion of topsoil increases, caused by rain on exposed soils.
I Flooding increases as stream channel is clogged with sediment
J The river carries more sediment as soil is washed into streams.
K Fences stop movement of rainforest animals in search of food.
L Pesticides and fertilisers wash into river
M Farm is abandoned as soil fertility is lost
N Weeds and other species dominate bare land
O Harvesting of timber reduces forest biodiversity.

12.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Refer to figure 1. What are the three main causes of deforestation in the Amazon?
2. What are the advantages and disadvantages of road building in the Amazon?

Explain

3. Why would subsistence farming in the Amazon be referred to as slash-and-burn farming?
4. In what ways would the ***environmental changes*** of small-***scale*** subsistence farming differ from those of large-***scale*** soya bean cropping?

Discover

5. Research soya bean farming in the Amazon. How does it compare with cattle ranching in terms of ***environmental sustainability***?

Predict

6. Examine the illustration of rainforest destruction shown in figure 3. Draw a sketch of what you predict the area will look like in ten years' time. Use labels and arrows to show important features.

Think

7. Opening up the rainforest with roads can lead to fragmentation of the forest. What might the effect of this be on:
   (a) native animals
   (b) local indigenous populations?
8. Compare how a small-scale farmer from the Amazon and an environmentalist from another country might view the resources of a rainforest.

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.
› **Forest environments**

12.4 SkillBuilder: GIS — deconstructing a map

online only

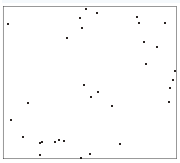
WHAT IS GIS?

A geographical information system (GIS) is a storage system for information or data, which is stored as numbers, words or pictures.

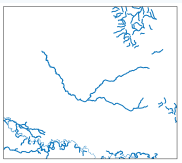
Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 GIS allows information to be displayed in a succession of map layers.

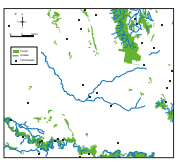


Point features marked on first layer of tracing paper.



Line features of rivers and creeks are traced onto a second layer.

The polygon data of forests are traced onto a third piece of tracing paper.



The three layers of tracing paper are now combined, and BOLTSS are added.

learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Deconstructing a map using GIS (eles-1730)

Try out this interactivity: Deconstructing a map using GIS (int-3348)

12.5 Paper profits, global losses?

Access this subtopic at **www.jacplus.com.au**

online only

12.6 Should we farm fish?

12.6.1 Why are we overfishing?

The ocean biome has always been seen as an unlimited resource of food for humans. In fact, overfishing is causing the collapse of many of our most important marine ecosystems, and threatens the main source of protein for over one billion people worldwide. **Aquaculture** is a possible solution but, at the same time, it contributes to the decline in fish stocks.

Overfishing is simply catching fish at a rate higher than the fish species can replace themselves. It is an unsustainable use of our oceans and freshwater biomes.

Massive improvements in technology have enabled fish to be located and caught in larger numbers and from deeper, more inaccessible waters. The use of spotter planes, radar and factory ships ensures that fish can be caught, processed and frozen while still at sea.

Globally, fish is the most important animal protein consumed (see figure 1). Historically, a lack of conservation and management of fisheries, combined with rising demand for fish products, has seen a 'boom and bust' mentality (see figure 2). The larger fish species are targeted and exploited and, after their populations are decimated, the next species are fished. Examples of these include blue whales, Atlantic cod and bluefin tuna.

FIGURE 1 Global protein demand, 1980–2030 (million tonnes)

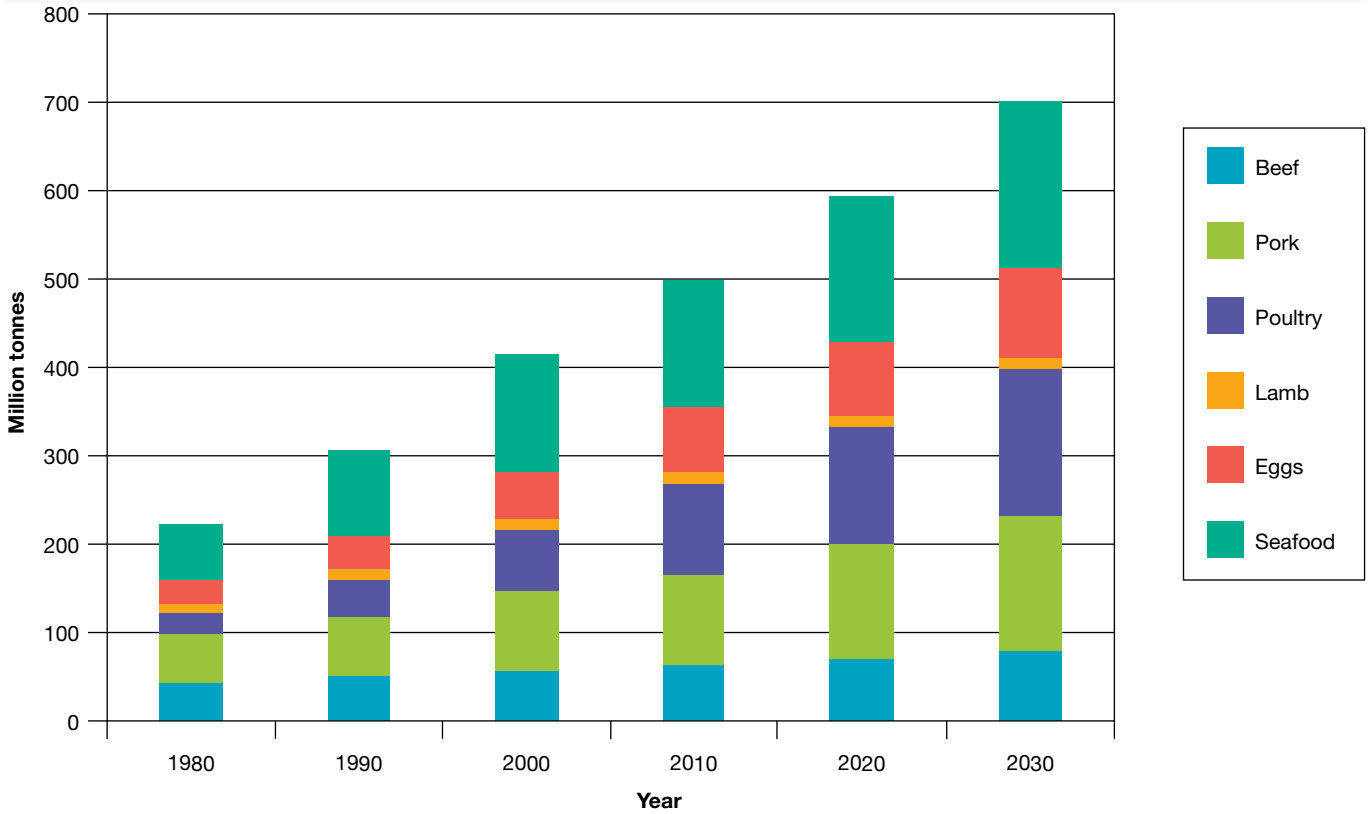


FIGURE 2 Unsustainable fishing

12.6.2 What happens when we overfish?

- With overfishing there are often large quantities of by-catch. This means that juvenile fish and other animals, such as dolphins and sea birds, are swept up in nets or baited on hooks before being killed and discarded. For every kilogram of shrimp caught in the wild, 5 kilograms of by-catch is wasted (see figure 3).
- Destructive fishing practices such as cyanide poisoning, dynamiting of coral reefs and bottom trawling (which literally scrapes the ocean floor) cause continual destruction to local ecosystems.
- A large quantity of fish, which could have been consumed by people, is converted to fishmeal to feed the aquaculture industry, and to fatten up pigs, chickens and pet cats (see figure 4).
- Coastal habitats are under pressure. Coral reefs, mangrove wetlands and seagrass meadows, all critical habitats for fish breeding, are being reduced through coastal development, overfishing and pollution.

FIGURE 3 Up to 80 per cent of some fish catches is by-catch.

12.6.3 Shark attack!

FIGURE 4 In Australia, the average cat eats 13.7 kilograms of fish a year compared with the average Australian, who eats 1 kilogram a year.

Many species of sharks are now threatened with extinction due to excessive overfishing. Their fins are often used to make shark fin soup, an expensive Chinese delicacy and status symbol, and a sign of wealth and prosperity. When sharks are caught, their fins are removed. The live sharks are then thrown overboard and they drown because they cannot swim without fins. This process is known as 'finning'. The United Nations Environment Programme (UNEP) estimates that up to 73 million sharks are killed each year to supply the shark fin market. One consequence of this is that nearly one-third of all ocean-going sharks are now on the internationally recognised list of threatened species. Some populations of hammerhead sharks have declined by 99 per cent in heavily fished regions such as the Mediterranean Sea and the north-west Atlantic Ocean.

Sharks are prone to overfishing because they tend to grow and mature slowly and produce relatively few young. They are also often accidently caught up in tuna fishing nets.

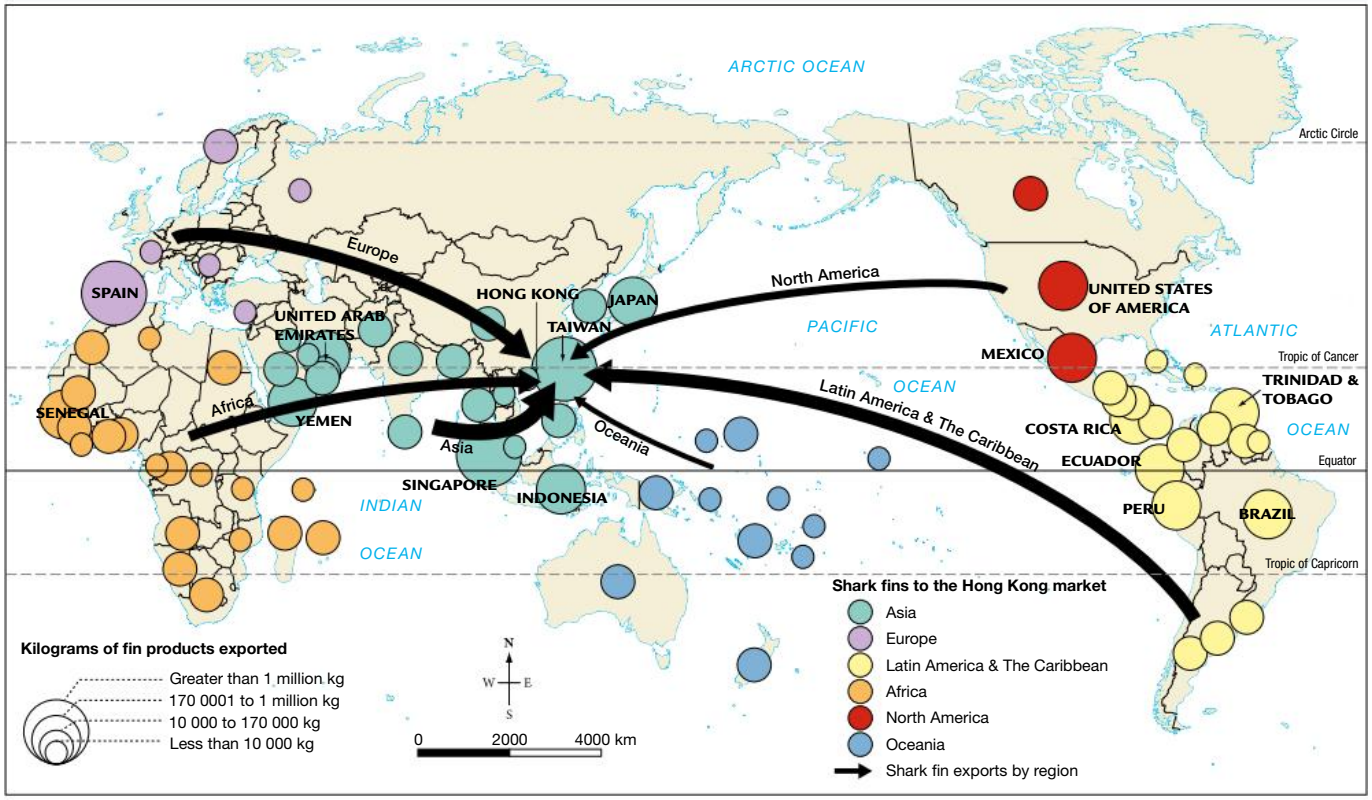
The practice of finning is banned in many countries, such as the United States, the European Union and Australia. Instead, the sharks must be brought back to shore before the fins are removed and the bodies must be discarded. This limits the size of catches due to the amount of space available on the boat as well as the need for refrigeration. However, the value of the fins is much higher than the shark meat. For example, an Australian fisherman might only earn $17 per kilogram for flake (shark meat that is filleted and frozen) compared to $880 per kilogram for shark fins, which are simply dried and stacked without refrigeration.

Changing trends

Hong Kong and China have always been the major importers of shark fin, as seen in figure 5, with supplies coming from more than 70 countries across all continents. However, in the past decade the demand and price for fins has decreased by approximately 25 per cent, particularly in China. This decline has been attributed to two main changes. First, in 2013 the Chinese Government banned shark fin soup and other unsustainable seafood from all official events; and second, there has been a major push from environmental organisations such as WildAid to educate people and discourage the consumption of shark fin.

A survey discovered that 75 per cent of Chinese were unaware that the soup, known as 'fish wing soup' was actually made of shark fin, and more than 19 per cent of people interviewed believed that the fins would grow back after being removed. The success of the public awareness campaign has led to more people rejecting finning and shark fin soup.

FIGURE 5 Imports of shark fins into Hong Kong in 2012



Source: Spatial Vision

What is being done to protect sharks?

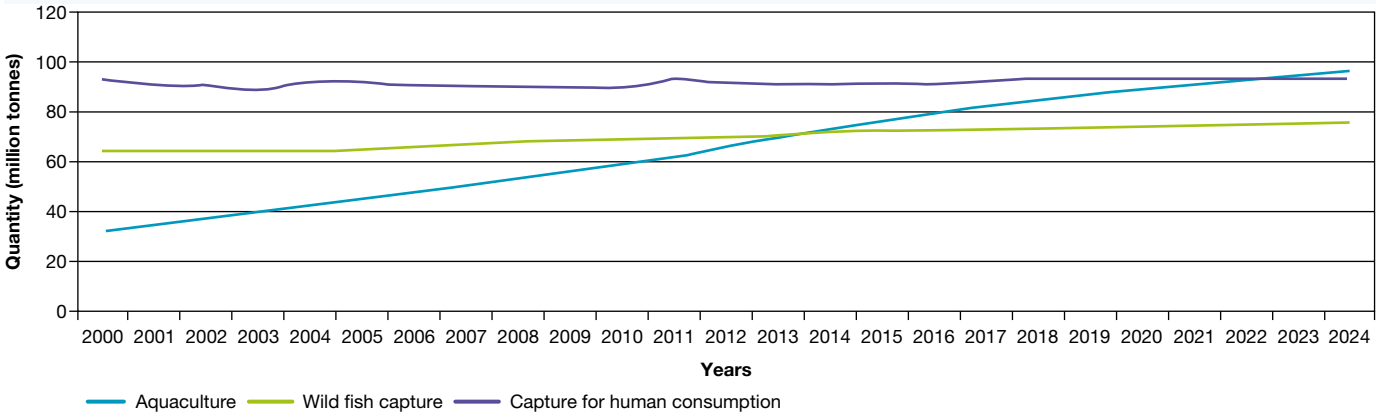
- More than 30 airlines are refusing to carry fins as cargo and 15 international hotel chains have dropped the soup from their menus.
- While finning is banned in Australia, it is legal to import, sell and export the fins. Eighteen thousand kilograms were imported in 2015, mostly from New Zealand, Hong Kong, China and the Philippines.
- Shark fishing is legal in India, but the export of fins is banned. Fishermen in coastal India are reliant on shark meat as a low cost protein source. The export of fins brings in much needed money, and fishermen argue that since shark populations have not changed in recent years, the export ban should be lifted.
- Palau, a small country of 22 000 people located 800 kilometres east of the Philippines has become the first nation to ban the fishing of sharks and create a shark sanctuary in its surrounding waters. Economically, more can be gained from the tourism industry, particularly scuba diving, than harvesting sharks for meat and fins.
- Mexico, Honduras, the Maldives and other Pacific countries are also in the process of establishing or have already established protected areas for sharks.

12.6.4 Is fish farming the solution?

Aquaculture is one of the fastest growing food industries, providing fish for domestic and export markets. It brings economic benefits and increased food security (see figure 6).

Over 50 per cent of fish consumed by people comes from aquaculture. This is predicted to rise to 60 per cent by 2030. While aquaculture is often seen as a sustainable and eco-friendly solution to overfishing, its rapid growth and poor management in many places has created large-scale environmental change. Some of these changes are described on the next page.

FIGURE 6 Aquaculture and wild fish capture, 2000–2024



- *Pollution.* Many fish species are fed a diet of artificial food in dry pellets (see figure 7). Chemicals in the feed, and the massive waste generated by fish farms, can pollute the surrounding waters.
- *Loss of fish stock.* Food pellets are usually made of fish meal and oils. Much of this comes from by-catch, but the issue is still that we are catching fish to feed fish. It can take 2 to 5 kilograms of wild fish to produce one kilogram of farmed salmon. Other ingredients in the food pellets include soybeans and peanut meal — products that are suitable for human consumption and grown on valuable farmland.

FIGURE 7 Feeding fish in pens, Thailand

- *Loss of biodiversity.* Many of the fish species farmed are selectively bred to improve growth rates. If accidentally released into the wild, they can breed with native species and so change their genetic makeup. This can lead to a loss of biodiversity. Capture of small ocean fish, such as anchovies, depletes food for wild fish and creates an imbalance in the food chain.
- *Loss of wetlands*. Possibly the greatest impact of aquaculture is in the loss of valuable coastal wetlands. In Asia, over 400 000 hectares of mangroves have been converted into shrimp farms. Coastal wetlands provide important ecological functions, such as protecting the shoreline from erosion and providing breeding grounds for native fish.

12.6 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Refer to figure 2. How important is fish as a source of protein compared with other sources? Use figures in your answer.
2. (a) What is by-catch?
   (b) Examine closely the photograph in figure 3, and describe the by-catch that you see.

3. Refer to figure 6. With the use of figures, compare the predicted growth of wild capture and aquaculture production to 2024.
4. Suggest one reason why wild capture will not increase greatly in the future.
5. Refer to figure 5. Who are the three major exporters of shark fins to Hong Kong? Use figures in your answer.

Explain

6. Explain how overfishing can lead to a loss of biodiversity.
7. (a) What other food items are you aware of that are regarded as status symbols in different cultures? (*Hint:* Consider luxury items.)
   (b) How do you think food items become status symbols in a culture?

Discover

8. Investigate and write a newspaper article on the collapse of the Atlantic cod in Newfoundland. What lessons in the ***sustainability*** of fishing can be learned from the case of the Atlantic cod?
9. Collect photographs and other information to create an annotated poster showing one of the destructive fishing practices mentioned above.

Predict

10. What do you think the future of aquaculture might be?

learnon RESOURCES — ONLINE ONLY

Try out this interactivity: The development of aquaculture around the world (int-3324)

12.7 SkillBuilder: Interpreting a geographical cartoon

online only

WHAT ARE GEOGRAPHICAL CARTOONS?

Geographical cartoons are humorous or satirical drawings on topical geographical issues, social trends and events. A cartoon conveys the artist's perspective on a topic, generally simplifying the issue.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 Cartoon on overfishing

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Watch this eLesson: Interpreting a geographical cartoon (eles-1731)

Try out this interactivity: Interpreting a geographical cartoon (int-3349)

12.8 How do we lose land?

12.8.1 What is land degradation?

Land is one of our most basic resources and one that is often overlooked. In our quest to produce as much as possible from the same area of land, we have often failed to manage it sustainably. Land degradation is the result of such poor management.

Land degradation is a decline in the quality of the land to the point where it is no longer productive. Land degradation covers such things as soil **erosion**, invasive plants and animals, **salinity** and desertification. Degraded land is less able to produce crops, feed animals or renew native vegetation. There is also a loss in soil fertility because the top layers, rich in **humus**, can be easily eroded by wind or water. In Australia, it can take up to 1000 years to produce just three centimetres of soil, which can be lost in minutes in a dust storm.

Globally, degradation has caused the loss of more than 350 million square kilometres of the Earth's surface. In Australia, of the five million square kilometres of land used for agriculture, more than half has been affected by, or is in danger of, degradation.

12.8.2 What are the causes of land degradation?

Land degradation is common to both the developed and developing world, and results from both human and natural causes.

Human causes

Human causes of land degradation involve unsustainable land management practices, such as:

- land clearance — deforestation or excessive clearing of protective vegetation cover
- overgrazing of animals — plants are eaten down or totally removed, exposing bare soil, and hard-hoofed animals such as cows and sheep compact the soil (see figure 1)
- excessive irrigation — can cause watertables to rise, bringing naturally occurring salts to the surface, which pollute the soil
- introduction of exotic species — animals such as rabbits and plants such as blackberries become the dominant species
- decline in soil fertility — caused by continual planting of a single crop over a large area, a practice known as **monoculture**
- farming on marginal land — takes place on areas such as steep slopes, which are unsuited to ordinary farming methods.

FIGURE 1 Soil erosion as a result of overgrazing in Australia

Biophysical causes

Natural processes such as prolonged drought can also lead to land degradation. However, land can sometimes recover after a drought period. Topography and the degree of slope can also influence soil erosion. A steep slope is more prone to erosion than flat land.

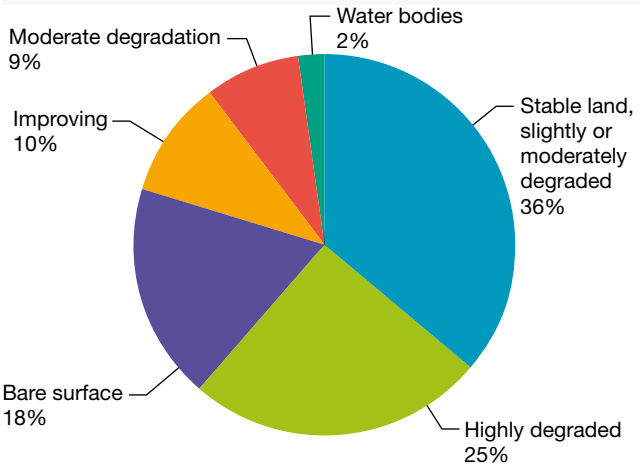
12.8.3 What are the impacts of land degradation?

As land becomes degraded, productivity, or the amount of food it can produce, is lost. Some countries in Sub-Saharan Africa have lost up to 40 per cent productivity in croplands over two decades, while population has doubled in the same time period. Farmers may choose to abandon the land, try to restore the land or, if the pressure to produce food is too great, they may have no choice but to continue using the land. Unproductive land will be exposed to continual erosion or weed invasion.

If extra fertilisers are applied to try to improve fertility, the excessive nutrients can create pollution and algae build-up in nearby streams. Airborne dust creates further hazards for both people and air travel. Land degradation is a classic example of human impact on all spheres of the environment — atmosphere, biosphere, lithosphere and hydrosphere.

Figure 2 shows the total amount of land across the Earth's surface (not just farmland) and the extent of land degradation. About 40 per cent of degraded lands are found in places that experience widespread poverty, which is a contributing factor to food insecurity. Poor farmers with degraded land and few resources often have little choice but to continue to work the land.

FIGURE 2 State of the world's land resources



Source: Food and Agriculture Organization of the United Nations 2011

12.8.4 Are we turning drylands into deserts?

Desertification is an extreme form of land degradation. It usually occurs in semi-arid regions of the world, and the result gives the appearance of spreading deserts. Desert biomes, or arid regions, are harsh, dry environments where few people live. In contrast, semi-arid regions, or drylands, occupy 41 per cent of the Earth's surface and support over two billion people, 90 per cent of whom live in developing nations. While traditional grazing and cropping has taken place in dryland regions for centuries, population growth and the demand for food has put enormous pressure on land resources. Overclearing of vegetation, overgrazing and overcultivation are a recipe for desertification.

12.8 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. List two human and two natural causes of land degradation.
2. Refer to figure 2. What percentage of the world's land resources are classified as moderately to highly degraded?
3. Which biome supports more life: desert or drylands? Why?

Explain

4. Create an annotated sketch to show the ***interconnection*** between plants and soil. Use the following points as labels on your sketch.
   - Plant roots help hold soil together.
   - Decomposing plants add nutrients to the soil.
   - Plants shade the topsoil and reduce evaporation.
   - Plants reduce the speed of wind passing over the ground.

5. Explain how land degraded by drought may recover, whereas land degraded by cultivation may not.
6. Study the photograph in figure 1. Why would it be difficult to either graze animals or grow crops on this land?

Discover

7. Investigate an area in Victoria that is suffering from land degradation. Identify the location, causes and impacts of the degradation. Are any steps being taken to reduce the impacts?

Think

8. Examine the photograph in figure 1 again. If this was your property and your livelihood, what steps would you take to reduce the erosion problem?

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: The types and impacts of land degradation (int-3325)

12.9 Irrigation: success or failure?

12.9.1 What is the purpose of irrigation?

Food production and security is directly related to water availability. As population increases, so too does demand for water. Moreover, there are always competing demands for water from the domestic, industrial and environmental sectors. In many places in the world, water is becoming increasingly scarce. Consequently, the development of water resources is becoming more expensive and, in some cases, environmentally destructive.

Most of the world's food production is rain-fed; that is, dependent on naturally occurring rainfall. Only a small proportion of agricultural land is irrigated, yet **irrigation** is now the biggest user of water in the world, consuming 70 per cent of the world's freshwater resources. Irrigation brings many benefits, such as:

- supplementing or replacing rain, especially in places where rainfall is low or unreliable. In many parts of the world, it is not possible to produce food without irrigation.
- increasing crop yields, up to three times higher than rain-fed crops. Only 20 per cent of the world's farmland is irrigated but it produces over 40 per cent of our food.
- enabling a wide variety of foods to be grown, especially those with high water needs, such as rice, or with high value, such as fruit and wine grapes
- flexibility, being used at different times according to crop needs; for example, during planting and growing or close to harvest time.

FIGURE 1 Irrigation allows for pasture to be grown in times of drought. Compare the irrigated with the non-irrigated paddocks.

12.9.2 What are the impacts of irrigation on the environment?

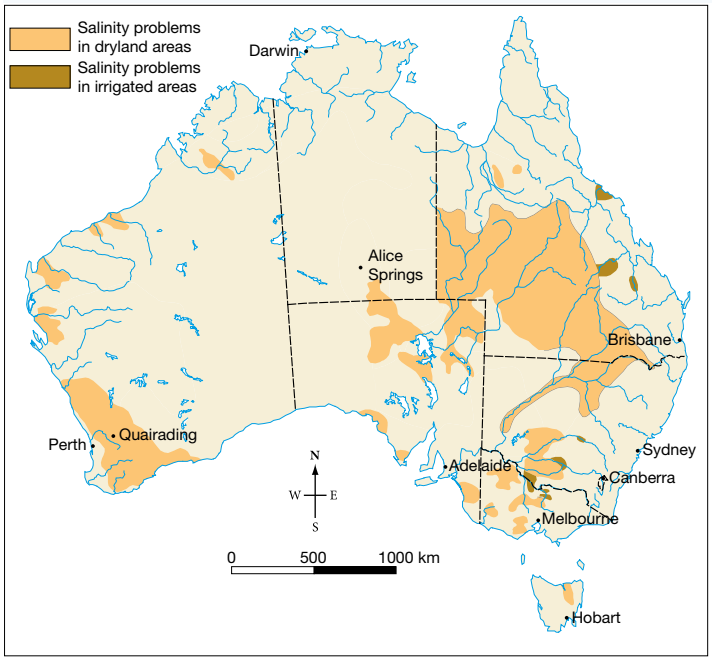
The benefits of irrigation have resulted in increased food production and greater food security. But irrigation has created major changes to the biomes where it is used. Irrigation changes the natural environment by extracting water from rivers and lakes and building structures to store, transfer and dispose of water. The topography or shape of the land is often changed too, as occurs when terraces are built for paddy fields. In addition, irrigation water is often applied to the land in much larger quantities than naturally occurs, which can then change soil composition and cause **waterlogging** and salinity problems.

How does irrigation create salinity problems?

On irrigated land, salinity is the major cause of land being lost to production, which is an area the size of France or 62 million hectares of lost productive land worldwide. It is also a major cause of land degradation in Australia (see figure 2).

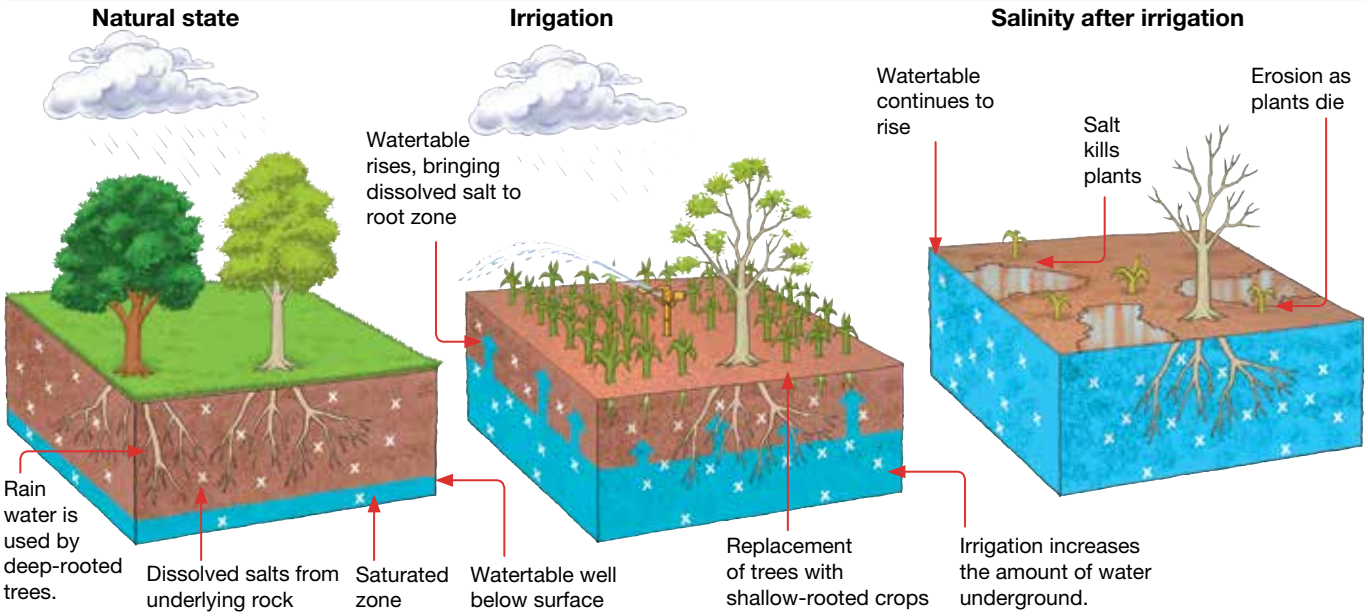
Overwatering of shallow-rooted crops adds excess water to the **watertable**, causing it to rise (see figure 3). If the subsoils are naturally salty, much of this salt can be drawn to the surface. Most crops and pasture will not grow in salty soils, so the land becomes useless for farming. Land that is affected by salinity is also more prone to wind and water erosion.

FIGURE 2 The distribution of salinity in Australia



Source: Spatial Vision.

FIGURE 3 The development of irrigation salinity



12.9 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What is meant by the term *waterlogging*?
2. What percentage of the world's fresh water is consumed by irrigation? What would be the other main uses of water?

Explain

3. (a) Study the map in figure 2, showing the distribution of salinity in Australia. Estimate the approximate percentage of each state affected by salinity.
   (b) Why do you think dryland salinity covers a larger area than irrigation salinity?
4. Use figure 3 as a model and create a similar sketch. Annotate your drawing with suggestions on how to reduce the effects of irrigation salinity.
5. What ***changes*** to the ***environment*** are needed in order to irrigate a large region?

Discover

6. Investigate methods used in Australia to reduce the ***environmental*** effects of salinity.

Think

7. Soil salinity was not a problem when Indigenous Australian peoples were the land's sole caretakers. What does this suggest about land management practices in this country since 1788?
8. Has irrigation been a success or failure? Write a paragraph expressing your viewpoint.

12.10 Does farming use too much water?

online only

Access this subtopic at **www.jacplus.com.au**

12.11 Why is global biodiversity diminishing?

12.11.1 The loss of biodiversity

The last few centuries have seen the greatest rate of species extinction in the history of the planet (see figure 1). The population of most species is decreasing, and genetic diversity is declining, especially among species that are cultivated for human use. Six of the world's most important land biomes have now had more than 50 per cent of their area converted to agriculture (see figure 2).

In those places where there has been very little industrial-scale farming, a huge variety of crops are still grown. In Peru, for example, over 3000 different potatoes are still cultivated. Elsewhere, biodiversity as well as agricultural biodiversity (biodiversity that is specifically related to food items) is in decline. In Europe, 50 per cent of all breeds of domestic animals have become extinct, and in the United States, 6000 of the original 7000 varieties of apple no longer exist. How has this happened?

- Industrial-scale farming and new high-yielding, genetically uniform crops replace thousands of different traditional species. Two new rice varieties in the Philippines account for 98 per cent of cropland.
- Converting natural habitats to cropland and other uses replaces systems that are rich in biodiversity with monoculture systems that are poor in diversity (see figure 3).
- Industrial-scale farming and new high-yielding, genetically uniform crops replace thousands of different traditional species. Two new rice varieties in the Philippines account for 98 per cent of cropland.

FIGURE 1 Extinctions per thousand species per millennium

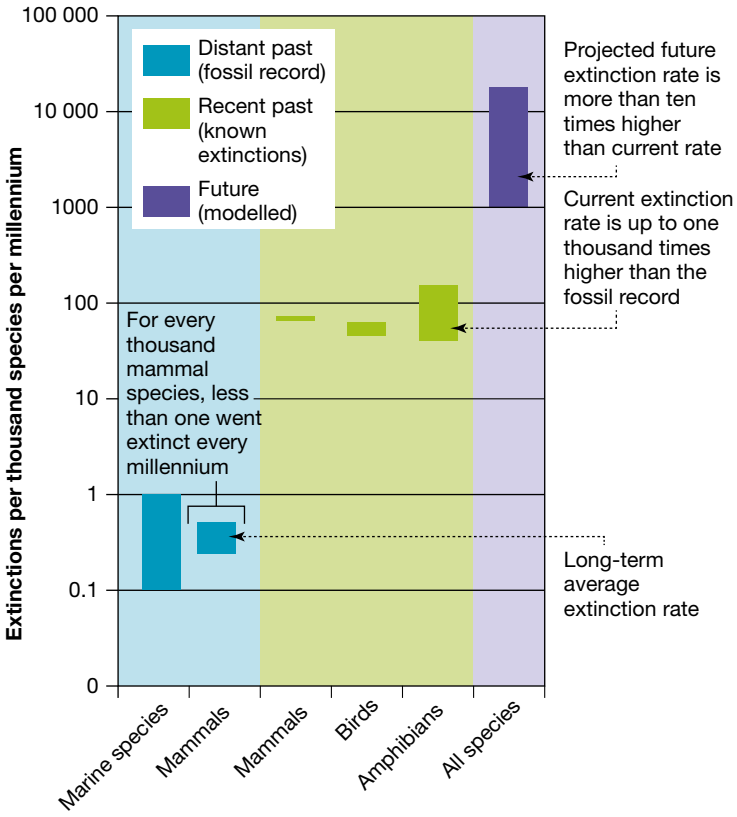


FIGURE 2 Percentage of biomes converted to agriculture over time

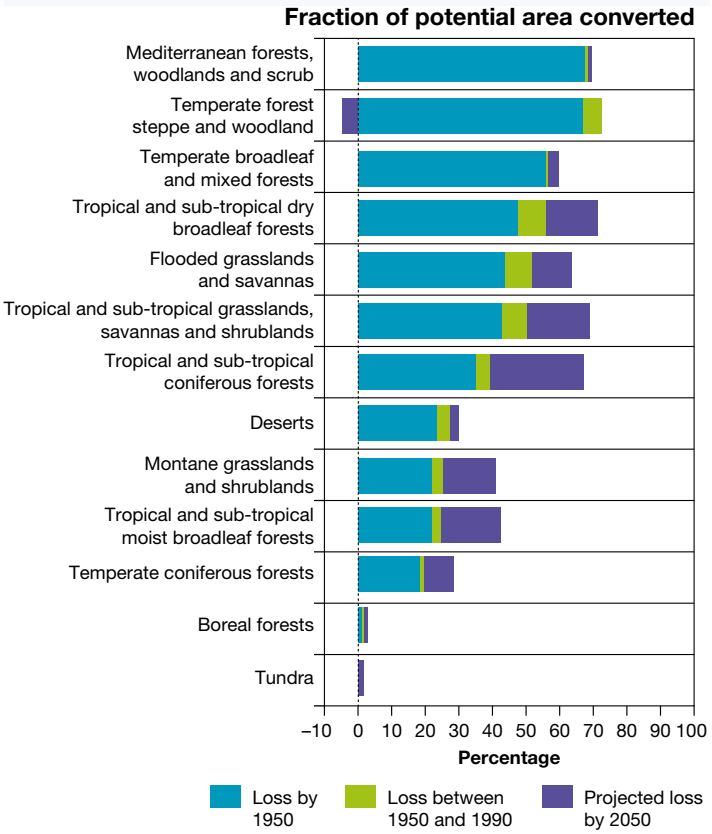
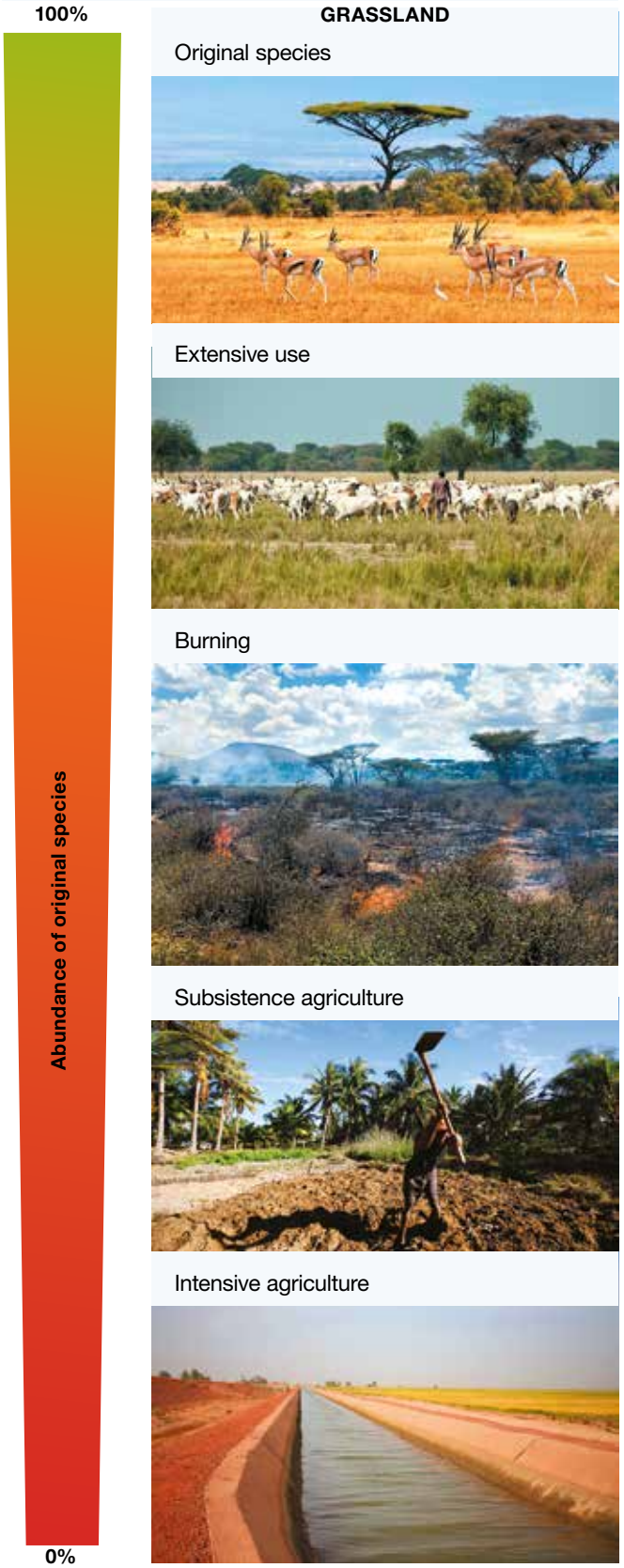


FIGURE 3 Changes to percentage of original species according to changes in biomes for food production

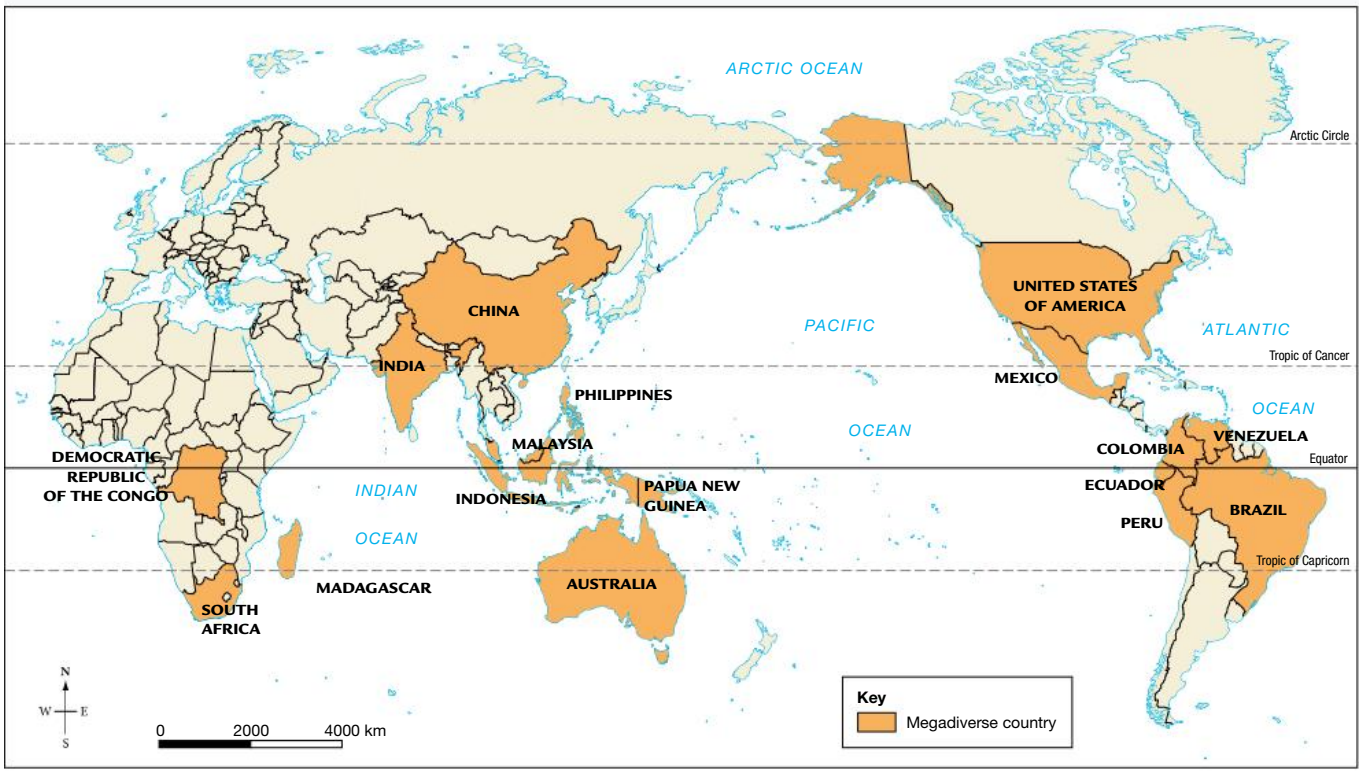


- Uniform crops are vulnerable to pests and diseases, which then require large inputs of chemicals that ultimately pollute the soil and water. Traditional ecosystems have many natural enemies to combat pest species.
- The introduction of modern breeds of animals has displaced indigenous breeds. In the space of 30 years, India has lost 50 per cent of its native goat breeds, 30 per cent of sheep breeds and 20 per cent of indigenous cattle breeds.

12.11.2 Australia's biodiversity

Australia has a high number of **endemic** species, and 7 per cent of the world's total species of plants, animals and micro-organisms. That makes Australia one of only 17 countries in the world that are classified as megadiverse — having high levels of biodiversity. These 17 nations combined contain 75 per cent of the Earth's total biodiversity (see figure 4). Australia's unique biodiversity is due to its 140 million years of geographic isolation. However, Australia has experienced the largest documented decline in biodiversity of any continent over the past 200 years. It is thought that 50 species of animals (27 mammal species and 23 bird species) and 48 plant species are now extinct.

FIGURE 4 Distribution of megadiverse countries



Source: Spatial Vision

12.11 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Describe the ways in which human activities can lead to a loss in biodiversity.
2. What is a megadiverse country? Why is Australia considered a megadiverse country?

Explain

3. (a) Study figure 2. Which three biomes have seen the greatest percentage ***change*** in areas converted to cultivation? Use figures in your answer.
   (b) Suggest why these three have had the most ***change***.
4. Study the information in figure 3. Describe the ***changes*** to the grassland biome as seen over time.

Think

5. In what ways would the Indigenous Australian peoples' practice of rotational land occupation have helped maintain biodiversity before European occupation?
6. Does it matter that we have fewer species of apples or goats?

12.12 Does farming cause global warming?

online only

Access this subtopic at **www.jacplus.com.au**

12.13 Review

online only

12.13.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

12.13.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

12.4 SkillBuilder: GIS — deconstructing a map

12.4.1 Tell me

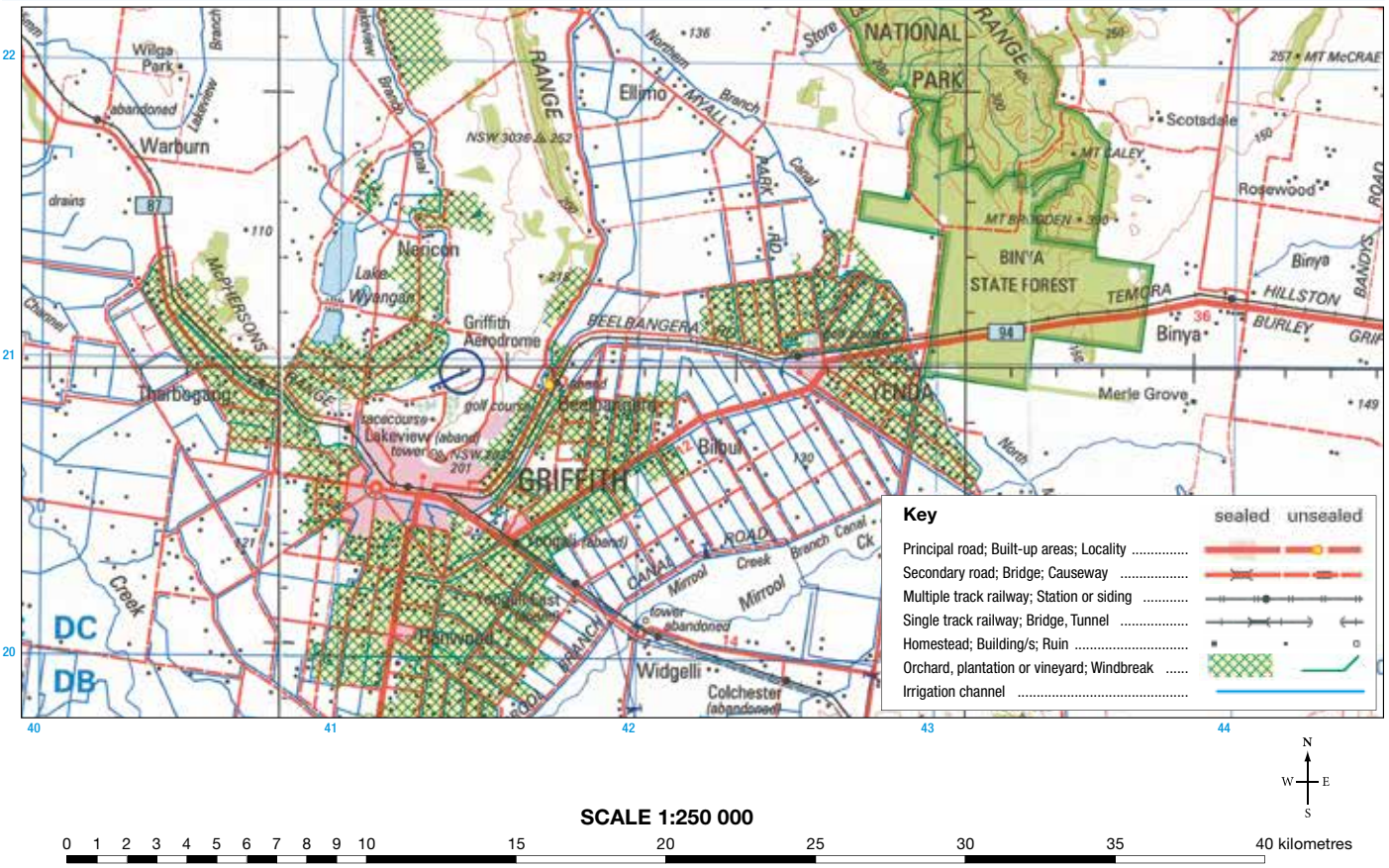
What is GIS?

A geographical information system (GIS) is a storage system for information or data, which is stored as numbers, words or pictures. The data has the location attached so that it may be viewed as a map or as an image. GIS can process huge amounts of information to produce maps that would take a long time to draw by hand. Specialised computer programs produce maps from the data.

In this SkillBuilder, map layers will be created in a similar way to that used by cartographers and GIS specialists when making digital maps, but with much simpler tools and processes.

Model

FIGURE 1 Example of a section of a topographic map



Source: Commonwealth of Australia (Geoscience Australia)

Why is GIS useful?

Analysing large amounts of information using a computer is much faster than doing it manually, and provides a much deeper understanding of the information. GIS allows multiple series of information to be displayed in a succession of map layers. The spatial distribution of the data and the relationship to other data may be compared. GIS is used in many professions wherever maps are required, such as in urban planning, logistics, resource management, the police force and public health.

FIGURE 2 Example of a satellite image (called a raster image in GIS). This shows a section of the area that appears in figure 1.

Source: Geoscience Australia

A GIS stores data in three ways: as points, lines or polygons (called vector data); as tables (called tabular data); and as pixels in an image (called raster data). A satellite image, for example, would be called a raster image in GIS. A GIS program:

- stores similar information together
- stores data attached to points, lines and polygons in separate files
- stores the location of each point, line or polygon digitally
- includes tables of data in which each row is linked to a location and each column stores information as numbers or words
- includes information about the source of the data — known as metadata.

A breakdown of maps such as a GIS:

- traces each set of point, line and polygon data onto three pieces of tracing paper
- uses appropriate colours for the features
- layers the features, with points on top, lines underneath and polygons on the bottom
- includes BOLTSS.

12.4.2 Show me

How to deconstruct maps to build a simple GIS

You will need:

- a topographic map
- three pieces of tracing paper
- coloured pencils.

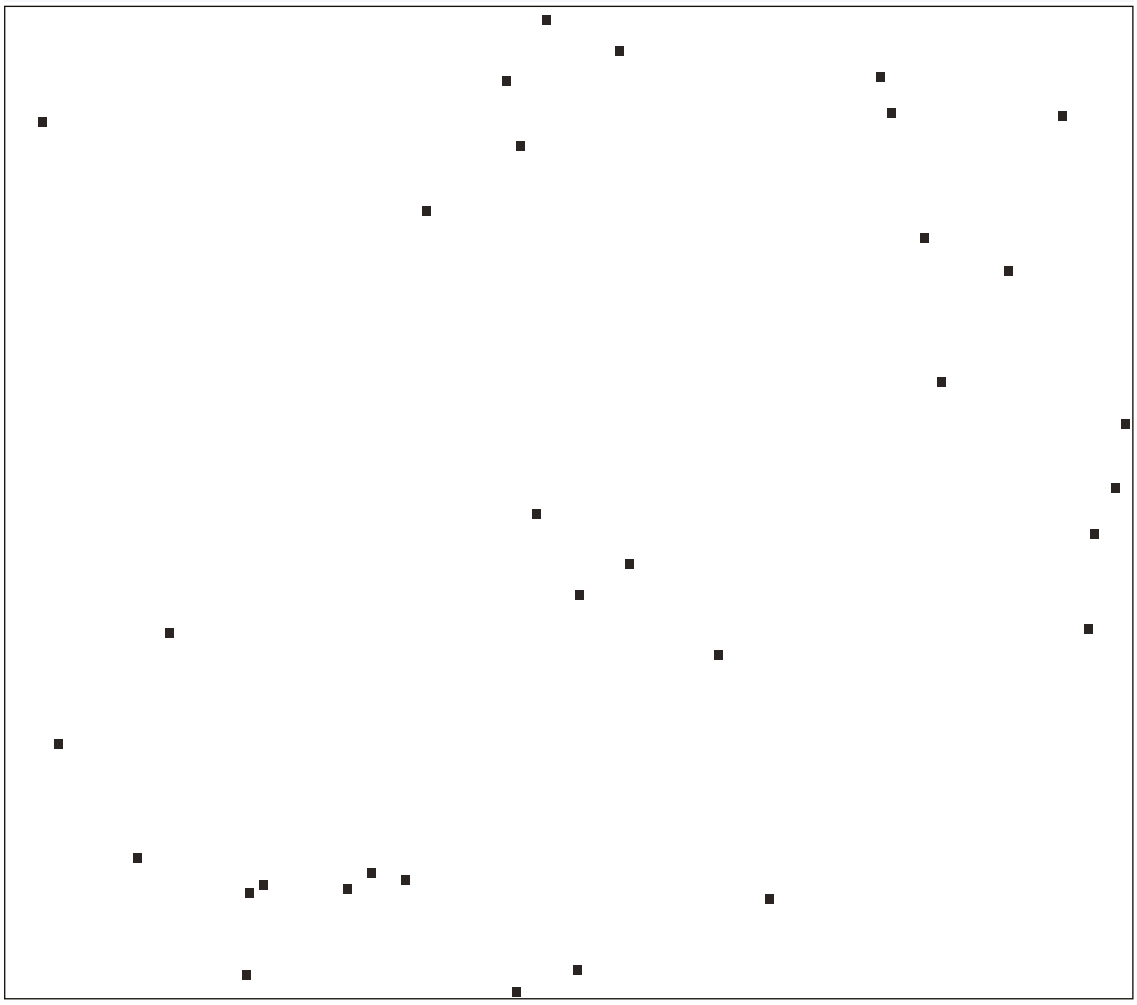
Procedure

STEP 1

Point features on the map have a location that may be defined using either a grid reference or latitude and longitude. The map of Griffith shown in figure 1 (doc-11566 in the Resources tab) has many point features, such as spot elevation (height), bores, wells, buildings, gates and stock grids.

Overlay one piece of tracing paper on the topographic map and, using an appropriate colour, mark the homesteads (point data) on the tracing paper.

FIGURE 3 Point features marked on first layer of tracing paper

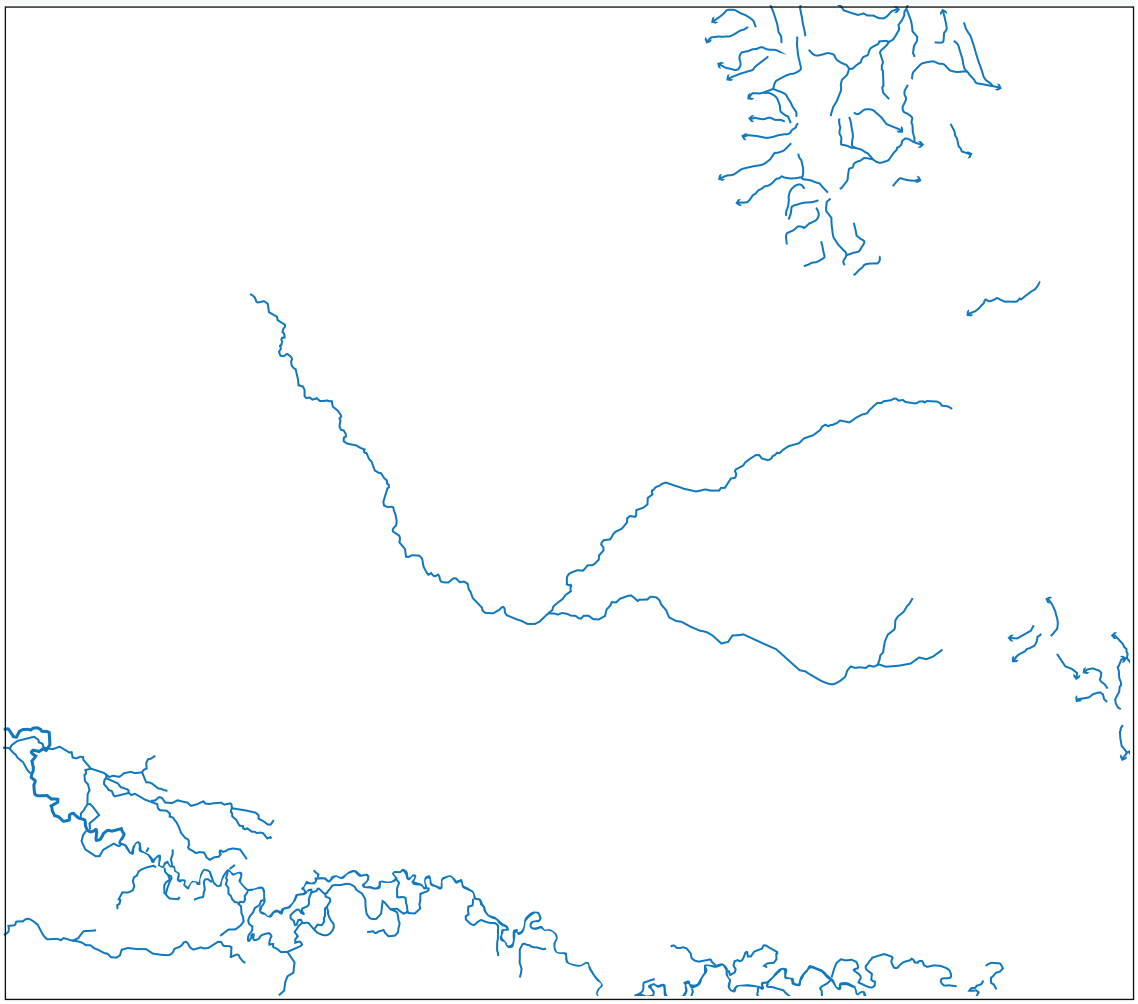


STEP 2

Line features on the map may be straight or winding. Their location is determined by joining multiple points. Figure 1 has many line features, such as roads, railway lines, rivers and creeks, irrigation channels and power lines.

Overlay a second piece of tracing paper on the topographic map and, with an appropriate colour, trace the rivers and creeks (line features).

FIGURE 4 Line features of rivers and creeks are traced onto a second piece of tracing paper.



STEP 3

A polygon is a shape that has many sides. Its location on the map is determined by joining multiple points. Figure 1 has many polygon features, such as orchards, vineyards, national parks, lagoons, swamps and forested areas.

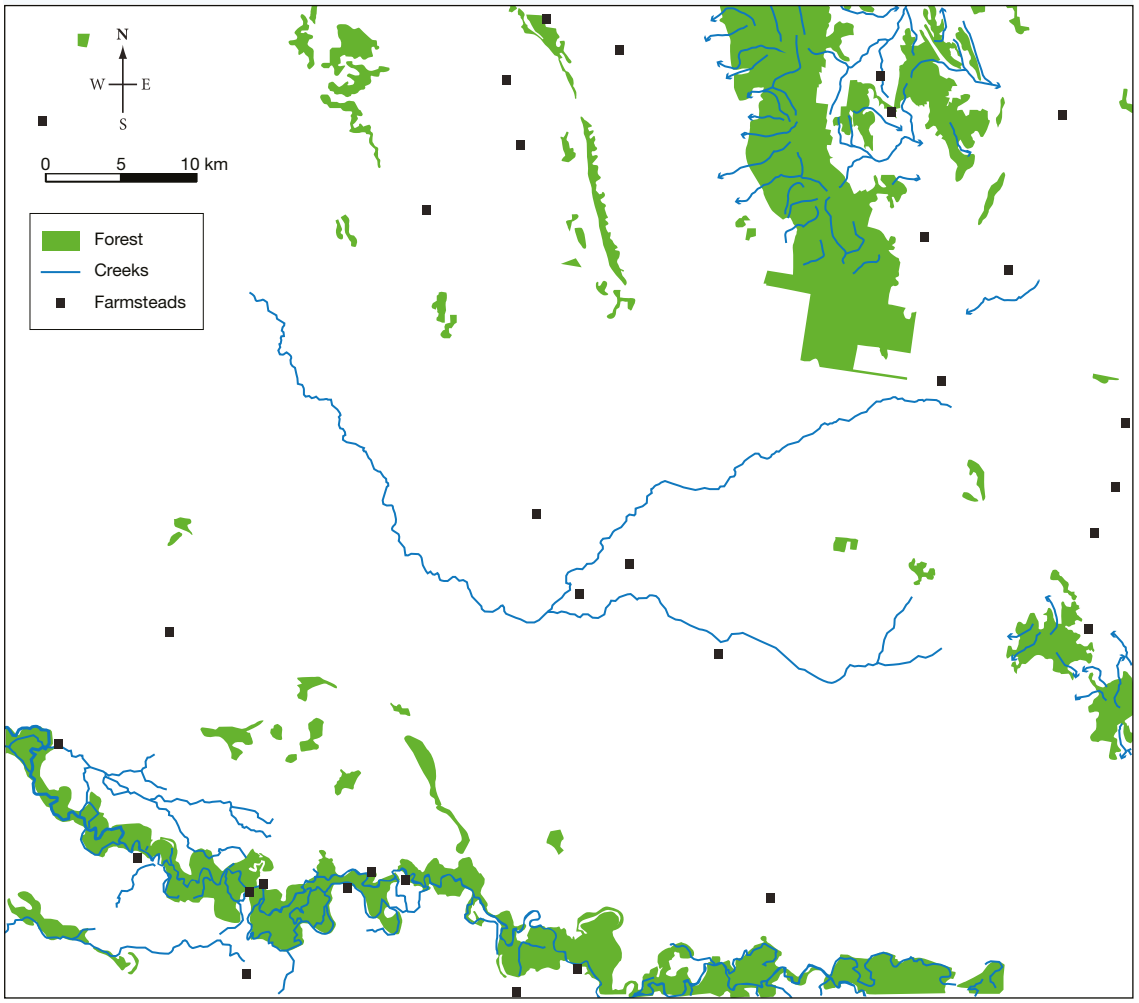
Overlay a third piece of tracing paper on the topographic map and, with an appropriate colour, trace the forests (polygon data).

FIGURE 5 The polygon data of forests are traced onto a third piece of tracing paper.

STEP 4

Place the three tracing paper layers in the following order: point features on top, line features underneath, and polygon features at the bottom. Provide BOLTSS for your map. In GIS, the finished map would be called a layout.

FIGURE 6 The three layers of tracing paper are now combined, and BOLTSS is added.



Source: Geoscience Australia, Narrandera NSW 1:250 000, 2004

12.4.3 Let me do it

Developing my skills

Use the figure 1 map of Griffith again. Choose one point feature, one line feature and one polygon feature and create three tracing paper overlays. Organise the layers appropriately and add BOLTSS to your map.

Questions

1. What is the name of the district through which the Murrumbidgee River flows?
2. The original biome for this area is likely to have been forest. What has happened to this biome and how would you describe the distribution of forest in the area today?
3. Compare the number of creeks in the map in figure 1 with the number of channels. What is the purpose of the many channels and canals?
4. Figure 1 shows a part of Australia that has undergone change. Using Google Earth and the map, identify the area where there has been the least change and the area where there has been the most change. Explain your choice.
5. This area is an example of intensive farming. What does this mean? Provide at least one piece of evidence from both the map in figure 1 and the satellite image in figure 2 (or Google Earth) to support this statement.
6. Maps and satellite photographs show different ways of recording information. Identify two pieces of information visible in figure 2 (or Google Earth) that are not shown on the figure 1 map.

Checklist

I have:

- traced each set of point, line and polygon data onto three pieces of tracing paper
- used appropriate colours for the features
- layered the features, with points on top, lines underneath and polygons on the bottom
- included BOLTSS.

Skills questions

1. True or false? A GIS stores three sorts of data: vector, raster and tabular data.
2. To view information in a GIS, it is best to place the layers in the following order:
   (a) lines above points, with polygons below
   (b) polygons above lines, with points below
   (c) points above lines, with polygons below
   (d) points above polygons, with lines below.
3. Which statement about GIS is false?
   (a) Placing the information in layers helps to compare the distribution of features.
   (b) Raster images store data in tables.
   (c) GIS is a way to view and analyse data that is spatial in nature.
   (d) A GPS may be used to collect data for a GIS.
4. What is metadata?

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Watch this eLesson: Deconstructing a map using GIS (eles-1730)

Try out this interactivity: Deconstructing a map using GIS (int-3348)

Complete this digital doc: Topographic map of Griffith, New South Wales (doc-11566)

12.5 Paper profits, global losses?

12.5.1 How do we use paper?

Look around you — how many different things can you see that are made out of paper? Paper is a renewable, recyclable material, and yet something so common and so useful also poses significant environmental consequences on biomes at all stages of its usage cycle.

Biomes enable us to produce the food we eat and they also supply many of the raw materials for manufacturing, such as minerals, ores and fibres. We are able to make cloth from cotton and wool using grassland biomes, while forest biomes give us wood for construction and **pulp** for making paper products. There are thousands of everyday items made from paper, ranging from toilet paper to disposable nappies, packaging, money, tickets and writing paper (see figure 1).

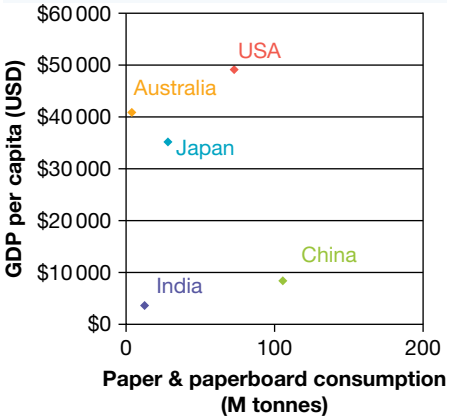
FIGURE 1 Different paper products

Traditionally, paper has provided us with the means to record ideas, news, knowledge and even works of art. Paper is interconnected with social development as it aids in literacy and communication. Despite the advent of modern electronic communication, plastic bags and the 'paperless office', paper still remains an essential part of our homes and workplaces.

12.5.2 Are we a paperless society?

We have become very dependent on paper products, but in the wealthier countries paper is generally discarded soon after purchase. Wrapping and packaging accounts for 54 per cent of the paper used today, followed by printing and writing (26 per cent), household and sanitary products (8 per cent) and newspapers (7 per cent). There is a strong interconnection between a country's level of wealth and the amount of paper consumed, as shown in figure 2. While India has 17 per cent of the world's population it only consumes 3 per cent of the world's paper. Conversely, the United States has 55 per cent of the world's population and consumes at least 30 per cent of the planet's paper.

FIGURE 2 GDP per capita and paper consumption for selected countries



The global consumption of paper has increased by 400 per cent in the past 40 years. Today the world consumes 300 million tonnes of paper annually, and this is expected to rise as developing countries in Asia increase their consumption. China has now passed the United States as the largest consumer of paper products at 72 kilograms per person, compared to the global average of 57 kilograms per person.

With technological advancements, paper has now become a cheap, disposable product. This has resulted in a high level of both use and waste.

12.5.3 How does making and using paper affect biomes?

Pulp and paper production has been ranked as one of the most resource-intensive and highly polluting of all manufacturing industries. Besides wood fibre, the main inputs into the paper-making process are water, energy and chemicals needed for breaking down fibres and bleaching to create clean, white paper. The paper industry uses more water to produce one tonne of product than any other industry. It takes 10 litres of water to produce just one A4 sheet of paper.

Pulp and paper is the third largest industrial polluter of air, land and water in both Canada and the United States, releasing over 100 million kilograms of toxic waste each year. Paper's impact on biomes starts at the forest stage with the activity of logging the timber, and continues with the conversion of the timber to pulp and paper. Environmental impacts continue even after paper has been used and discarded. Today, more than 34 per cent of municipal waste in the United States is made up of paper and cardboard. As paper decomposes, it releases methane, a dangerous greenhouse gas. Figure 3 illustrates how biomes are affected by paper production.

FIGURE 3 Environmental consequences of paper production

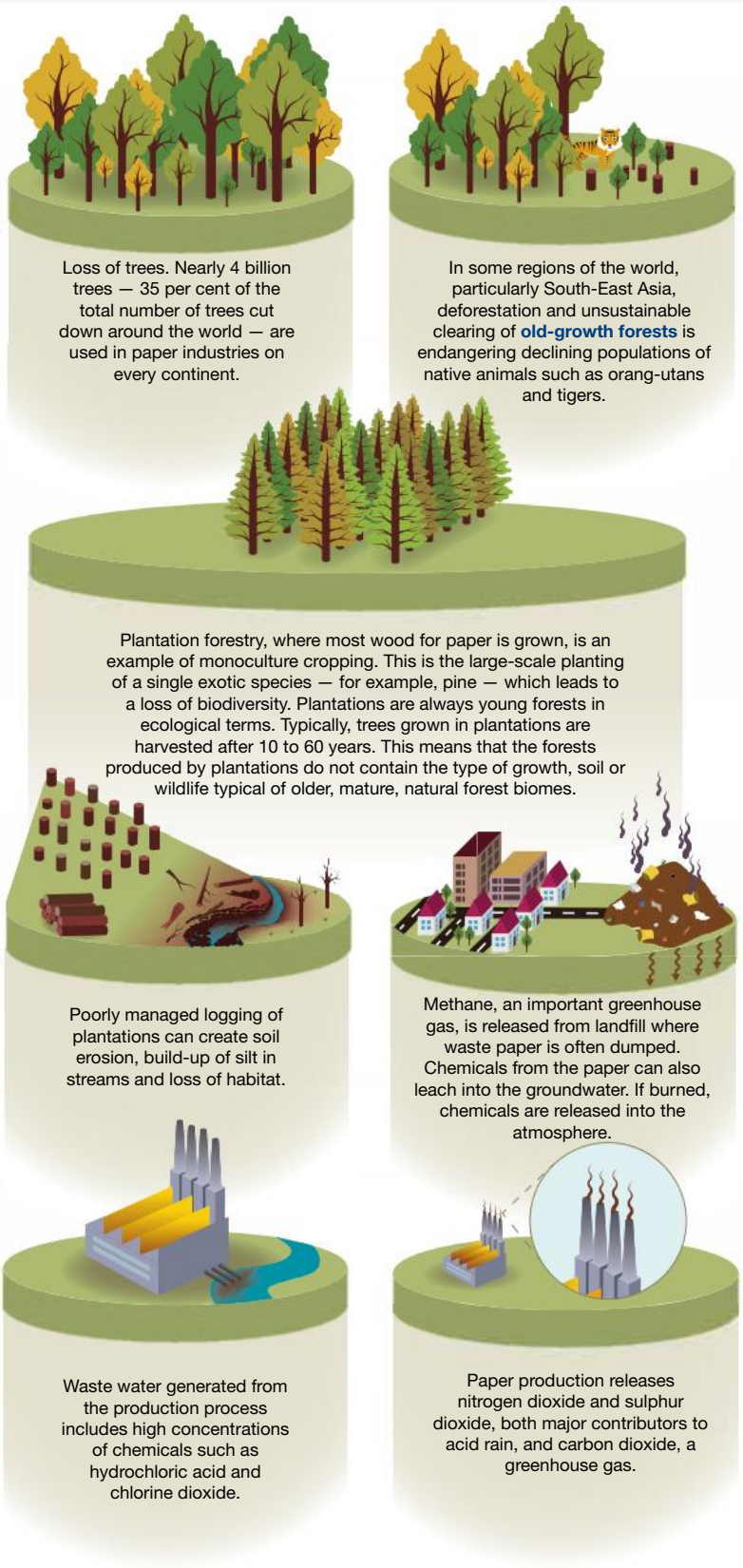


FIGURE 4 Environmental effects of harvesting plantation timber

12.5.4 Is there a sustainable future for paper?

There has been an increase in environmental awareness and government legislation in recent years — this is helping to make the paper industry and people's use of paper more environmentally friendly, thus reducing the negative impacts on biomes. The Australian timber industry follows the Forest Code of Practice, which sets out rules and regulations regarding logging on slopes and protecting streams and habitat trees.

There has been considerable research conducted into the use of non-wood products, for example bamboo, sugarcane, hemp and **kenaf**, to provide fibre for paper. Currently, these non-wood products make up 5 to 10 per cent of the fibre used in paper-making globally.

In some places, tree plantations are able to grow on land that is unsuitable for other forms of agriculture or is badly degraded, in which case there is likely to be an *increase* in habitat and biodiversity.

For the paper industry, the goals are to reduce fuel and energy requirements and reduce emissions. China, with its relatively new paper industry, is leading the way in this field. For everyday citizens, it is about making sensible choices, and reducing our use of paper and recycling (see figure 5). Products made from recycled paper can include masking tape, hospital gowns, bandages, egg cartons and even lampshades. However, paper can be recycled only 5 to 7 times, after which the fibres become too short and weak to bond together.

FIGURE 5 Paper recycling factory

For every tonne of paper *not* consumed, the following savings are made:

- 18 trees
- 67 500 litres of water
- 9500 kilowatt hours of power
- 3300 kilograms of greenhouse gas emissions.

How can you and your classmates reduce your paper consumption?

12.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Construct a list of the ten most important paper items in your day-to-day life. How does your list compare with that of someone else in your class? Are there similarities and differences? Why is this?
2. (a) Refer to figure 2. Using the data, compare the differences between Australia and India in terms of GDP and paper consumption.
   (b) What reasons can you give for any differences? Why is this?
3. Refer to figure 4. List the ***environmental*** effects of clearing a pine plantation that you can see in this photograph.

Explain

4. To what extent is there a link between a country's level of development and its consumption of paper? Note, you may wish to consult the World Statistics in your atlas.
5. What is *old-growth forest*? Why is it important to protect these types of biomes from being cleared?
6. How might the structure and biodiversity be different in an old-growth forest compared with a tree plantation?

Discover

7. Use the **Paper production** weblink in the Resources tab and study the interactive map. Create a list of some of the ***environmental*** concerns of paper production in Asia, Latin America and Russia.

Think

8. Is there such a thing as a paperless society? Do you think perhaps there might be in the future? Give your viewpoint.
9. Does your school have a paper recycling program? How effective do you think it is? How could it be improved?

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Explore more with this weblink: Paper production

12.7 SkillBuilder: Interpreting a geographical cartoon

12.7.1 Tell me

What are geographical cartoons?

Geographical cartoons are humorous or satirical drawings on topical geographical issues, social trends and events. A cartoon conveys the artist's perspective on a topic, generally simplifying the issue.

Why are cartoons useful?

Cartoons promote an interest in a topic or issue, and encourage discussion and debate. The cartoonist's message about a geographical topic is evident. Our feelings, attitudes and values are expressed in our response to the cartoon. Your response to geographical cartoons encourages discussion and evaluation of alternative responses as you take in other people's viewpoints and perspectives.

Cartoons are useful for:

- showing the key points of a geographical topic
- exaggerating the key points of an issue
- creating a response to an issue, whether in agreement or disagreement with the cartoonist
- presenting information, or an issue, or a viewpoint in an interesting way.

Model

FIGURE 1 Cartoon on overfishing

The cartoon shown in figure 1 is about overfishing our oceans. The cartoonist suggests that by 2048 there will be no more fish left in the oceans. It is not clear why the cartoonist chose this date (2048; perhaps they randomly chose a date well into the future). The cartoon uses exaggeration, as there will be fish, but the quantities may not make it economical to fish using the techniques currently available. The string of hooks in this cartoon is also unrealistic, as this is not the way commercial fishing is undertaken. Our wider perspective on the topic tells us that actual fishing techniques are trawling and purse-seine netting to maximise the catch at any one time. The cartoon plays on the word *bite*. It can mean (a) that a fish bites a hook or (b) that someone reacts or responds to something. Thus, the second fish reacts to the first fish's statement and asks the question *why*, but it might also bite one of the many hooks that surround it. The answer to the *why* question is obvious to the viewer — the fish will be caught because it will be impossible to avoid capture. This cartoon makes us think about the issue of taking fish from the ocean, and it questions the sustainability of the fishing industry: too many people are fishing for a limited resource.

A good interpretation of a cartoon:

- recognises the issue
- analyses the components of the cartoon
- identifies the cartoonist's personal opinion or message
- states your personal response to the geographical topic.

12.7.2 Show me

How to interpret a cartoon

You will need:

- a geographical cartoon.

Procedure:

STEP 1

Take the time to study the cartoon and carefully look for the overall idea. Next, focus on the artistic work of the cartoonist and any subtleties that have been included. Consider different relative sizes of parts of the drawing, as well as any wording or attitudes expressed in the image. Figure 1 is about overfishing our oceans. In this case, the subtleties are in the words of the fish — what are the fish really saying?

STEP 2

Consider the overarching issue; in this case, overfishing. What is your general knowledge on the topic? In Geography classes, when you are given a cartoon, you know that it relates to the topic you are studying. If you are viewing a cartoon from elsewhere, then you have to think through the issue being portrayed. Things to look for in a cartoon include the following.

- Symbolism — conveying ideas in a concise manner through the use of symbols. In figure 1, the large number of hooks suggests too much fishing.
- Stereotyping — our fixed mental picture of something. In figure 1, the fish are drawn in a stereotypical way. Be wary of stereotyping in a cartoon that involves people.
- Caricatures — overemphasis or distortion of physical features. In figure 1, the fish have large eyes and mouths to draw our attention to their conversation and to give them human qualities.
- Visual metaphors — the artist's means of helping us understand the topic. In figure 1, the large number of hooks and the use of the word *bite* suggest the fish will be caught.
- Exaggeration or distortion — for example, making things appear larger, smaller or greater in number than they really are. The number of fishing hooks is an exaggeration or distortion of commercial fishing techniques.
- Humour — the use of visual or verbal jokes or wit to make the viewer smile or laugh. Irony and satire are commonly used.
- Perspective — the point of view of the cartoonist. In figure 1, it is evident that the cartoonist believes that most fish will be gone by 2048, a date well into the future.
- Captions — text-based content that adds to the visual content. In figure 1, both of the fish have speech bubbles in which they discuss the sustainability of the fishing industry. (A speech bubble usually has a pointed end, like this , but because they are fish and cannot actually talk, the cartoonist has used 'thought bubbles', like this .)

STEP 3

Now systematically approach an analysis of the cartoon. Answer the following three questions.

- What issue does the cartoon convey? In figure 1, the issue is overfishing.
- What geographical concepts are related to the issue in the cartoon? In figure 1, the concepts of environment (the ocean), space (global), change (commercial fishing causing a decline in fish numbers), scale (global), interconnection (fishing techniques and human demand decreasing fish resources) and sustainability (the future) can be mentioned.
- What are the geographical implications of the cartoon? The cartoon in figure 1 implies that the future of the fishing industry could be at risk.

STEP 4

Complete your writing with a concluding statement on how you feel about the topic of the cartoon. The text below figure 1 states that 'This cartoon makes us think about the issue of taking fish from the ocean, and it questions the sustainability of the fishing industry: too many people are fishing for a limited resource'.

12.7.3 Let me do it

Developing my skills

Using the cartoon in figure 2 in subtopic 12.6 of your textbook, write a paragraph analysing the geographical issue portrayed.

Questions

1. Why is the fishing trawler drawn so small?
2. Has the trawler caught many fish? Explain your answer.
3. Explain the discussion between the two fish.
4. What message do you think is being conveyed in this cartoon?
5. How does this cartoon make you feel?

Checklist

I have:

- recognised the issue
- analysed the components of the cartoon
- identified the cartoonist's personal opinion or message
- stated my personal response on the geographical topic.

Skills questions

1. Cartoons are used to show:
   (a) the general public's opinion on an issue
   (b) the correct response to an issue
   (c) the cartoonist's view on an issue
   (d) the humour level of the cartoonist.
2. Cartoons are most often based on:
   (a) known facts
   (b) questionable data
   (c) outdated topics
   (d) controversial topics.
3. Why is it important to know the context, or bigger picture, of the issue in the cartoon?
4. Why do cartoonists exaggerate some aspects of their drawings?

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Watch this eLesson: Interpreting a geographical cartoon (eles-1731)

Try out this interactivity: Interpreting a geographical cartoon (int-3349)

12.10 Does farming use too much water?

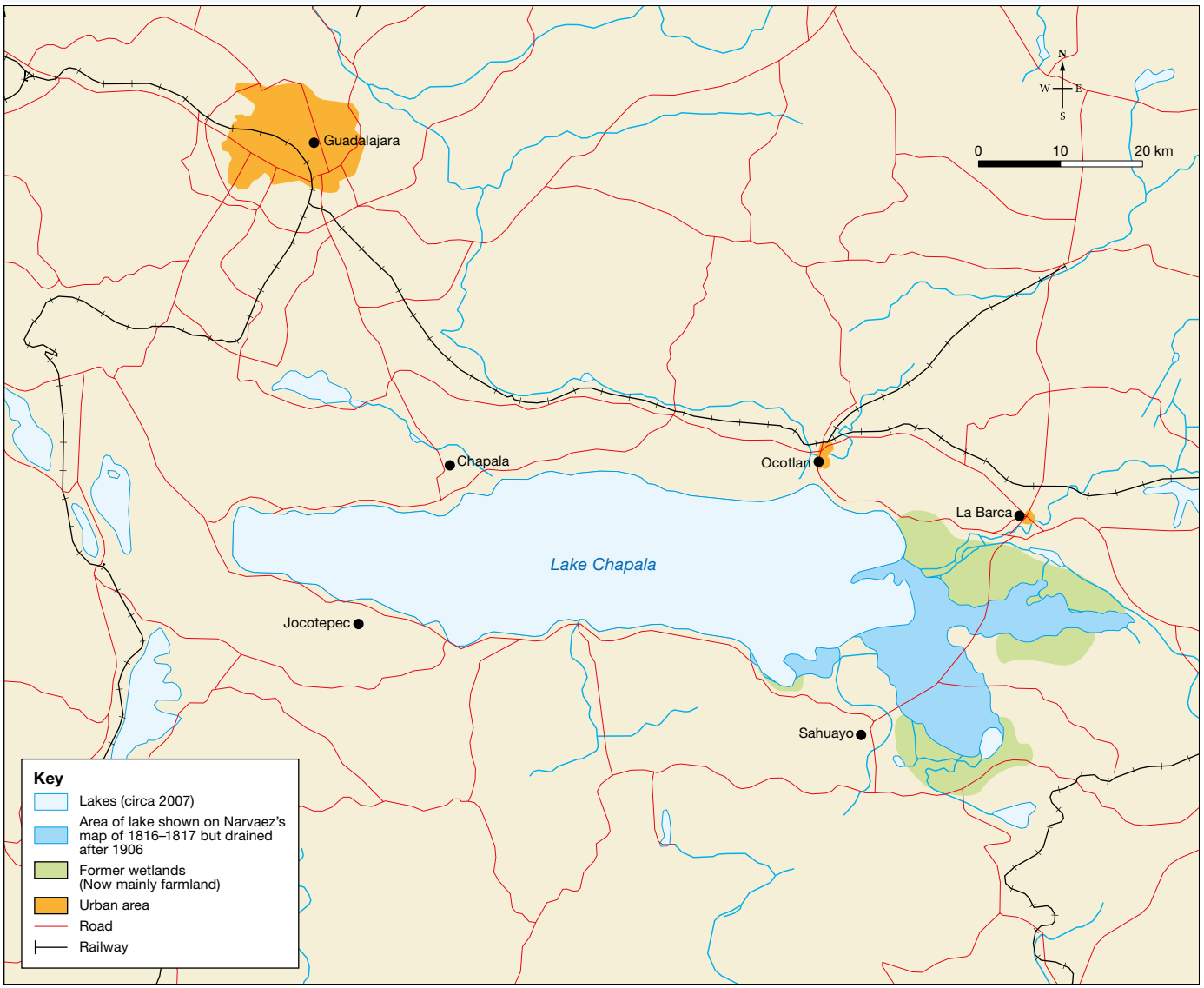
12.10.1 What happens if we divert too much water?

Water is a finite resource but, although there is plenty of water in the world, it is not always located where people are concentrated or where food is grown. Therefore, humans have drawn water from both surface and underground sources to improve food production in areas of high population. This is not sustainable. For countries that have growing populations and limited water resources, water deficits and food insecurity are a growing concern.

For thousands of years, farmers have diverted water from rivers, lakes and wetlands for watering crops and pastures in dry areas. Large-scale irrigation schemes can effectively 'water' our deserts but, if too much water is used, wetlands can dry out, rivers cease to flow and lakes dry up. It is estimated that between three and six times more water is held in reservoirs around the world than exists in natural rivers. It is possible that the level of water extraction will nearly double by 2050.

Lake Chapala, Mexico's largest lake (see figure 1), is shrinking. The amount of water lost through irrigation and domestic use, combined with high evaporation rates, has seen the volume of the lake decrease by 50 per cent.

FIGURE 1 Map of Lake Chapala, Mexico. Note the area of land drained for farmland.

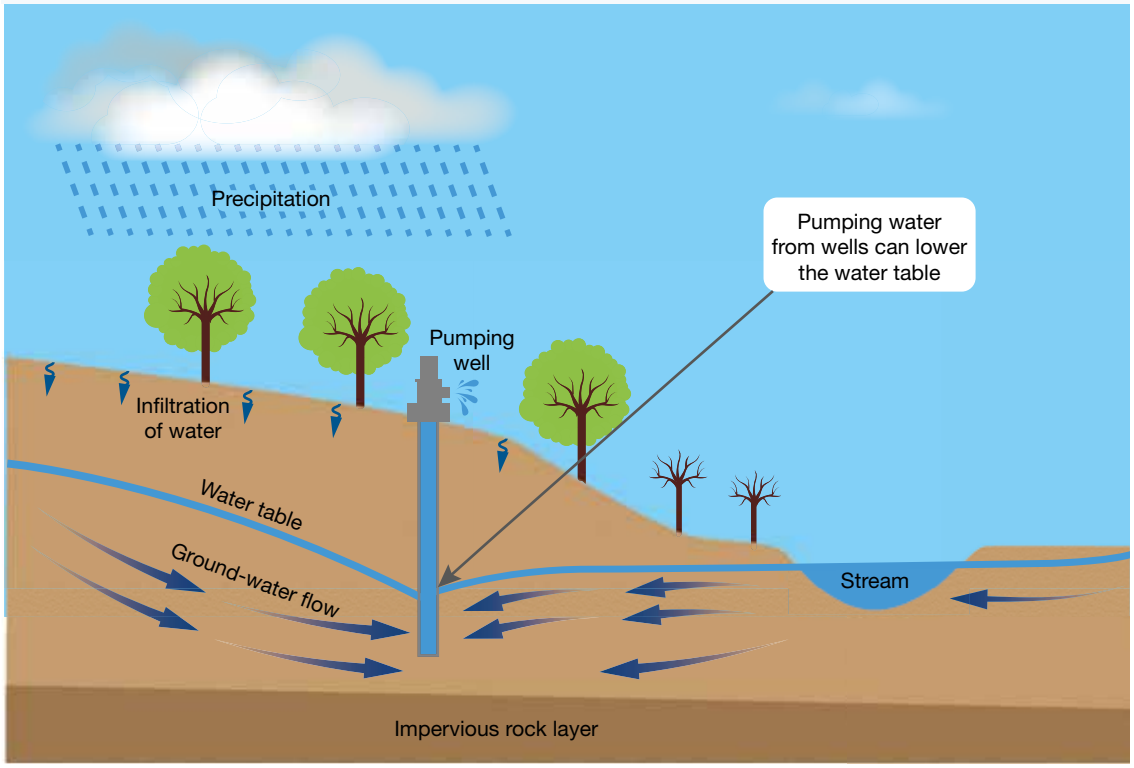


Source: Data from Tony Burton. All rights reserved. Map drawn by Spatial Vision.

12.10.2 What happens if we extract too much water?

As surface water resources become fully exploited, people turn to underground water sources. Improvements in technology have also enabled farmers to pump water from **aquifers** deep underground (see figure 2).

FIGURE 2 Diagram showing the use of groundwater as a water source in farming



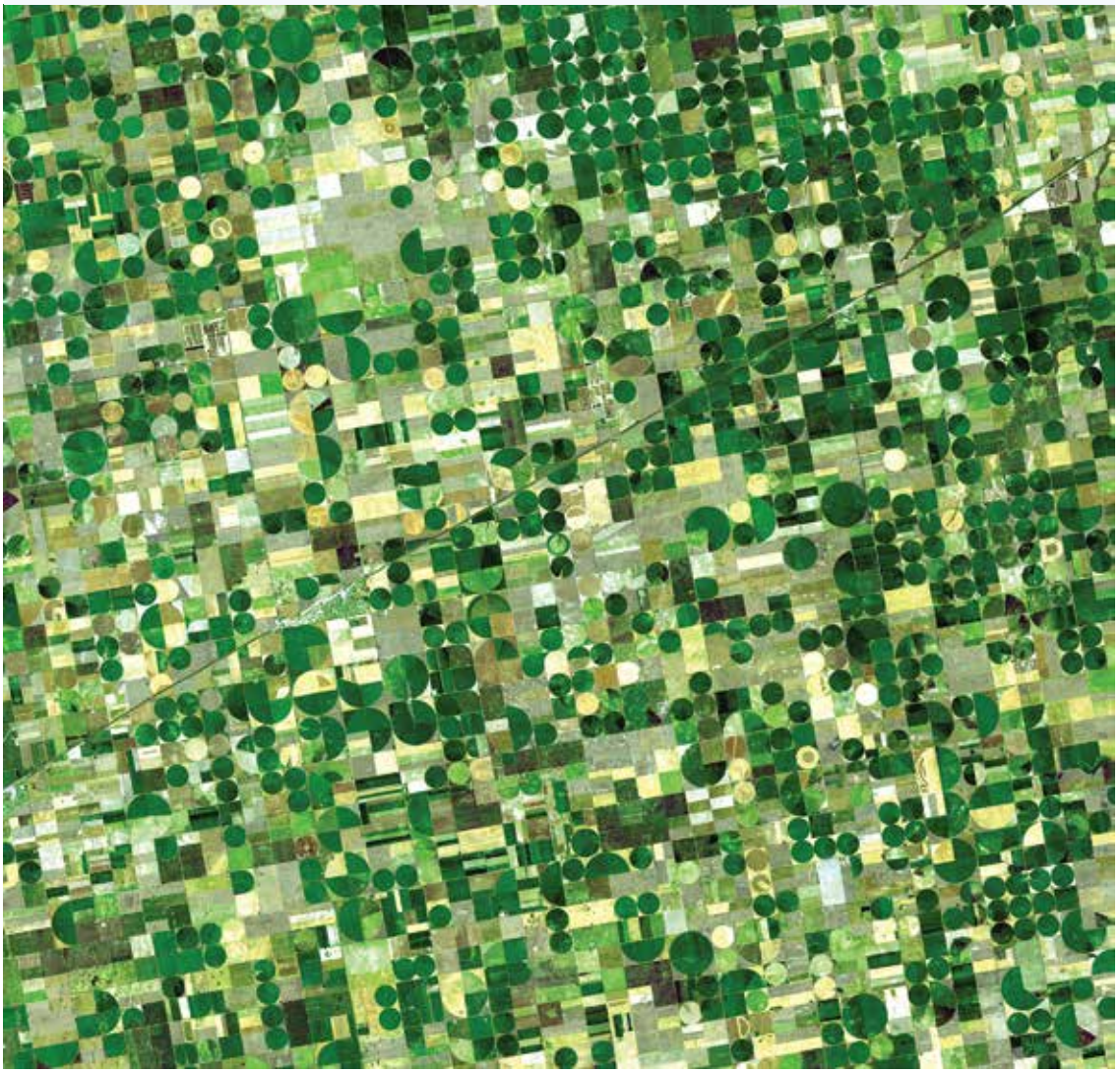
Groundwater levels do not respond to changes in the weather as rapidly as rivers and lakes do. If the water is removed unsustainably (at a rate that is faster than the rate of replenishment by rainfall, run-off or underground flow), then **watertables** fall. Water then becomes harder and more expensive to extract. Water stored in aquifers can take thousands of years to replenish. Over-extraction of groundwater can result in wells running dry, reduced stream flow, and even land subsidence (sinking).

The High Plains region of the central United States (see figure 3) is the leading irrigation area in the western hemisphere, producing over $20 billion worth of food and fibre per year. In all, 5.5 million hectares of semi-arid land is irrigated using water pumped from the huge Ogallala Aquifer. Since large-scale irrigation was developed in the 1940s, groundwater levels have dropped by more than 30 metres. Pesticides and other pollutants from farming have also infiltrated the groundwater. Scientists estimate that the aquifer will be 69 per cent depleted by 2060 and it would take more than 6000 years for it to refill naturally.

FIGURE 3 The size of the Ogallala Aquifer

Source: USGS

FIGURE 4 Irrigated cropland relies heavily on water from the Ogallala Aquifer.



12.10 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. List the different types of water resources that can be used to supply water for food production.
2. Identify one natural and one human factor that has contributed to the ***change*** in water levels in Lake Chapala.

Explain

3. Study figure 2. Explain how pumping groundwater can lower watertables.
4. Refer to figure 3. With the use of the ***scale*** bar, work out the approximate area covered by the Ogallala Aquifer.
5. What are some of the likely effects of draining wetlands for farmland, as has occurred around Lake Chapala, Mexico?
6. Compare the advantages and disadvantages of using groundwater and surface water for farming.

Discover

7. Research the Aral Sea in Asia and write a report to cover:
   - location
   - development of the issue of over-extraction of water
   - impacts of overuse.

   Include a location map and labelled photographs in your report.

Think

8. If the Ogallala Aquifer was to run dangerously low, and irrigation was no longer possible, what would be the short- and long-term consequences?
9. Select one of the examples shown in this section and consider what steps water managers could take to reduce the impact of ***unsustainable*** water use in the region.

12.12 Does farming cause global warming?

12.12.1 How can farming contribute to global warming?

Agriculture and climate change are interconnected processes, both of which take place on a global scale. Global warming will cause changes to what can be grown and where. At the same time, however, many of our agricultural practices may in fact contribute to global warming.

The term 'global warming' generally refers to the warming of the planet that is caused by increased emissions of **greenhouse gases** as a result of human activity. The human activity of food production can contribute to global warming in two ways.

- Grazing animals and flooded rice paddies produce the greenhouse gas methane. Livestock are thought to be responsible for 35 per cent of the world's methane output. The next largest sources, in order, are oil and gas, landfill, rice paddies and wastewater treatment systems.
- Food production changes the surface of the Earth, which then alters the planet's ability to absorb or reflect heat and light. Large-scale deforestation and desertification can significantly alter the microclimate of a region. Around 80 per cent of global deforestation is caused by clearing the land for grazing, slash-and-burn farming and cropping.

FIGURE 1 A cartoonist's view of livestock and global warming

12.12.2 What are the biggest polluters?

Cows emit large quantities of methane through belching and flatulence (caused by digestive gases). The gas is produced by bacteria digesting grass in one of the four stomachs that cows have. It has been estimated that one cow could produce somewhere between 100 and 500 litres of methane per day (see figure 2). This amount is similar to the pollution produced by one car in one day. When you consider there are over 1.5 billion cows in the world, this equates to a lot of gas. Scientists today are working on 'fuel-efficient cows' — cows that convert feed more efficiently into milk rather than methane.

FIGURE 2 Argentine scientists are strapping plastic tanks to the backs of cows to assess how much methane they produce.

Rice farming is one of the biggest sources of human-produced methane, averaging between 50 and 100 million tonnes per year. The gas is produced in the warm, waterlogged soils of the rice paddies (see figure 3).

FIGURE 3 Methane is released from rice paddies.

The practice of **factory farming**, in which a very high number of animals are concentrated in the one place, produces an unmanageable amount of waste (see figure 4). On a sustainable farm, animal manure can be used as a natural fertiliser but on a factory farm the large quantity becomes a source of methane, because the waste is often mixed with water and stored in large ponds or lagoons. An additional problem can occur if these ponds leak, as they create soil and water pollution. The use of nitrogen-based fertilisers on farms also releases nitrous oxide, another greenhouse gas.

FIGURE 4 Factory farming produces large quantities of waste products.

12.12.3 How does deforestation contribute to global warming?

Trees are 50 per cent carbon, so when they are burned or felled to create land for farming, the CO_2 they store is released back into the atmosphere. On average, 13 million hectares of the world's forests are lost each year, mostly in tropical regions of South-East Asia, Latin America and Africa. Deforestation accounts for 30 per cent of greenhouse gases released into the atmosphere each year. Forests also act as carbon sinks, the most effective way of storing carbon. Large areas of cleared land absorb more heat than native vegetation, which can lead to changes in local weather conditions.

12.12 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What are the three main greenhouse gases?
2. What are two ways in which deforestation can contribute to ***changes*** in greenhouse gases?
3. What is the biggest global emitter of methane: livestock, cars or rice paddies?

Explain

4. Study figure 4. How does factory farming differ from traditional farming methods? Draw up a table of two columns, one headed 'Key features of a traditional dairy farm' and one headed 'Key features of a factory farm'. List the features of both styles of farming and then compare your lists.
5. Is factory farming a ***sustainable*** form of food production? Give reasons for your answer.
6. The building of large-***scale*** dams and subsequent flooding of forests in the Amazon is also contributing to increases in greenhouse gas emissions. What is the reason for this?

Discover

7. Research the sources of methane gas and find out what percentage each contributes to world methane output. Present your information in a pie or bar graph. Is the biggest source natural or human?
8. If one cow produces 16 kWh energy equivalent per day, how many cows would be needed to power your own home per day? You will need to check your household electricity bill.
9. How might climate ***change*** affect agriculture? Do some online research to investigate some of the possible effects of climate ***change*** on food production.

Think

10. With another member of the class, discuss different ideas for reducing agriculture's contribution to global warming.

12.13 Review

12.13.1 Review

The biophysical world

1. Refer to figure 1 in subtopic 12.2. Rank the Earth's spheres according to which are most affected by the production of food. Which sphere is the most affected? Why?
2. Explain how the effects of a poorly managed farm can ***interconnect*** all four of Earth's spheres.
3. As the world's population has increased, how has food production managed to keep pace?
4. Refer to figure 2 in subtopic 12.2. Name three regions of the world in which deforestation is a major ***environmental*** concern.
5. Suggest why countries in Africa are less affected by agricultural pollution than countries in Europe and Asia.

Deforestation

6. Look around the room you are in at present. List all the products you can see that are made of wood. How dependent are we on forests? Explain.
7. Where are tropical rainforests found in the world? Refer to a world vegetation map and a world climatic zone map in your atlas. Describe in detail the distribution of tropical rainforests across the world's ***space***. Use the following questions to help you.
   (a) Which continents or regions have rainforests?
   (b) Rainforests are distributed between which latitudes?
   (c) What climate zones are rainforests associated with?
8. Describe how the production of biofuels can have an adverse effect on the ***environment***.
9. There are several organisations, such as the Worldwide Fund for Nature (WWF), which are now involved in rescuing and protecting endangered orangutans in South-East Asia.
   (a) Investigate one organisation, and report on its:
      - aims
      - strategies.
   (b) Do you think this organisation will be successful in achieving its aims? If so, why? If not, why not? What needs to be done?

Overfishing

10. (a) What is meant by the term *boom and bust* when referring to resource use?
    (b) Think of other examples or resources that have gone through the boom and bust stage.
    (c) Is this a ***sustainable*** practice? Explain your answer.
11. Investigate either the large-***scale*** methods of catching fish or the role of factory ships in world fishing.
12. The prestigious Peninsula Hotel in Hong Kong has taken shark fin soup off its menu in protest against shark finning. Is this ***scale*** of protest enough? What else could be done?

Land degradation

13. Make a list of the types of human activities that can contribute to land degradation.
14. Would land degradation in urban areas be similar to or different from land degradation in rural areas? Give a detailed answer.
15. Conduct research about another ***place*** that is threatened by desertification, such as Mongolia, Patagonia, southern Spain, the Aral Sea or the Sahel in Africa. Research questions could include the following.
    (a) Describe the location.
    (b) What factors have contributed to desertification?
    (c) What are two consequences of desertification in this ***place***?
    (d) What is being done to reduce the consequences?

Water

16. What are some of the advantages of irrigated farming over rain-fed farming?
17. How has technology allowed us to access more water for food production? Construct a list and write a brief note on how each invention has ***changed*** water availability.
18. Is the increasing use of groundwater a ***sustainable*** option for future farming? Justify your answer.

Biodiversity

19. Refer to figure 1 in subtopic 12.11. Compare the extinction rates of all species for the past, present and future. What trend do you notice?
20. In what ways has food production influenced the world's biodiversity?
21. Use the following data to construct a bar graph showing the worldwide percentages of threatened species.
    - Plants 70 per cent
    - Invertebrates 51 per cent
    - Fish 39 per cent
    - Amphibians 31 per cent
    - Reptiles 30 per cent
    - Mammals 22 per cent
    - Birds 12 per cent
22. How has food production contributed to the number of threatened species?

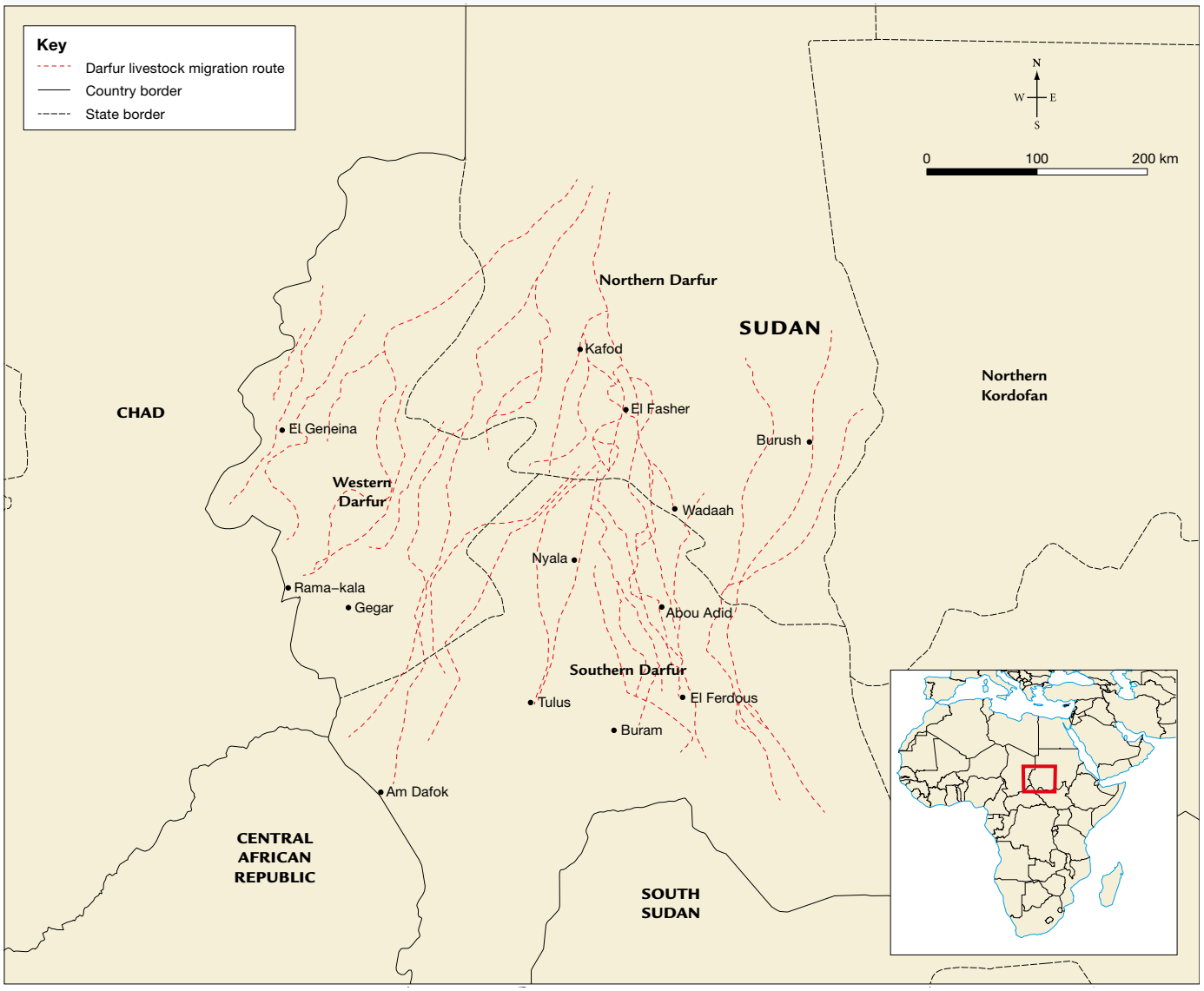
12.13.2 Reflect

23. In parts of the Sahel region of Africa, nomads traditionally moved their flocks of goats and camels around in search of water and feed. Over time, their range area has been reduced and political borders tightened up. Governments have installed wells to provide a more reliable water source for grazing animals but these in turn have created land degradation problems. Refer to figures 1, 2 and 3, which show the effects of overgrazing in Sudan, Africa, to answer the questions that follow.
    (a) Describe the traditional patterns of livestock migration. Use distances, directions and regional borders in your answer.
    (b) How might conflict between the different regions of Sudan influence nomadic herdspeople?
    (c) Study figure 2. What ***changes*** do cattle bring to the areas around waterholes?
    (d) What is the extent of degradation shown occurring around Bara in figure 3? Use the ***scale*** on the satellite image to estimate the size of the area affected by degradation.
    (e) Predict what might happen if the areas of sand dune encroachment (spreading) and active desertification enlarge.
    (f) How might this affect available food supplies for Bara?
24. How can you provide assistance to people and their livelihoods and yet prevent ***environmental*** damage?
25. *Desertification is not caused by any one thing, but rather by a combination of factors*. Do you agree or disagree with this statement? Explain your viewpoint.
26. Palau, a small country of 22 000 people and 200 islands, is located 800 kilometres east of the Philippines. It is the first nation in the world to create a shark sanctuary. Estimates have shown that catching 100 reef sharks would be worth a one-off $18 000. Those same reef sharks, as a tourist and diving attraction, currently bring in $18 million annually. It took some effort to convince Palauans to protect sharks, but they are now responsible for managing and enforcing shark-fishing restrictions.
    (a) How do you view the decision of the Palau government?
    (b) Is this the best way to reduce the ***environmental*** threat of overfishing of a species?
27. In Western Australia, there are plans to export shark fins that have a 'green stamp'; that is, they are caught and processed in a ***sustainable*** manner. Demand for ***sustainably*** caught fish would be very high, and they could earn up to $100 per kilogram (presently $10 to $20 per kilogram). Is this type of ***sustainable*** fishing acceptable to you? Give your opinion.

The paper industry

28. Create a table listing all the paper products that you might use in a day. In a second column, for each product suggest ways in which you could reduce your usage or substitute other more environmentally friendly products.
29. Construct a flow diagram to illustrate the different impacts that paper production and use has on the atmosphere, biosphere and lithosphere.

FIGURE 1 Major historical migration routes used by nomadic herders in Sudan, Africa, in the past. Currently, the borders with Chad and the Central African Republic are closed, and even borders between provinces in the Sudan are closed, so herders must stay within their own province.



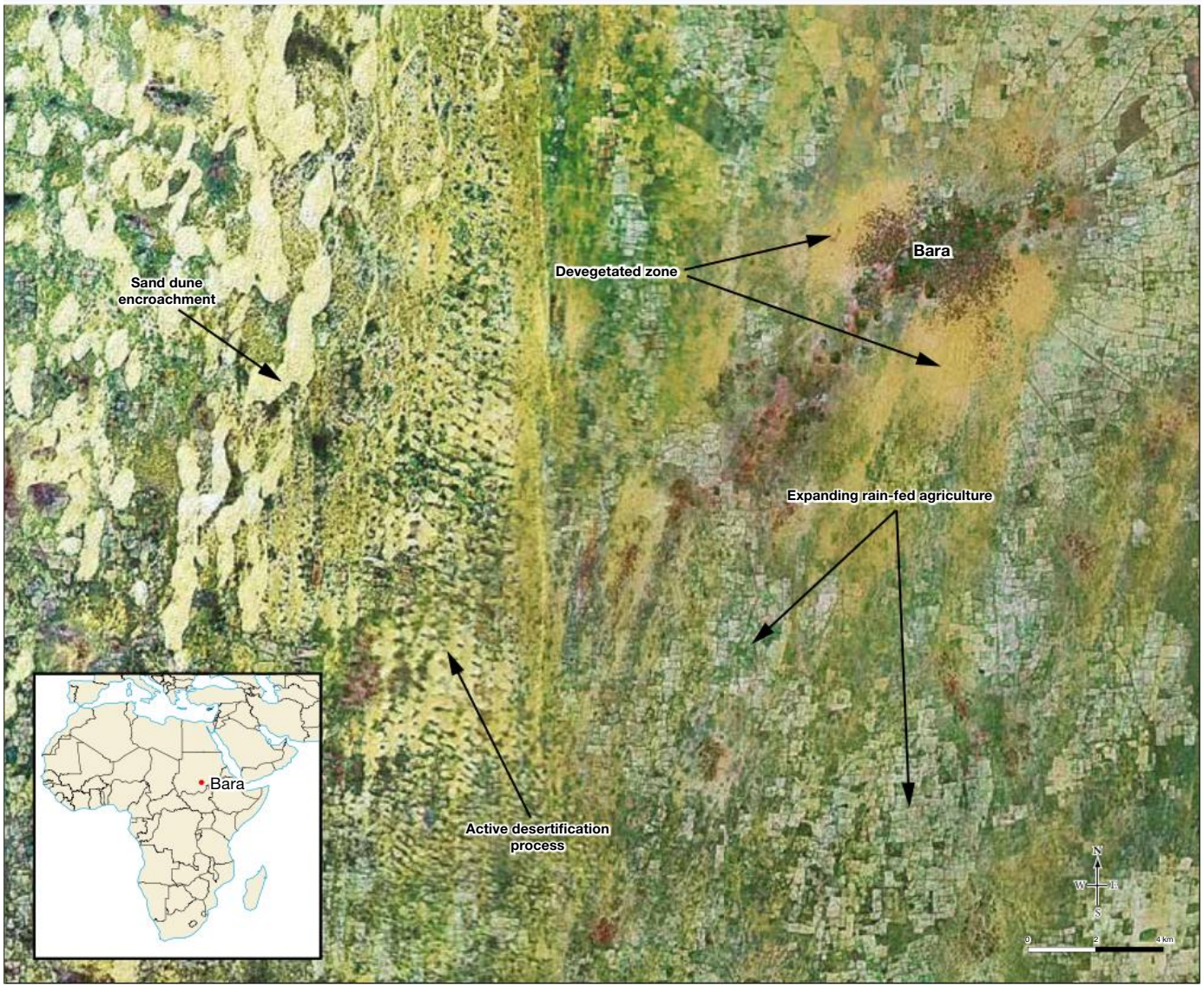
Source: Spatial Vision

Notes:

1. Livestock migration from north to south is in February–March and from south to north in May.
2. The routes shown on this map are major historical routes that have some degree of official and local recognition. However, routes can change over time and the legitimacy and impacts of many routes are a source of local and regional tension.
3. Since the beginning of the Sudanese conflict, all livestock routes have been disrupted.

FIGURE 2 Cattle grazing around a waterhole in Sudan

FIGURE 3 False-colour satellite image showing the effects of agriculture and overgrazing in Sudan, Africa

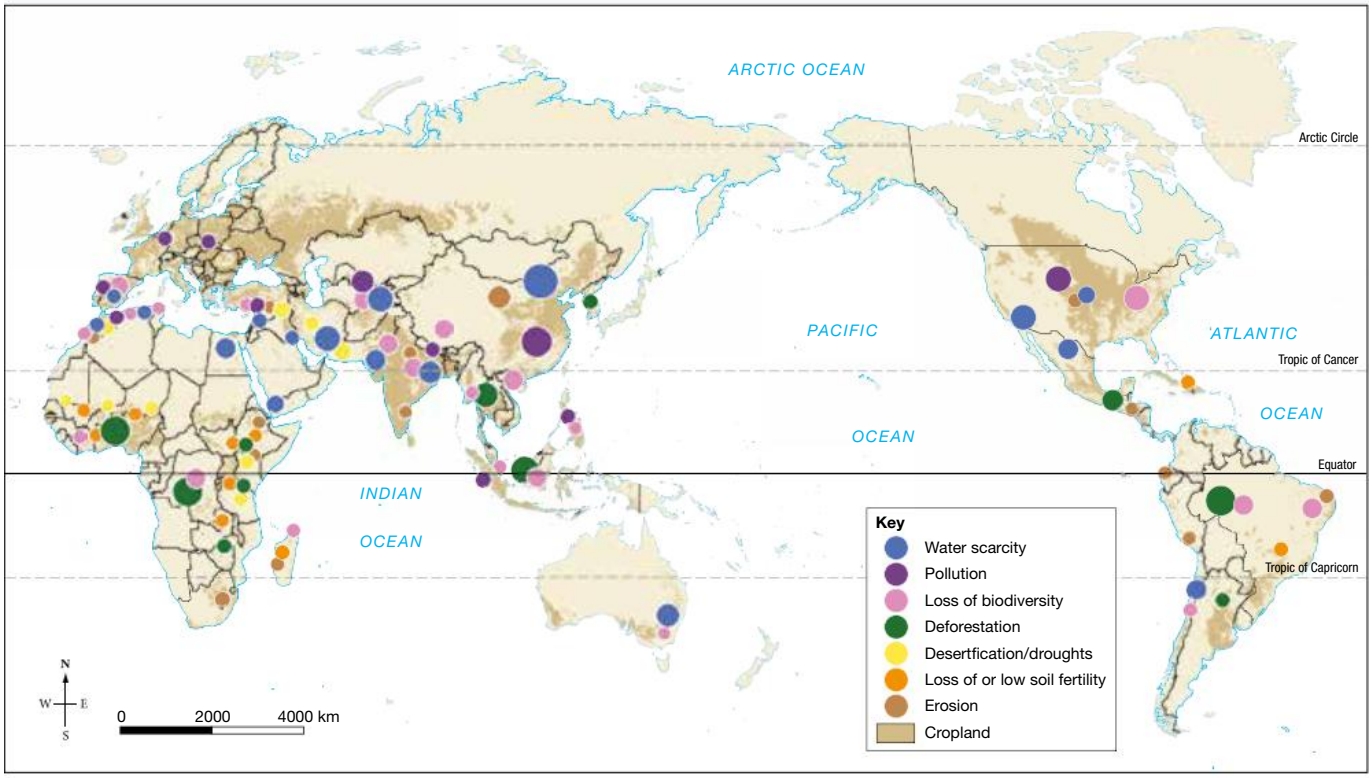


Source: Spatial Vision

Food production: environmental risks

30. Rank what you consider to be the three most serious environmental issues shown in figure 4.
    (a) What criteria did you use to make your decisions? (For example: extent of area covered, number of people affected, economic impacts)
    (b) Share your list with at least two other students. What were the similarities and differences in the rankings?
    (c) Would you now change your own ranking? Why or why not?

FIGURE 4 The environmental risks associated with food production



Source: Spatial Vision

Whaling

31. Investigate the issue of whaling and the conflicting viewpoints held by Australia and Japan. What were the factors (reasons) involved in:
    (a) Australia's decision to ban whaling
    (b) Japan's decision to continue whaling?
    How do you suggest both groups could come to a resolution?

TOPIC 13
Are we devouring our future?

13.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

13.1.1 Introduction

There is enough food produced in the world today to feed every man, woman and child, so why is it that one in nine people, or 795 million, will go to bed hungry tonight? What is stopping everyone getting enough to eat? If this is the current situation, what is going to happen in the future?

For these children, in a tent camp for people displaced by flooding in northern India, the only kind of food security is in the form of aid.

Starter questions

1. How long has it been since you had anything to eat?
2. How many different food items have you eaten today?
3. How many of these did your family grow?
4. Do you know when and where your next meal is coming from?
5. Do you feel secure in knowing that you have food in your home?
6. How would your answers to these questions compare with those of the people shown in the photograph on the previous page?
7. Why do you think we have so many people hungry when there is enough food produced in the world?
8. How will the world feed its future population?

INQUIRY SEQUENCE

13.1	Overview		271
13.2	Who's not hungry?		272
13.3	Who is hungry?		275
13.4	**SkillBuilder:** Constructing and describing complex choropleth maps	online only	278
13.5	How does a famine develop?	online only	278
13.6	Will land loss lead to food shortages?		278
13.7	**SkillBuilder:** Interpreting satellite images to show change over time	online only	283
13.8	Are we running dry?		283
13.9	Climate change: freeze or fry?		286
13.10	Why is food being wasted?	online only	289
13.11	**Review**	online only	289

13.2 Who's not hungry?

13.2.1 What is food security?

Very few Australians, by choice, would go to bed at night hungry. We live in a country where there is a plentiful supply and wide range of food items available. Our relatively high standard of living enables most of us to afford to purchase, store and prepare food, or even dine out. Most of us are secure in the knowledge that there will be food at the next meal time.

Food security exists when all people, at all times, have physical and economic access to enough safe and nutritious food to meet their dietary needs and food preferences for an active and healthy lifestyle.
Source: Food and Agriculture Organization

Food security for you, as a student, means that your family either grows its own food, has sufficient income to purchase food, or is able to barter or swap food. Similarly, food security for a country means that it is able to grow sufficient food, or it has enough wealth to import food, or it combines the two. Not all people in the world are able to achieve this. For example, consider the range of foods available in the two markets in figures 1 and 2.

FIGURE 1 The fresh produce section of a supermarket in a developed economy

FIGURE 2 A food market in a developing economy

13.2.2 Who has food security?

Figure 3 shows the countries of the world regarded as having low risk of food insecurity shaded in dark green. This is based on a range of 12 different **indicators**, including the:

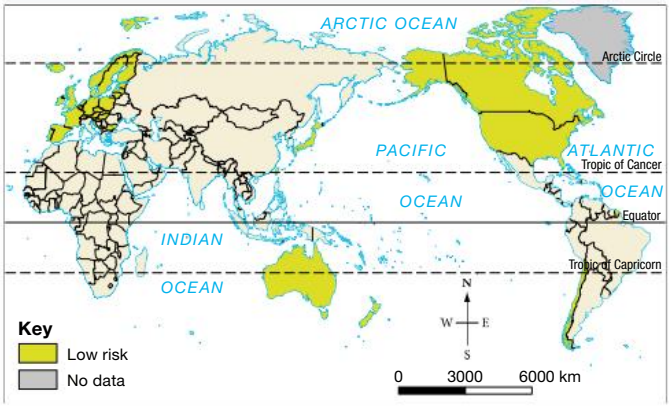
- affordability of food
- accessibility of food
- nutritional value of food
- safety of food
- nutritional and health status of the population.

The map shows only those countries that have low risk of food insecurity. These countries are able to produce more food than they require, so they can export their surplus; or they are able to afford to import all their needs, as is the case for the United Arab Emirates, for example.

Australia, for instance, produces three times as much food as it consumes, and is a major exporter of both fresh and processed food. We can trade competitively in cereals, oil seeds, beef, lamb, sugar and dairy products. Ninety per cent of our food is grown in Australia. Of the remaining 10 per cent that we import, many foods are either processed or out of season; oranges are an example. Global trade is an important component of food security because it is almost impossible to exactly match food production to food demands.

As a country, Australia does not have a problem feeding its population but it has a humanitarian interest in the food security of developing nations. As a major food producer, Australia does face future challenges. There is declining growth in agricultural productivity, the threat of climate change, and increasing competition for land and water.

FIGURE 3 Countries with low risk of food insecurity



Source: Verisk Maplecroft – Verisk Maplecroft's Food Security Index provides a quantitative assessment of risks to the continued availability, stability and access to sufficient food supplies. The index also considers the nutritional outcomes of each country's relative food security.

13.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What is meant by the term *food security*?
2. How do you give your pet food security?
3. Refer to figure 3 and your atlas.
   (a) List five examples of countries, from different regions of the world, that are considered to have low risk of food insecurity.
   (b) Would you classify these countries as developing or developed?
   (c) What does it mean for people who live in a country with low risk of food insecurity?

Explain

4. Compare the two photographs in figures 1 and 2.
   (a) What are the similarities and differences between the two markets? Do you think all food groups would be available in both markets? Why or why not?
   (b) List 10 food items (not including water) that you could live on for a week, while still maintaining a balanced diet. You are not allowed anything else.
5. The Food Security Risk Index was based on evaluating five different indicators. Why do you think indicators such as accessibility and safety were included?

Discover and predict

6. How do you think climate ***change*** might affect Australia's food security?
7. What natural or human events could disrupt our food security?

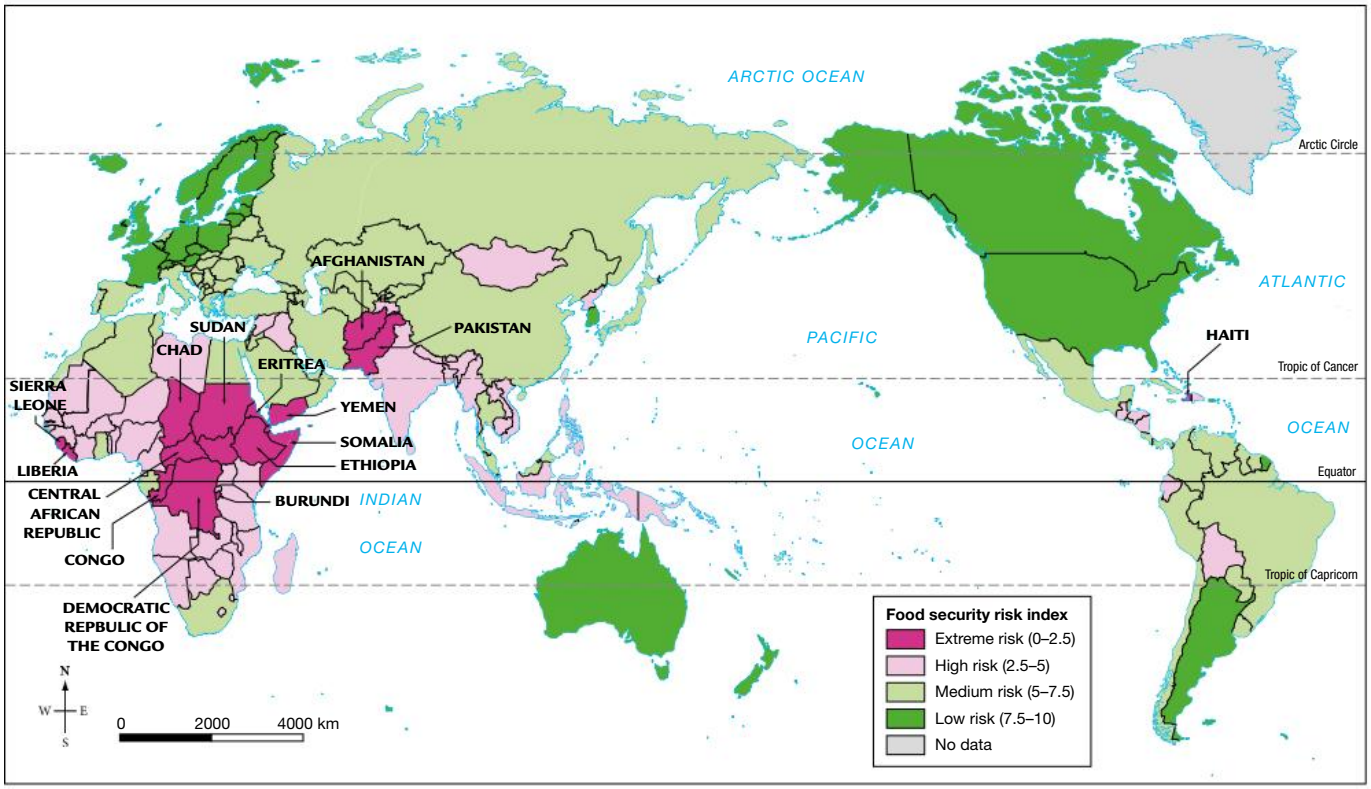
13.3 Who is hungry?

13.3.1 Who is at risk of food insecurity?

Have you ever felt hungry? How long since you last had a meal? How long before your next meal? How easy is it to open the fridge or cupboard for a snack? But what if there was no food in the house, no money to purchase food with and very little food available in the shops? If that was the case, you would be just one of the hundreds of millions of other people in the world in a similar position.

Figure 1 highlights those countries that are most at risk of not having reliable access to food. Seventy five per cent of all hungry people live in rural areas, mainly in rural environments of Asia and Africa. These people are often totally dependent on agriculture for food, and have no alternative source of work or income. Consequently they are vulnerable to food insecurity.

FIGURE 1 The Food Security Risk Index, 2013



Source: Verisk Maplecroft – Verisk Maplecroft's Food Security Index provides a quantitative assessment of risks to the continued availability, stability and access to sufficient food supplies. The index also considers the nutritional outcomes of each country's relative food security.

13.3.2 What happens when people do not have food security?

For the 800 million people who do not have enough to eat, the issue of finding sufficient and nutritious food must be faced daily. At least 2 billion of the world's people are **undernourished**, with diets that are minimal or below the level of sustenance. People who do not have a regular and healthy diet often have shortened life expectancy and an increased risk of disease. Children are especially vulnerable to poor diet, and their growth, weight, and physical and mental development suffer. In India, 29.4 per cent of children are underweight while 38.4 per cent have stunted growth, indicating they are **malnourished**. In the previous decade this figure was closer to 48 per cent of the child population.

FIGURE 2 An old man in Delhi suffering from a lifetime of malnutrition

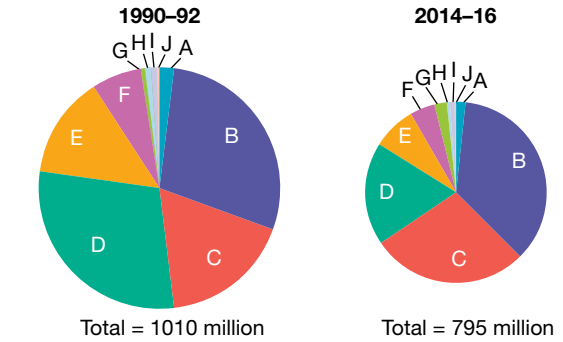
13.3.3 Why is there food insecurity?

Global food production now provides 17 per cent more calories per head than 30 years ago, despite the world's population increasing by 70 per cent. There is, however, unequal access to **arable** land, technology, education and employment opportunities. In the past decade the actual number of undernourished people in the world has fallen by 216 million, mostly due to large-scale improvements in the highly populated countries of India and China. Improvements in food production and economic development have not always occurred in those places experiencing rapid growth in population. Food is redistributed around the world via trade and aid but neither is a long-term or large-scale solution to food insecurity. Regional variations still occur in the distribution of hunger as can be seen in figure 3.

Some of the reasons for food insecurity include:

- poverty
- population growth
- weak economy and/or political systems
- conflict
- natural disasters such as drought.

FIGURE 3 The changing distribution of hunger in the world: numbers and shares of undernourished people by region, 1990–92 and 2014–16



Total = 1010 million

Total = 795 million

	Number (*millions*)		Regional share (%)	
	1990–92	2014–16	1990–92	2014–16
A Developed regions	20	15	2.0	1.8
B Southern Asia	291	281	28.8	35.4
C Sub-Saharan Africa	176	220	17.4	27.7
D Eastern Asia	295	145	29.2	18.3
E South-Eastern Asia	138	61	13.6	7.6
F Latin America and the Caribbean	66	34	6.5	4.3
G Western Asia	8	19	0.8	2.4
H Northern Africa	6	4	0.6	0.5
I Caucasus and Central Asia	10	6	0.9	0.7
J Oceania	1	1	0.1	0.2
Total	**1 011**	**795**	**100**	**100**

Note: The areas of the pie charts are proportional to the total number of undernourished in each period. Data for 2014–16 refer to provisional estimates. All figures are rounded.

Source: FAO

13.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What factors make people vulnerable to food insecurity?
2. What is the difference between undernutrition and malnutrition?

Explain

3. Refer to a map of conflict in your atlas or online. Is there an ***interconnection*** between those countries that have a high or extreme risk of food insecurity and those countries that are experiencing conflict? Include country names in your answer.
4. Explain how conflict can lead to food insecurity.

Discover

5. Use the internet to research the link between malnutrition in children and the mother's health.
6. Research and find out the causes and effects of one of the conditions caused by dietary deficiency, such as deficiency in iron, vitamin A or vitamin C.
7. Select one of the ***places*** mapped in figure 1 as being extreme risk. Find out the main factors that contribute to its food insecurity.
8. Refer to figure 3. Compare the three regions of the world that had the highest number of undernourished people in 1990–92 and 2014–16.
   (a) Which region of the world has shown the greatest decrease in the percentage of undernourished people?
   (b) Which region has shown the greatest increase in the percentage of undernourished people?

Predict

9. With a partner, develop five steps you think would reduce a country's risk of food insecurity. Give reasons for your choices.
10. How can Australia best help another country that is at high risk of having insufficient food for its people?

Think

11. At the turn of the twentieth century, the total worldwide spending on agricultural research was US$23 billion. Compare this to $1.5 trillion on weapons. Do we have our priorities right? Write a short letter to the editor outlining your viewpoint.

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: Food insecurity around the world (int-3326)

13.4 SkillBuilder: Constructing and describing complex choropleth maps

online only

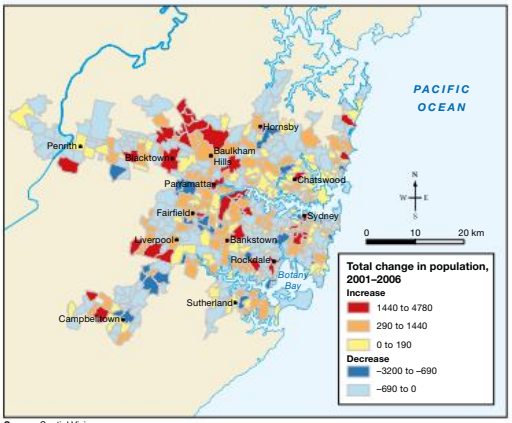
WHAT IS A COMPLEX CHOROPLETH MAP?

A complex choropleth map is a map that is shaded or coloured to show the average density or concentration of a particular feature or variable, and it shows an area in detail.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 Population change in Sydney, 2001–2006



Source: Spatial Vision

learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Constructing and describing complex choropleth maps (eles-1732)

Try out this interactivity: Constructing and describing complex choropleth maps (int-3350)

13.5 How does a famine develop?

online only

Access this subtopic at **www.jacplus.com.au**

13.6 Will land loss lead to food shortages?

13.6.1 How is land lost?

Land is absolutely essential for food production, and the world has more than enough arable land to meet future demands for food. Nevertheless, we need to find a balance between competing demands for this finite resource.

The loss of productive land has two main causes. First, there is the degradation of land quality through such things as erosion, **desertification** and **salinity**. Second, there is the competition for land from non-food crops, such as **biofuels**, and from expanding urban areas. As figure 1 shows, the growth in world population is inversely proportional to the amount of arable land available. This does not even take into consideration the land that is degraded and no longer suitable for growing food.

Land degradation

Although there have been significant improvements in crop yields, seeds, fertilisers and irrigation, they have come at a cost. Environmental degradation of water and land resources places future food production at risk.

The main forms of land degradation are:

- erosion by wind and water
- salinity
- pest invasion
- loss of biodiversity
- desertification.

Land degradation occurs in all food-producing biomes across the globe. Some degradation occurs naturally; for example, a heavy rainstorm can easily wash away topsoil. However, the most extensive degradation is caused by overcultivation, overgrazing, overwatering, overloading with chemicals and overclearing (see figure 2). Currently, 25 per cent of the world's land is highly degraded, while only 10 per cent is improving in quality. In South-East Asia, 50 per cent of cultivated land has severe soil quality problems, which prevent increases in food production. The Ministry for Agriculture in China estimates that 3.3 million hectares of arable land is polluted with chemicals and heavy metals, mostly in regions that grow grains.

FIGURE 1 Comparison of world population growth and arable land per capita

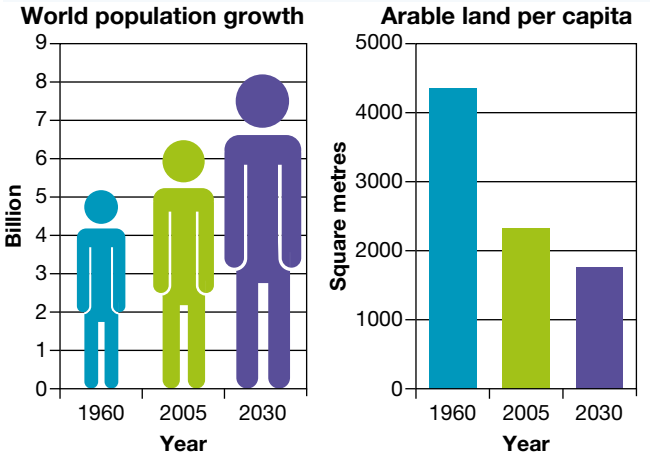


FIGURE 2 Land degradation caused by deforestation in Madagascar

Competition for land

There has been a growing global trend to convert valuable cropland to other uses. Urban growth, industrialisation and energy production all require land. For example, in less than 16 years, China lost more than 14.5 million hectares of arable land to other land uses. This land no longer produces food, which then puts pressure on existing land resources to make up the loss.

Growing fuel

Traditionally, the main forms of biofuel have been wood and charcoal. Almost 90 per cent of wood harvested in Africa and 40 per cent harvested in Asia is used for heating and cooking. Today, people are seeking more renewable energy sources and wanting to reduce CO_2 emissions associated with deforestation, so there is greater demand for alternative energy sources. Consequently, the use of agricultural crops to produce biofuels is increasing. Ethanol (mostly used as a substitute for petrol) is extracted from crops such as corn, sugar cane and cassava. Biodiesel is

derived from plantation crops such as palm oil, soya beans and **jatropha**. The growth of the biofuel industry has the potential to threaten future food security by:

- changing food crops to fuel crops, so less food is produced and crops have to be grown on **marginal land** rather than arable land
- increasing prices, which makes staple foods too expensive for people to purchase
- forcing disadvantaged groups, such as women and the landless poor, to compete against the might of the biofuel industry.

Creeping cities

Cities tend to develop in places that are agriculturally productive. However, as they expand, they encroach on valuable farmland.

FIGURE 3a Satellite image of the city of Tehran in 1985

FIGURE 3b Satellite image of Tehran in 2009 — the expansion of the city has taken over valuable arable land.

Land grabs

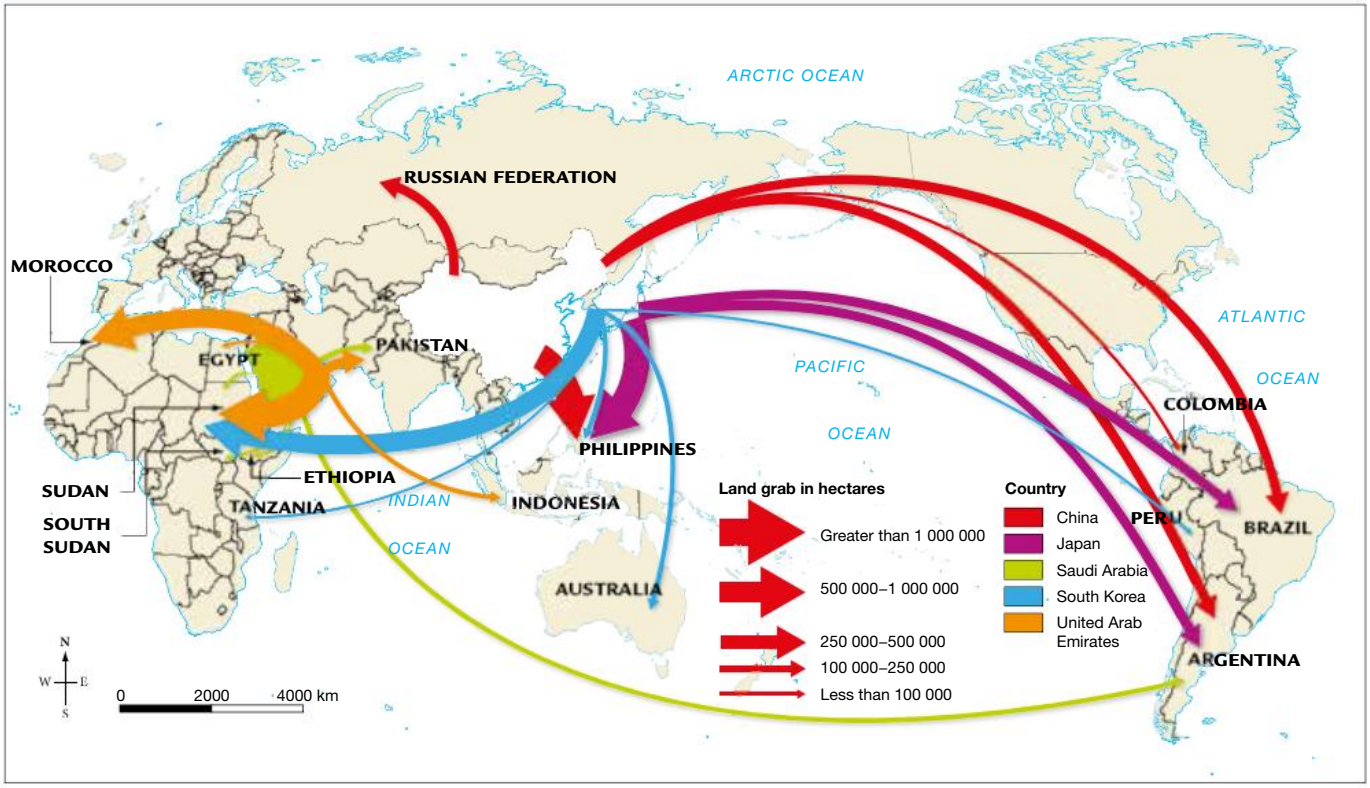
A growing challenge to world food security is the purchase or lease of land, largely in developing nations, by resource-poor but wealthier nations. Large-scale 'land grabs', as they are known, have the potential to improve production and yields but at the same time there is growing concern over the loss of land rights and food security for local populations. Since 2002, over 36 million hectares, an area bigger than Victoria and Tasmania combined, has been purchased or leased by foreigners around the world, with another 15 million hectares being negotiated. By and large, the land buyers are dominated by four regions: western Europe, North America, the Middle East and the expanding economies within Asia. China has land in 33 different countries, the United States in 28 and the United Kingdom in 30. Australia has land in nine different countries, while 13 countries have control over land in Australia.

The regions where land is purchased tend to be located in Africa, South America, eastern Europe and parts of South East Asia. Ethiopia 'exports' land to 21 different countries, while Madagascar and the Philippines export to 18 countries. Figure 4 shows the global scale of land grabs.

The rise of land grabs came about as a result of the 'triple-F' crisis — food, fuel and finance.

- *Food crisis*: massive increases in world food prices in 2007–08 emphasised the need for those countries heavily reliant on importing food, such as Saudi Arabia and China, to improve their food security by obtaining land in other countries to produce food to meet their own needs.
- *Fuel crisis*: rising and fluctuating oil prices in 2007–09 created an incentive for countries to acquire land to produce their own biofuels (see figure 5).
- *Financial crisis*: the global financial crisis in 2008 saw organisations switch from investing in stocks and shares to land in overseas countries, especially land that could be used to generate food and fuel crops.

FIGURE 4 Land grabs — who's buying where



Source: Spatial Vision

FIGURE 5 Countries in Africa where land is being bought by other nations for biofuel crops

Ghana Italian-based Agroils obtains 105 000 hectares, Jatropha Africa (UK) acquires 120 000 hectares, Scanfuel (Norway) cultivates 10 000 hectares and has contracts for 400 000 hectares, Galten (Israel) acquires 100 000 hectares.

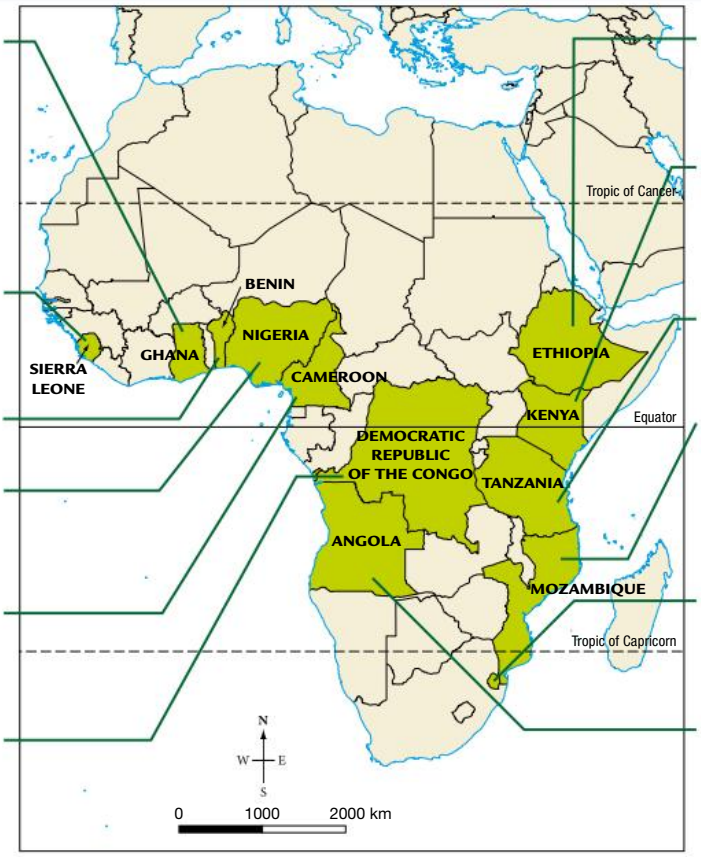
Sierra Leone Swiss-based Addax Bioenergy obtains 26 000 hectares for sugar cane.

Benin Proposed 300 000–400 000 hectares of wetlands to be converted for palm oil.

Nigeria Land acquisitions by the state using foreign capital and expertise. Over 100 000 hectares grabbed.

Cameroon Cameroon/French company expanding palm oil plantations including 60-year lease on 58 000 hectares.

Congo Chinese company requests 1 million hectares. Italian energy corporation ENI plans palm oil plantation of 70 000 hectares.



Source: Friends of the Earth

Ethiopia 700 000 hectares earmarked for sugar cane. 23 million hectares suitable for jatropha.

Kenya Japanese, Belgian and Canadian companies plan to purchase up to 500 000 hectares.

Tanzania 1000 rice farmers forced off their land to make way for sugar cane.

Mozambique Investors aim for 4.8 million hectares. Over 183 000 hectares currently allocated to jatropha. Companies: UK, Italy, Germany, Portugal, Canada and Ukraine.

Swaziland UK-based D1 Oils suspends expansion of jatropha despite promotion by rockstar Bob Geldof.

Angola 500 000 hectares of land designated for agrofuels. Angolan, Brazilian, Spanish and South African companies.

The risk to food security

Investors in farmland are, understandably, seeking large expanses of land that has fertile soils and good rainfall or access to irrigation water. Often, land that is purchased is already occupied and used by small-scale farmers, in particular women who rarely benefit from any compensation. Prices for land can be much lower and there is frequently corruption, with much money going to local and government officials. People can also be forced off their land by governments keen to make deals with wealthy governments and corporations. Many land grabs have neglected the social, economic and environmental impacts of the deals.

With the purchase of land can come the right to withdraw the water linked to it and this can deny local people access to water for fishing, farming and spraying animals. Withdrawal of water can reduce flow downstream. The Niger River, West Africa's largest river, flows through three countries and sustains over 100 million people, so any large-scale water reductions create significant impact to downstream environments and people. One country the Niger River flows through is Mali. By the end of 2010, about 500 000 hectares had been leased by foreign companies and countries in Mali. Although Mali has limited arable land and two million people are underfed, a high percentage of land bought by foreign owners will be used for biofuel crops.

It has been estimated that the land taken up by foreign investors could feed as many as 190 to 370 million people, or even more, if yields are raised to the level of industrialised western faming. As well, there are environmental risks associated with **monoculture** farming and the loss of biodiversity in the region.

13.6 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What are the two main ways that productive farmland can be lost?
2. Why is the use of corn as a biofuel a threat to food security?
3. What is meant by the term ***land grab***?

Explain

4. Refer to figure 1.
   (a) Describe the ***changes*** in population growth and the arable land per person between 1960 and 2030, making use of figures.
   (b) What do these graphs suggest about food security?
5. Compare the advantages and disadvantages in developing and developed nations of using traditional biofuels, such as wood and charcoal, instead of oil and gas.
6. Refer to figure 4.
   (b) Which three countries are the largest purchasers of overseas land? Use figures in your answer.
   (b) Why do you think South Korea has invested in so many countries in such different ***places***?

Discover

7. What is jatropha? What are the benefits of growing this rather than corn and other biofuels?
8. What is happening in Australia? Investigate which foreign companies own farmland here, what they are using it for and where it is located.

Predict

9. Do you think Australia will need to purchase farmland overseas? Give reasons for your answer.

Think

10. Are land grabs an effective solution for establishing a country's food security? Discuss your point of view.

learnon RESOURCES — ONLINE ONLY

Try out this interactivity: Key countries involved in land grabs (int-3327)

13.7 SkillBuilder: Interpreting satellite images to show change over time

online only

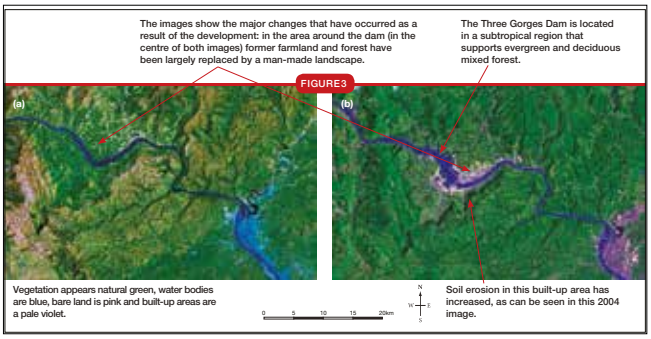
WHAT IS A SATELLITE IMAGE?

A satellite image is an image taken from a satellite orbiting the Earth. Satellite images allow us to see very large areas — much larger than those that can be visualised using vertical aerial photography.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 Change over time on the Yangtze River, China



learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Interpreting satellite images to show change over time (eles-1733)

Try out this interactivity: Interpreting satellite images to show change over time (int-3351)

13.8 Are we running dry?

13.8.1 Why are we running low on water?

There is no substitute for water. Without water there is no food, and agriculture already consumes 70 per cent of the world's fresh water. Every type of food production — cropping, grazing and processing — requires water. Thus, a lack of water is possibly the most limiting factor for increasing food production in future.

To feed an additional two billion people by 2050, the world will need to generate more food and use more water. The two main concerns that threaten future water security are water quantity and water quality (see figure 1).

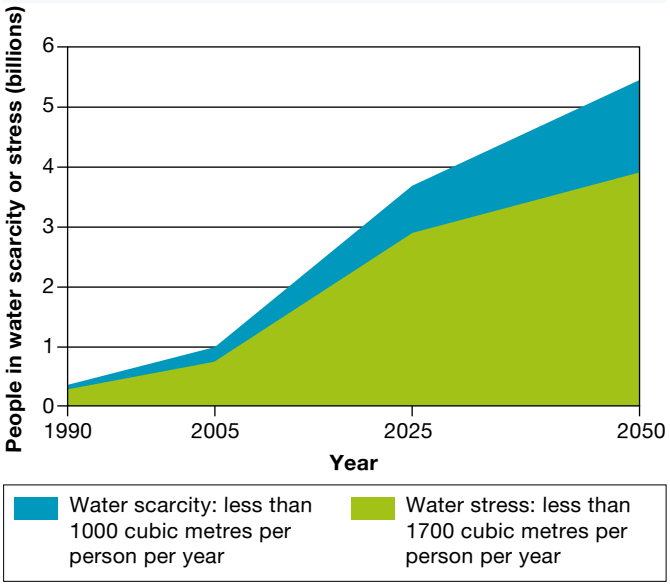
In theory, the world has enough water; it is just not available where we want it or when we want it, and it is not easy to move from place to place. We already use the most accessible surface water, and now we are looking for it beneath our feet.

FIGURE 1 Water scarcity is a serious threat to food security.

Underground **aquifers** hold 100 times more water than surface rivers and lakes. However, groundwater is not always used at a sustainable rate, with extraction exceeding natural recharge, or filling. This occurs in many of the world's major food-producing places, in countries such as the United States, China and India.

Water insecurity is connected with food insecurity. Figure 2 shows the predicted number of people who will face **water stress** and water scarcity in the future. A more complex view is seen in figure 3, which shows an interconnection between increased demand for water and predicted climate change, population increase and greater industrialisation in the 2050s.

FIGURE 2 People facing water stress and water scarcity

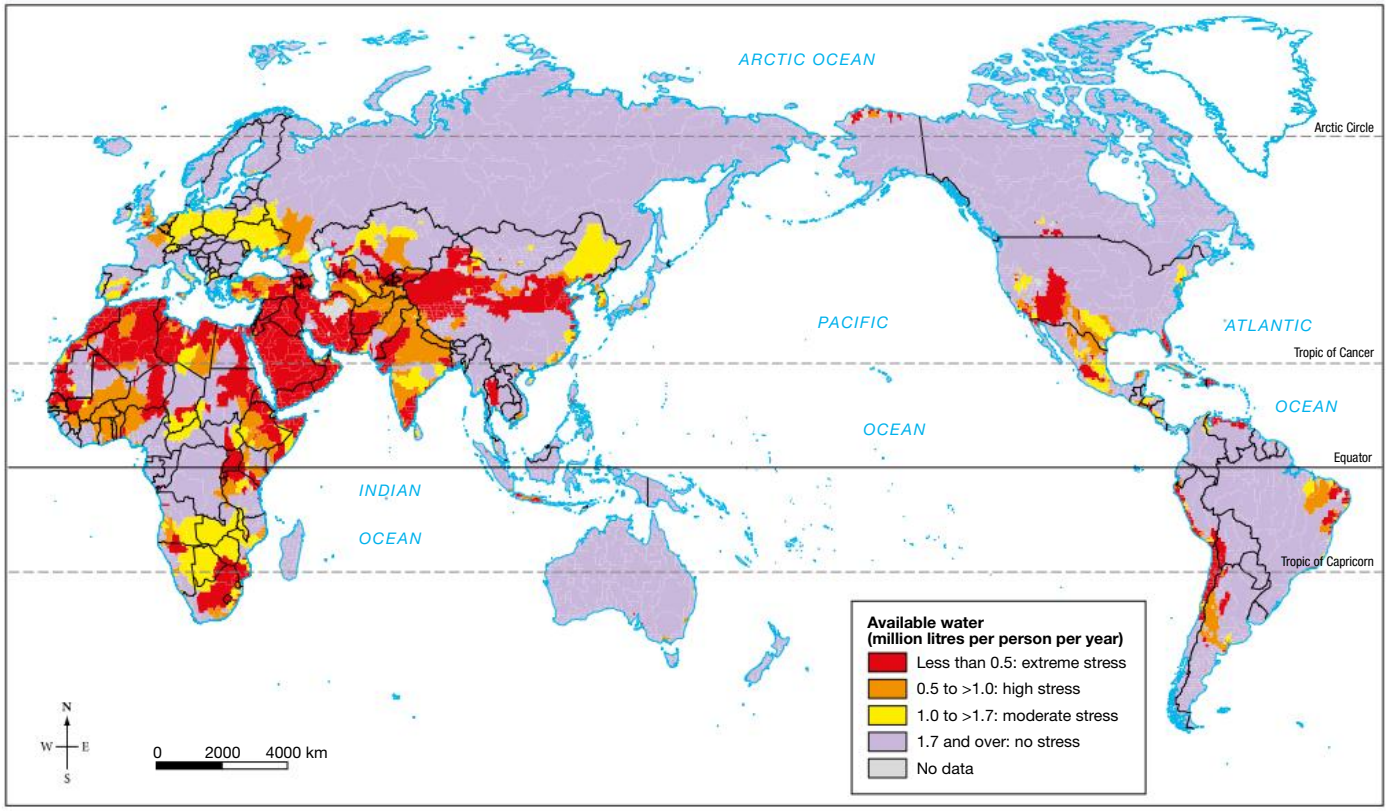


When water availability drops below 1.5 million litres per person per year, a country needs to start importing food, although that makes the country susceptible to changes in global prices. Developing countries that experience water stress cannot afford to import food. They are also more vulnerable to environmental disasters. Seventy per cent of food emergencies in developing countries are brought on by drought.

The main causes of the growing water shortage are outlined below.

- *Food production*. It is estimated that an additional 6000 cubic kilometres of fresh water will be needed for irrigation to meet future food demand. Changes in diet, especially increased meat consumption, require more water to grow the crops and pasture that feed the animals. A typical meat eater's diet requires double the amount of water that a vegetarian diet requires.
- *Growth of urban and industrial demand*. Water for farming is diverted to urban populations, and productive land is converted to urban use.
- *Poor farming practices*. Water is wasted through inefficient irrigation methods and cultivating water-hungry crops such as rice. Poorly maintained irrigation infrastructure, such as pipes, canals and pumps, creates leakage.
- *Over-extraction*. Improved technology and cheaper, more available energy have enabled us to pump more groundwater from deeper aquifers. This is not always done at a sustainable rate, so as water is removed, less is available to refill lakes, rivers and wetlands.
- *Poor management*. Governments often price water cheaply, so irrigation schemes use water unsustainably. Some countries may have available water but lack the money to develop irrigation schemes.

FIGURE 3 How water availability may change with temperature, population and industrialisation increase, 2050s



Source: Spatial Vision

13.8.2 Why is water quality deteriorating?

Agriculture is a major contributor to water pollution. Excess nutrients, pesticides, sediment and other pollutants can run off farmland or leach into soils and groundwater. Excessive irrigation can cause waterlogging or soil salinity. This salty water not only poisons the soil but also drains into river systems. Industrial waste, untreated sewage and urban run-off also pollute water that may be used to irrigate farmland. Food that is irrigated with polluted water can actually pass on diseases to people. Pollution is an important contributor to the scarcity of clean, **potable** water.

13.8 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. (a) Examine figure 2 and describe the projected ***changes*** in the number of people affected by water stress between 1990 and 2050. Use figures in your description.
   (b) How do these ***changes*** compare with figures for water scarcity?
2. If a country has an average of 0.5 to <1.0 million litres of water per person, per year, would they be considered to be water stressed? Why?
3. Why is agriculture both a contributor and a victim of water pollution?

Explain

4. (a) Refer to figure 3. Describe those ***places*** in the world that are predicted to be in high to extreme water stress in the 2050s.

(b) Compare your answer with a map of world average rainfall. Are areas that are predicted to be suffering high to extreme stress by 2050 also areas of low rainfall?
(c) How could you explain why ***places*** like eastern Europe could face water scarcity?

Discover

5. Using the internet, construct a table to compare water usage for four countries — one from each continent of Europe, Africa, Asia and South America. (Try to select different countries from those chosen by other students.) Write a paragraph to summarise your findings.

Think

6. What do you think water managers could do to help prevent water scarcity affecting future food security?

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: The reasons for growing water shortages (int-3328)

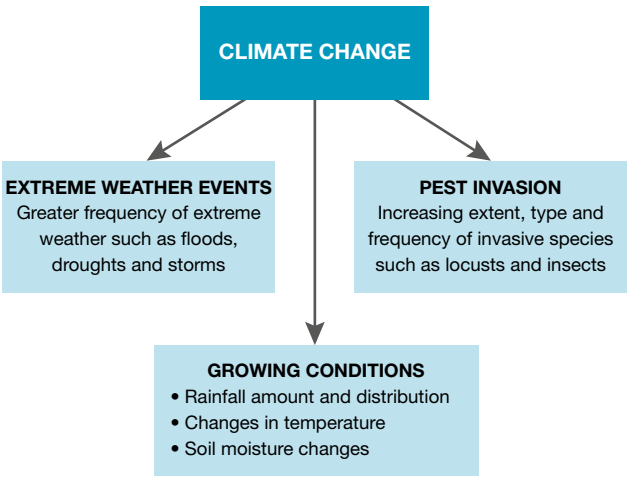
13.9 Climate change: freeze or fry?

13.9.1 How will food security be affected by climate change?

The impacts of climate change on future world food security are a case of give and take. Some regions of the world will benefit from increases in temperature and rainfall, while others will face the threat of greater climatic uncertainty, lower rainfall and more frequent drought. In either case, food production will be affected.

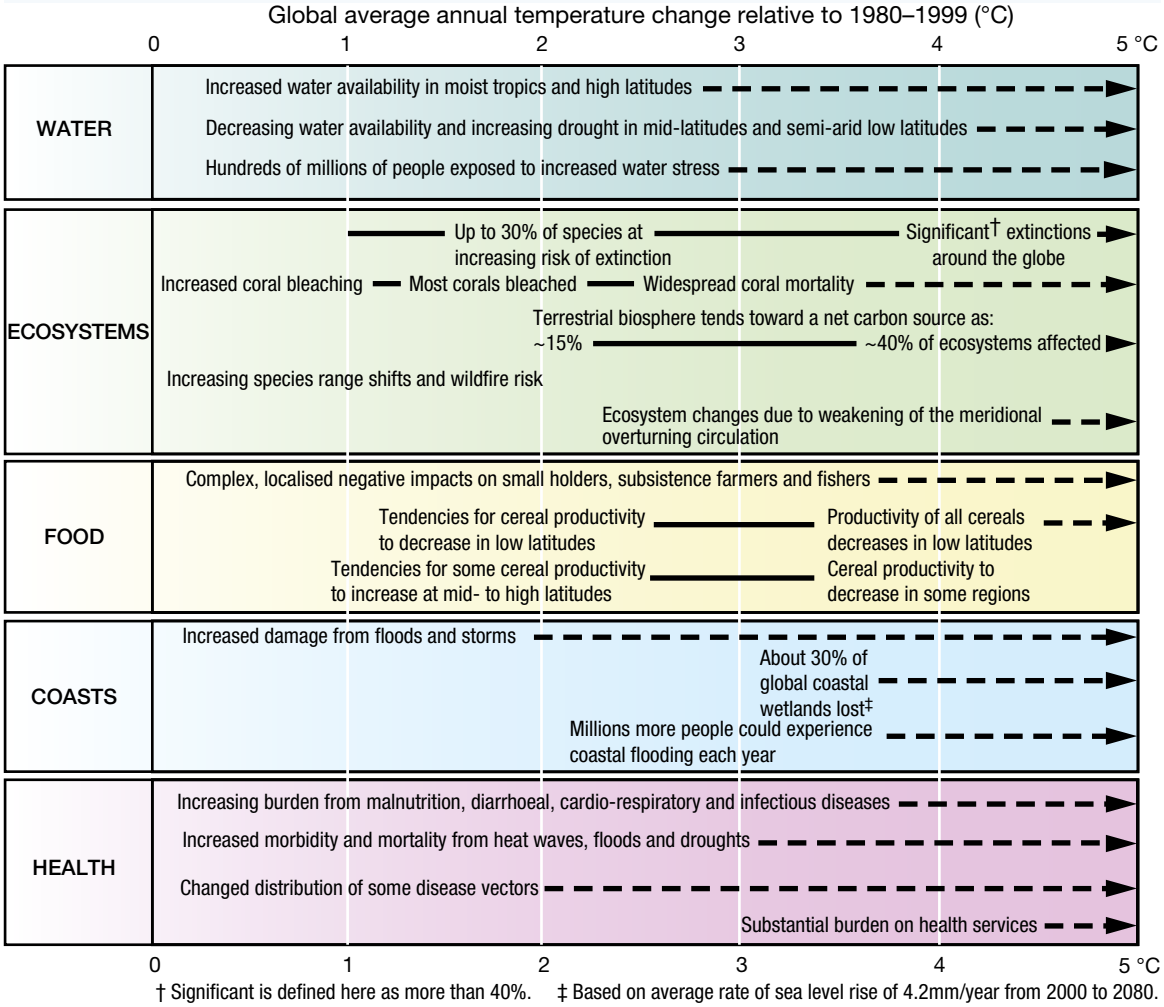
Agriculture is important for food security, because it provides people with food to survive. It is also the main source of employment and income for 36 per cent of the world's workforce. In heavily populated countries in Asia, between 40 and 50 per cent of the workforce is engaged in food production, and this figure increases to over 63 per cent in sub-Saharan Africa.

FIGURE 1 Possible impacts of climate change on food production



It is difficult to predict the likely impacts of climate change, because there are many environmental and human factors involved (see figure 1), as well as different predictions from scientists (see figure 2). Use the **How to feed the world in 2050** weblink in the Resources tab to find out more about this topic.

FIGURE 2 Projected consequences of climate change

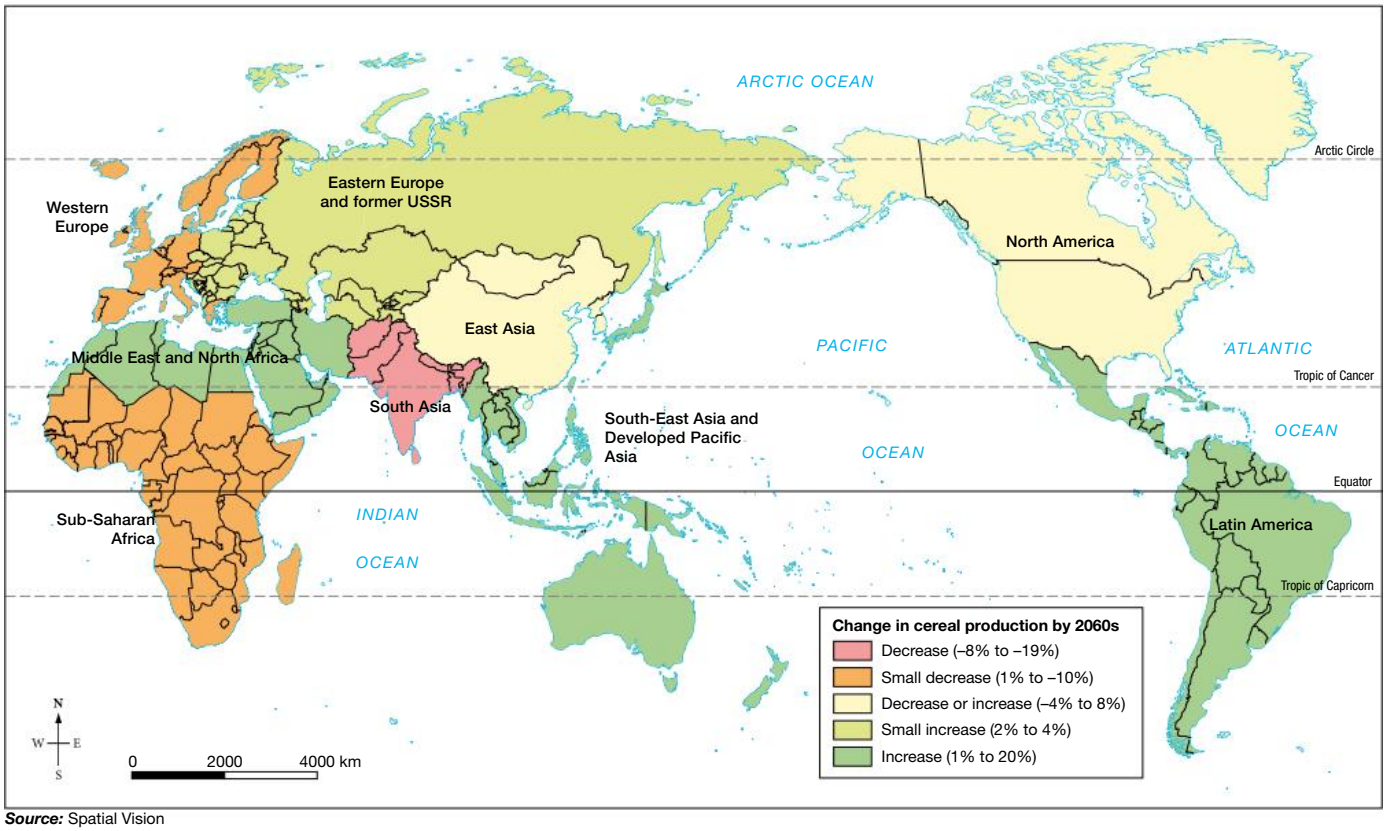


† Significant is defined here as more than 40%. ‡ Based on average rate of sea level rise of 4.2mm/year from 2000 to 2080.

There is a wide range of possible impacts of climate change. Sea-level rises may cause flooding and the loss of productive land in low-lying coastal areas, such as the Bangladesh and Nile River deltas. Changes in temperatures and rainfall may cause an increase in pests and plant diseases. However, agriculture is adaptable. Crops can be planted and harvested at different times, and new types of seeds and plants, or more tolerant species, can be used. Low-lying land may be lost, but higher elevations, such as mountain slopes, may become more suitable. The loss in productivity in some places may be balanced by increased production in other places. Figure 3 demonstrates the effects of climate change on cereal crops, while figure 4 shows the range of potential impacts across the European Union.

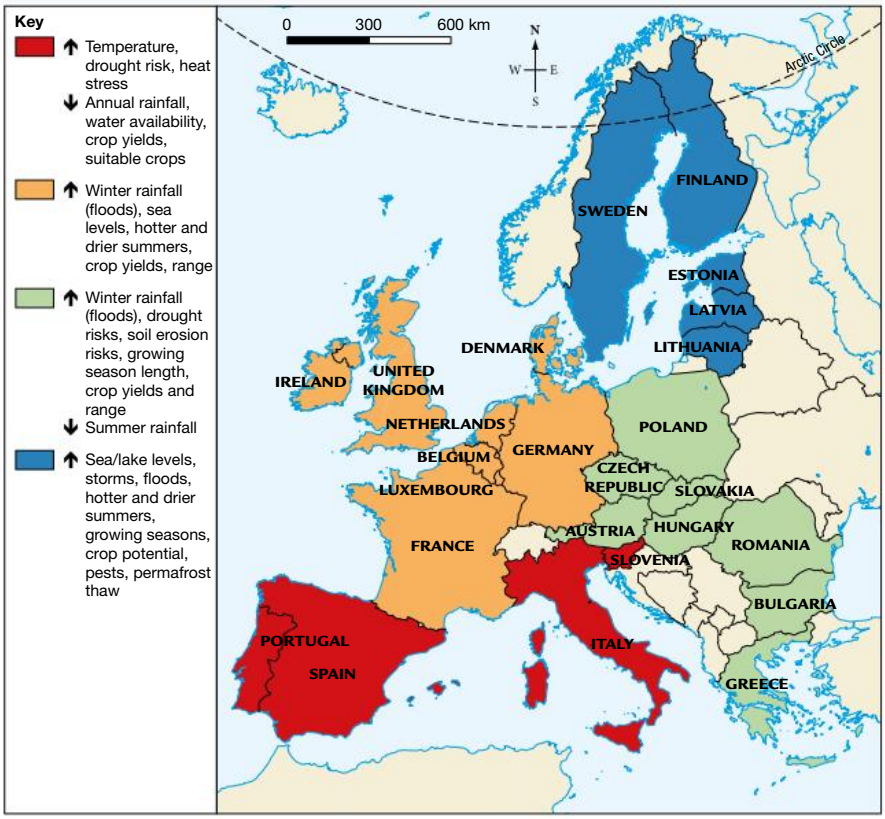
Essentially, hundreds of millions of people are at risk of increased food insecurity if they have to become more dependent on imported food. This will be evident in the poorer countries of Asia and Sub-Saharan Africa, where agriculture dominates their economy. There is also a risk of greater numbers of **environmental refugees** or people fleeing places of food insecurity.

FIGURE 3 Predictions of the effects of climate change on cereal crops



Source: Spatial Vision

FIGURE 4 Examples of potential consequences of climate change in the European Union



Source: Spatial Vision

13.9 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Refer to figure 2 and decide whether the following statements are true or false.
   (a) If temperatures increase by 3 °C, you would expect to see crop yields rising around the equator.
   (b) ***Changes*** in extreme weather events are unlikely unless temperatures increase by at least 1 °C.
   (c) Food insecurity will be felt greatly in developing regions if temperatures rise more than 4 °C.
   (d) ***Places*** that are likely to experience decreasing crop yields will be found in the higher latitudes.

Explain

2. (a) Refer to figure 3. Which ***places*** have the potential to be grain exporters and which ***places*** are likely to become dependent on grain imports? Use data in your answer.
   (b) What are the economic and social implications of this for countries in these regions?
3. (a) Refer to figure 4. Which countries of Europe will benefit from climate ***change*** in terms of food production and which countries are likely to suffer negative outcomes?
   (b) Would increased irrigation be a ***sustainable*** solution to growing food in Spain? Explain your answer.
4. Describe the ***interconnection*** between ***environmental*** refugees and climate ***change***.

Discover

5. Research potential impacts of climate ***change*** on Australia. Create an annotated map to illustrate your findings.

Predict

6. How might a country such as Australia best prepare its food production systems to cope with potential ***changes*** in climate?

Think

7. How might food be shared more equitably around the world? Discuss with a group and report your suggestions back to the class.

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Explore more with this weblink: How to feed the world in 2050

13.10 Why is food being wasted?

online only

Access this subtopic at **www.jacplus.com.au**

13.11 Review

online only

13.11.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

13.11.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

13.4 SkillBuilder: Constructing and describing complex choropleth maps

13.4.1 Tell me

What is a complex choropleth map?

A complex choropleth map is a map that is shaded or coloured to show the average density or concentration of a particular feature or variable, and it shows an area in detail. The collector areas of data are smaller, so they show the mapped information more precisely. The key or legend shows the value of each shading or colouring. The densest or highest concentration is usually the darkest shade. The least dense or lowest concentration is usually the lightest shade. Average values are attached to the colour shadings in the key or legend. In constructing your own choropleth map, you need to determine the values that relate to each shade within a colour range.

Why are complex choropleth maps useful?

A complex choropleth map is used to show values in a pictorial way. It allows the viewer to quickly identify where the values are highest (darkest) and lowest (lightest) and to note any patterns over space. However, the information is based on averages, and precise data is not given for a particular place or region within the map. Areas can contain within them wide variations from the average value mapped.

Complex choropleth maps are useful for showing:

- the distribution of a feature across a city or country
- the extent of a feature across a region
- patterns, which are indicated by the changing colours of the map
- conglomerations of data in specific locations.

Model

The change in Sydney's population between 2001 and 2006 has been very uneven. The areas of greatest increase (1440 to 4780) are scattered across the city, with most of this found on the urban fringes.

Most areas that have experienced the greatest increase are clustered together — for example, around Baulkham Hills, Blacktown and Parramatta in the west and north-west, and Liverpool and Campbelltown in the south-west. There are relatively few census areas that show minimal increase (0 to 290 people).

The areas of greatest decrease (–3200 to –690) are also scattered across the city. Most of these decreases are found on the urban fringes, especially in the west and south-west of Sydney, between Liverpool and Campbelltown.

The areas with the smallest change (0 to 290 increase) tend to be found in areas about 5 to 15 kilometres from the city. Clusters are found on the north shore around Chatswood, north-east and south-east of Parramatta, and around Penrith.

The most common kind of change is moderate decline (–690 to 0). Clusters of this change are found around Penrith and Botany Bay, north and south-east of Hornsby, and north of Campbelltown.

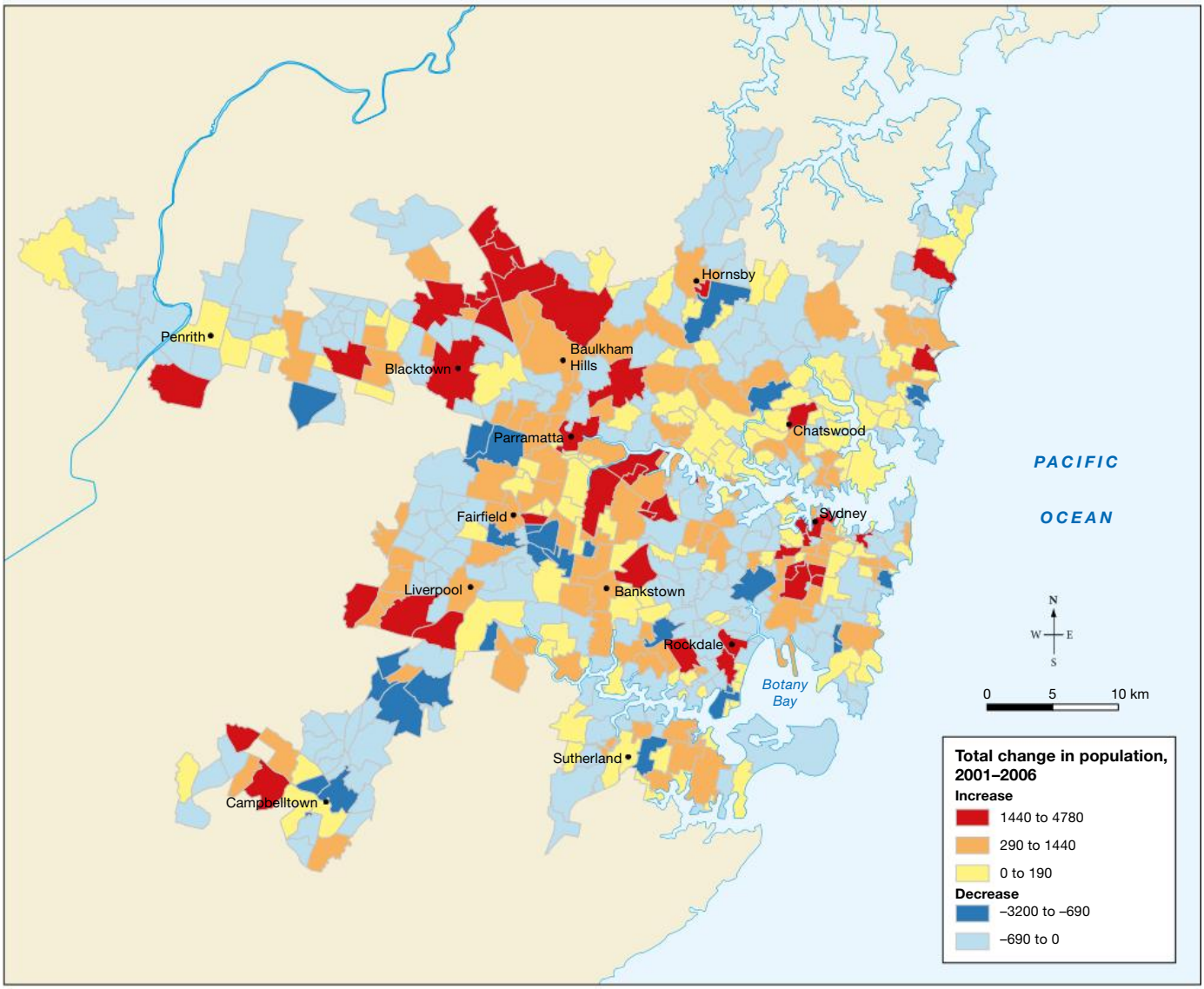
A good complex choropleth map:

- uses a base map
- has clearly determined values for each colour
- uses shades within a colour spectrum
- is neatly coloured
- includes a clear title.

A good description of a complex choropleth map:

- looks for a pattern and subtleties within a broad pattern
- notes any anomalies
- uses quantities
- refers to the title and legend.

FIGURE 1 Population change in Sydney, 2001–06



Source: Spatial Vision

13.4.2 Show me

How to construct and describe a complex choropleth map

You will need:

- a set of data specific to a range of places
- a base map to match the places
- coloured pencils with a range of shades
- a ruler.

Procedure:

Constructing a choropleth map

STEP 1

Select a set of data to map, and ensure that you have a base map to match the area. In figure 1, the ABS data is based on small regions across Sydney, and the base map shows the boundaries of those regions. The ABS website will provide you with the names of these areas.

STEP 2

Look at the range of data you have to plot. In figure 1, there were positive and negative numbers to consider, but this is not always the case. You should try to divide the data into approximately five categories — too many categories will spread the data too thinly, while too few categories will show few variations in the data. For each category, select a colour shade where the darkest colour represents the greatest value and the lightest colour represents the lowest value. Create a key on the base map.

STEP 3

Now very carefully colour all areas on the base map with the highest value. It is a good idea to go through the list of data and colour code each place before you begin.

STEP 4

Check that the geographical conventions are complete: border, orientation, legend, title, scale and source.

Describing a choropleth map

STEP 5

To interpret the colours, you need to comment on where the deepest or most intense colours occur. Can you discuss the map by areas? For example, in figure 1 the areas of greatest change (1440 to 4780 people), represented by a deeper colour, are scattered across the city but are most likely to be found on the urban fringes, indicating the growth of the city's boundaries.

STEP 6

To further interpret the colours, you need to comment on where the lightest or least intense colours occur. Can you discuss the map by areas? For example, in figure 1 most of the areas that have shown only moderate increase (0 to 290) are found 5 to 15 kilometres from the city.

STEP 7

To identify a subtle change, you need to look for a change of colour within an area that is predominantly one colour. In figure 1, in the middle of the northern area of 1440 to 4780 increase there are two census areas that show 290 to 1440 increase.

STEP 8

Are there any coloured areas that stand out from the rest as being unusual? That is, is there a colour among a mass of other colour that isn't expected? This is called an anomaly, and needs to be discussed. Identify the place that is different from the surrounding places. For example, there are no areas of 1440 to 4780 increase in the Sutherland Shire, south of the river that flows into Botany Bay.

TABLE 1 Official development assistance to agriculture in sub-Saharan Africa, 2010

Country	(US$ million)
Angola	27
Benin	21
Botswana	1
Burkina Faso	71
Burundi	96
Cameroon	62
Cape Verde	3
Central African Republic	3
Chad	9
Comoros	2
Congo	1
Cote d'Ivoire	93
Democratic Republic of Congo	100
Eritrea	13
Ethiopia	222
Ethiopia (People's Democratic Republic)	28
Gabon	15
Gambia	126
Ghana	8
Guinea	10
Guinea-Bissau	323
Kenya	0
Lesotho	36
Liberia	19
Madagascar	79
Malawi	223
Mali	11
Mauritania	0
Mauritius	72
Mozambique	14

(*continued*)

13.4.3 Let me do it

Developing my skills

Use the data from table 1 (showing official development assistance to agriculture in sub-Saharan Africa in 2010) and a base map of Africa (use doc-12012 in the Resources tab) to construct a choropleth map.

Describe what is shown on your map.

TABLE 1 Official development assistance to agriculture in sub-Saharan Africa, 2010 (*continued*)

Country	(US$ million)
Namibia	43
Niger	69
Nigeria	68
Rwanda	3
Sao Tome and Principe	256
Senegal	1
Seychelles	75
Sierra Leone	1
Somalia	20
South Africa	145
Sudan	6
Swaziland	36
Togo	198
Uganda	132
United Republic of Tanzania	36
Zambia	81
Zimbabwe	3

Source: Food and Agriculture Organization of the United Nations, 2012, FAO, *The State of Food and Agriculture 2012*, http://www.fao.org/docrep/017/i3028e/i3028e.pdf

Questions

1. Which regions of sub-Saharan Africa receive the most agricultural assistance?
2. Which regions of sub-Saharan Africa receive the least agricultural assistance?
3. Which countries within southern Africa (south of 10°S) received quite different agricultural aid from that of their neighbours?
4. Are there any parts of the region that you think should receive more aid? Can you think of a reason why aid might not be going to these countries? Look at the food security risk map in figure 1 in section 13.3.1 to support your ideas.
5. Will aid make a difference to the figures produced in 10 years' time? Explain your answer.

Checklist

In drawing a complex choropleth map, I have:

- used a base map
- included clearly determined values for each colour
- used shades within a colour spectrum
- coloured neatly
- included a clear title.

In describing a complex choropleth map, I have:

- looked for patterns and subtleties within a broad pattern
- noted the anomalies
- used quantities
- referred to the title and legend.

Skills questions

1. Complex choropleth maps are used to show:
   (a) the height of the land across a region
   (b) a range of colours
   (c) the distribution of one factor
   (d) the detailed distribution of one factor.

2. A complex choropleth map includes information about:
   (a) numbers
   (b) colours
   (c) species
   (d) ground cover.
3. Why should you use a carefully selected colour spectrum?
4. Why does your map need to be neat?

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Watch this eLesson: Constructing and describing complex choropleth maps (eles-1732)

Try out this interactivity: Constructing and describing complex choropleth maps (int-3350)

13.5 How does a famine develop?

13.5.1 Why did Somalia have a famine?

While many countries across the globe face food insecurity, it is rare for a country or region to be officially declared in **famine**. At the same time that countries in the Horn of Africa were suffering drought, much of southern Australia was similarly affected. Yet we did not suffer from food insecurity, nor was a famine declared. Why is there such a difference?

Somalia is located in the Horn of Africa. It is an arid place with less than two per cent **arable** land. For twenty years, the country suffered almost continual hardship. A combination of political, economic and environmental factors combined to create an acute food crisis. The United Nations declared a famine in two parts of southern Somalia in July 2011, and a month later the famine spread to four more regions. Figures 2 and 3 show the progression of the famine across the country. In all, 42 per cent of the population needed emergency life-saving assistance over the six months of the declared famine.

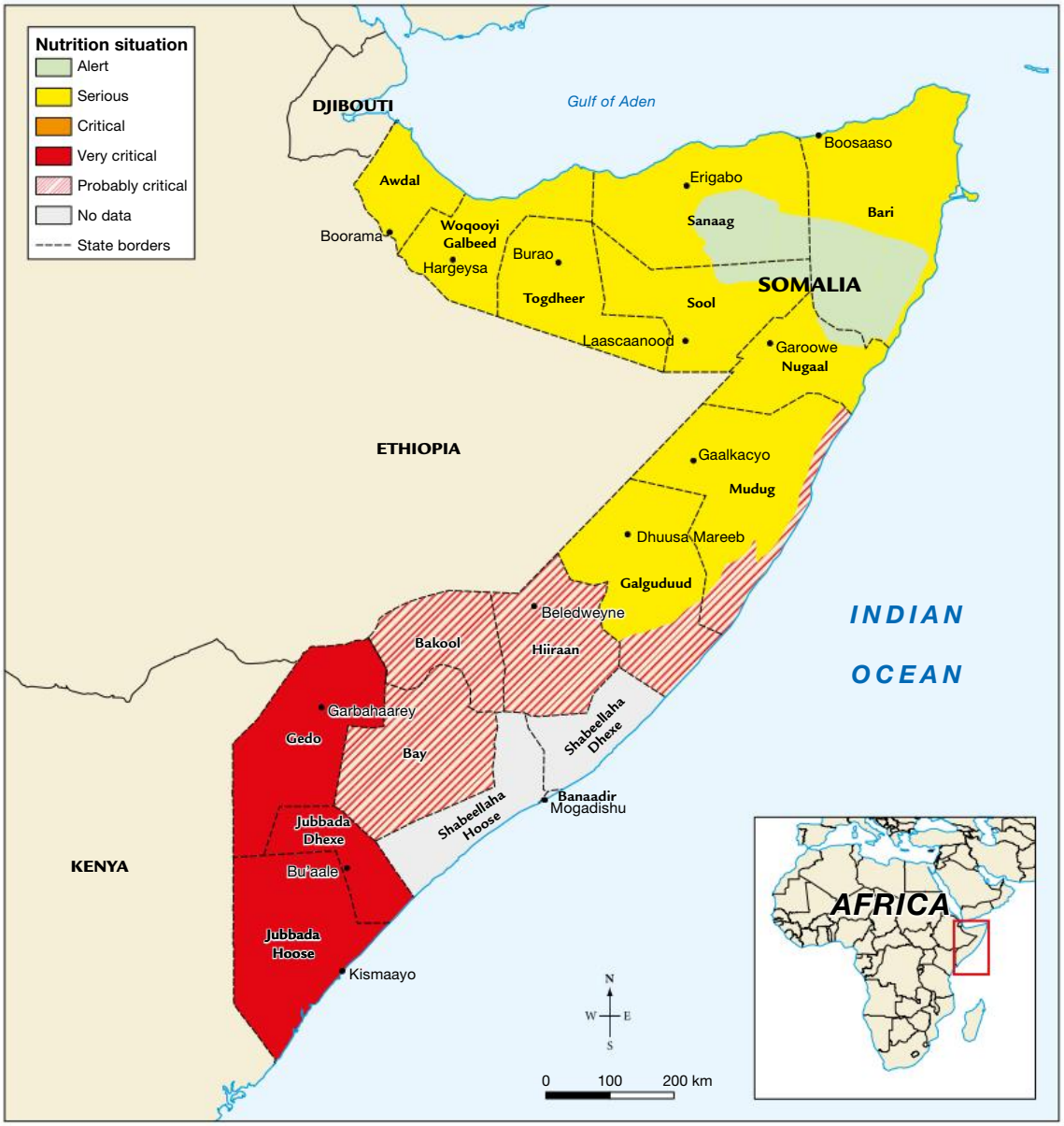
FIGURE 1 Famine in Somalia, May 2011

What contributed to the famine?

- The country experienced the worst drought in 60 years, which led to failed harvests.
- Prices of both local and imported foods soared; cereal prices increased up to 190 per cent.
- Since the 1990s, there have been 14 failed attempts to achieve peace and reconciliation within the country.
- The militant Islamist al-Shabaab group banned most Western aid agencies and expelled the Red Cross from areas it controlled.
- Somalia had not had a functioning central government for more than 20 years.
- Conflict and a shortage of food caused people to flee rural areas, creating large-scale displacement.
- Half of all food aid sent to Somalia was stolen.

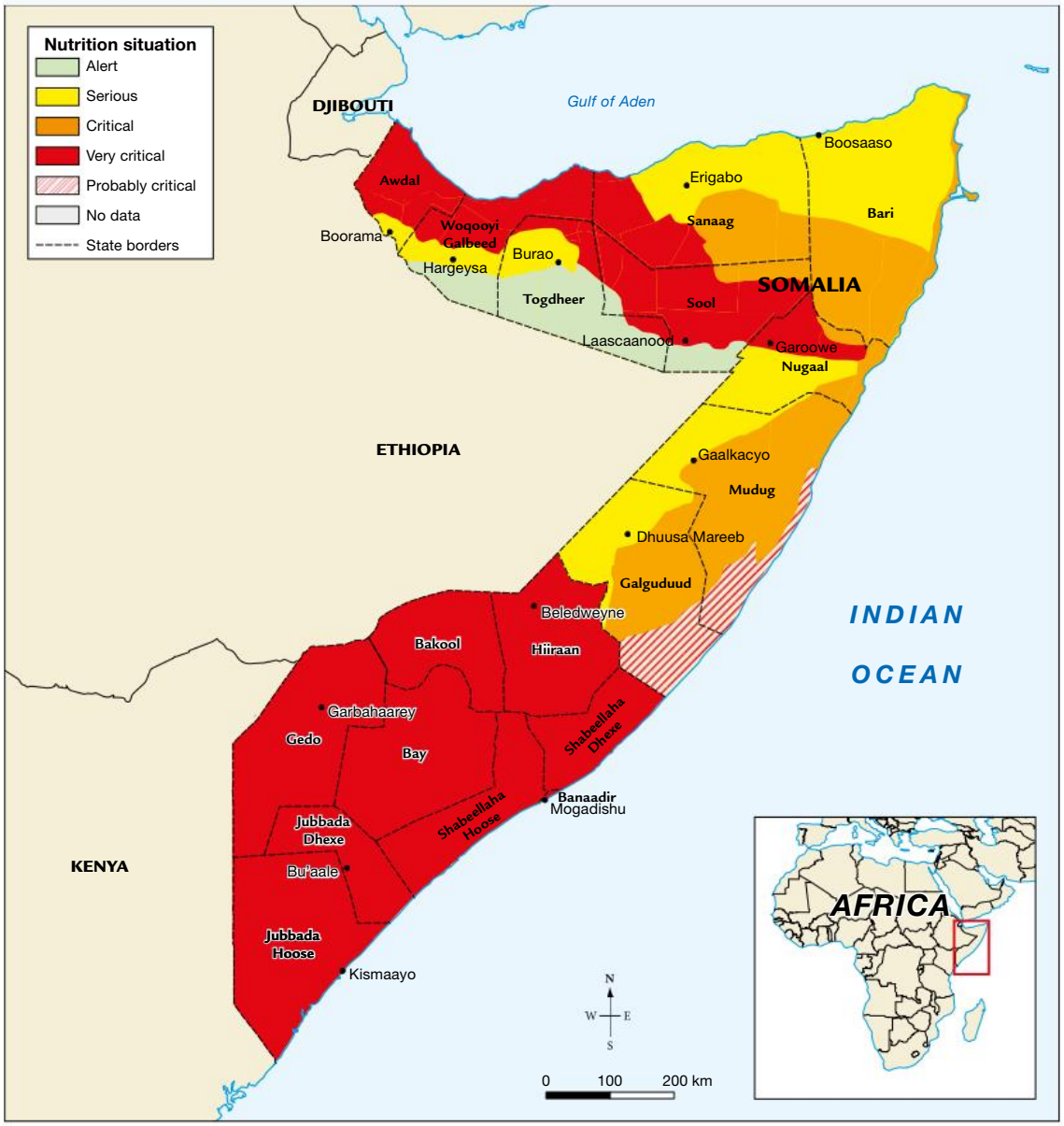
- Somalia was dependent on imports for over 60 per cent of its food supply (mostly rice and wheat flour).
- The country lacked good road and rail infrastructure, so food could not be moved around and delivered easily. Frequent militia-run checkpoints made travel dangerous.
- Shipping was affected by increased pirate attacks in the Gulf of Aden. This further increased the shortage and cost of imported foods.
- The main port could only deal with small ships. Larger ships had to offload into smaller ones in Dubai or Oman, which increased the costs of food items.

FIGURE 2 Somalia's nutrition situation, January 2011



Source: Data from FAO, Food Security and Nutrition Analysis Unit

FIGURE 3 Somalia's nutrition situation, August 2011



Source: Data from FAO, Food Security and Nutrition Analysis Unit

13.5.2 What were the impacts of famine?

- More than 260 000 people died, and more than half of these were children under the age of five.
- Approximately 30 000 children died in just four months, from April to July 2011.
- Three million people in southern Somalia became food insecure.
- Along with displaced people, around 25 per cent of urban populations were affected by high food costs and food shortages.
- The United Nations estimated that over 1.4 million people became IDPs (internally displaced persons). Over 900 000 became refugees, fleeing to Ethiopia and Kenya in search of food.
- Livestock was decimated.
- Due to the high costs of purchasing food, diets were reduced to less than four food groups per day, mostly grain and oil, and the number of meals per day was reduced.

What is happening now?

The famine was officially declared over by February 2012. This was due to a combination of good rainfall (allowing crop harvests to double that of the previous 17 years' average) and large-scale **humanitarian aid**. Twelve months later, however, 3.8 million people still needed emergency support in the form of food, clean water, shelter and help in restocking their land with seeds and grazing animals. Other assistance included drilling more water bores, supplying irrigation pumps, and providing cash-for-work projects to upgrade irrigation channels.

In 2015, Somalia was still considered to be in a 'critical' state, with continuing high levels of malnutrition and food insecurity. It is estimated that 855 000 people were in need of help, with 215 000 children classified as malnourished. Poor rains had impacted on harvests, and at least one million people were still internally displaced and reliant on food aid.

13.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. When does a food crisis become a famine?

Discover

2. Refer to figures 2 and 3.
   (a) Construct a table to compare the approximate percentages of the country classified as: on alert, serious, critical, very critical, and likely critical.
   (b) Describe the ***changes*** over time in the spread of the famine.
3. With the help of your atlas, identify the direction and countries that most refugees flee to.
4. Refer to figure 1 and use the **Fleeing Somalia's drought** weblink in the Resources tab to watch a slideshow on the Somalian famine.
   (a) Make a list of all of the belongings of the family in figure 1 in the refugee camp.
   (b) Describe the ***environment*** around the camp and the living conditions there.
5. List the difficulties that aid agencies might have when faced with getting aid to people.

Predict

6. (a) What might happen when you get a relatively sudden and large-scale movement of people fleeing from one country and crossing the border into another?
   (b) What happens to the refugees? What can the new host country do?

Think

7. Much of Australia was in an extended period of drought for over ten years, yet we did not experience food insecurity. Why?

learnON RESOURCES — ONLINE ONLY

Explore more with this weblink: Fleeing Somalia's drought

13.7 SkillBuilder: Interpreting satellite images to show change over time

13.7.1 Tell me

What is a satellite image?

A satellite image is an image taken from a satellite orbiting the Earth. Satellite images allow us to see very large areas — much larger than those that can be visualised using vertical aerial photography. A satellite image often does not use the natural colours that we expect. This is referred to as using false colours, and these are applied in the computer processing of the images in order to highlight spatial patterns more clearly.

Why is a satellite image useful?

A satellite image is useful because its size allows us to see trends and patterns, interconnections and relationships. Cartographers are able to increase the intensity of colours and use false colours to distinguish one feature from another. Satellite images are enhanced photography. Comparing satellite images can provide information about change over time. You will gain a lot of information from a satellite image that cannot be gained from a topographic map or aerial photograph, so your knowledge of an environment is enhanced.

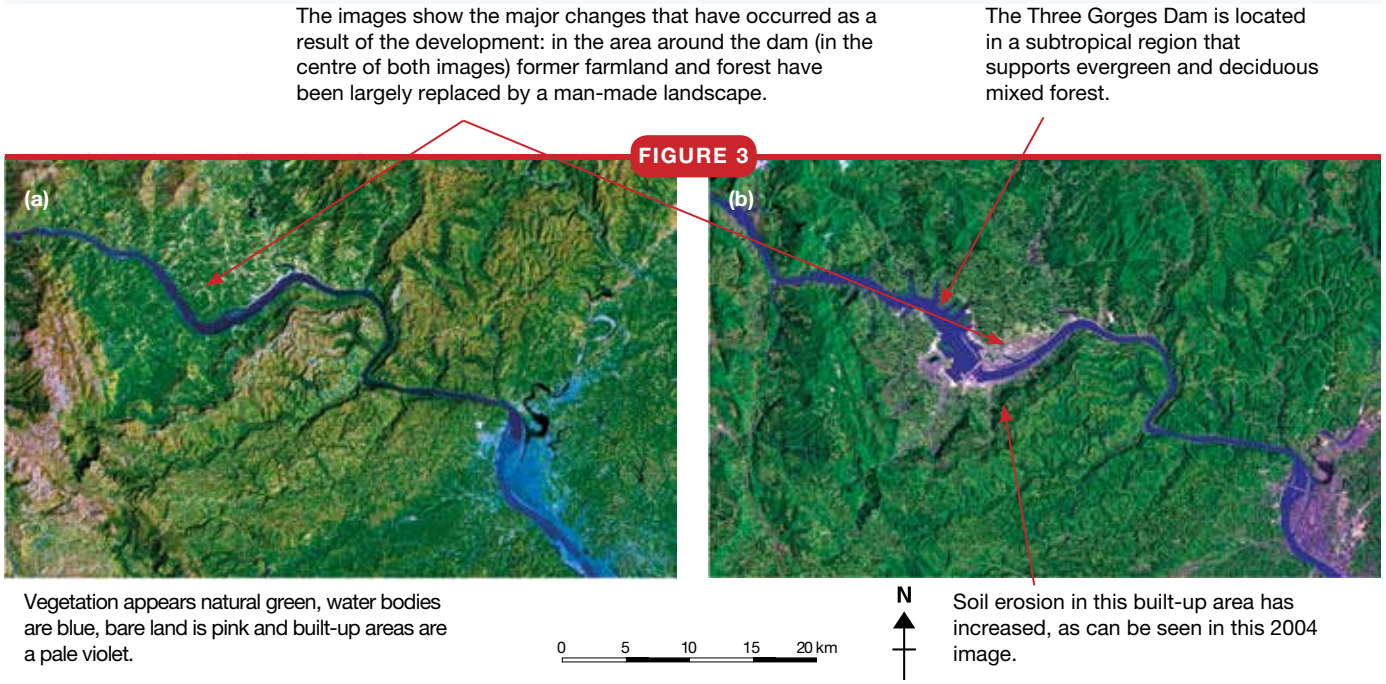
Satellite images are useful for:

- identifying changes in heat patterns from different surfaces
- assessing vegetation modifications
- identifying urban sprawl
- tracking data across international boundaries.

Model

The Yangtze River in 1987 was a natural river running through a deep gorge. In the satellite image from 1987, the area is surrounded by high, barren hills and areas of dense subtropical forest (natural green).

FIGURE 1 Change over time around the Yangtze River, China: (a) in 1987 and (b) in 2004, after the building of the Three Gorges Dam



Source: Geoscience Australia

By 2004, the Three Gorges Dam wall (pale violet) had been built across the river. The water (blue) filled behind the two-kilometre dam wall and spread across the gorge floor, flooding back up the river about eight kilometres. New urban areas (pale violet) developed east and west of the dam wall on both sides of the river. In the 17 years since the first satellite image was taken, a town has developed on the low-lying land in the south-east covering an area of about 36 square kilometres.

A good interpretation of a satellite image:

- translates the false colours
- identifies patterns
- makes logical inferences
- uses distance and direction to locate places.

13.7.2 Show me

How to interpret satellite images to show change over time

You will need:

- two satellite images of the same place, taken at different times
- an atlas.

Procedure:

STEP 1

Determine the dates for the satellite images. Consider how many years it is between the images. In figure 1, the time span is 17 years. Check that the satellite images are at the same scale. Note that in figure 1, the 1987 and 2004 images show slightly different areas, but at the same scale. The central area of interest is covered by both images.

STEP 2

Study the satellite images carefully, identifying the key features of the place. In satellite imagery, true colours are not always used. It is helpful to learn the colours commonly used in false-colour imagery.

TABLE 1 Colours commonly used in false-colour satellite imagery

Colour	Ground feature
Green	Vegetation
Dark blue	Water — the deeper the water, the darker the colour
Bright blue to mauve/grey	Housing and industrial areas
White to cream	Beaches and sands
Yellow	Barren areas, heavily grazed or fallow land
Pink to red	Recent plant growth, suburban parklands
Red	Flourishing vegetation, including forests (mangroves appearing brown)

In the description in figure 1, the colours have been included to help you see the patterns evident in the satellite images.

STEP 3

To interpret the colours, you need to comment on where the various colours appear. Use compass directions, scale or features identifiable on the satellite image, such as roads and rivers, to help reference the place that you are discussing. For example, the text below figure 1 says ‘The water (blue) filled behind the two-kilometre dam wall’.

STEP 4

Use the same feature in each of the satellite images as a reference point for identifying change. It may be the road system, a railway line passing across the region, a river flowing through the area or a town

established in the earliest dated image. For example, in figure 1 the Yangtze River is a key feature that allows you to identify points by the bends in the river.

STEP 5

It may be possible to make inferences from the satellite image. You may be able to see changes in topography, and these may relate to changes in land use. For example, in 1987 the area of the present-day dam was surrounded by high, barren hills and areas of dense subtropical forest; by 2004 a human-constructed landscape surrounded the dam.

13.7.3 Let me do it

Developing my skills

Refer to the satellite images for Tehran in 1985 and 2009 shown in figures 3a and 3b in section 13.6.1. Write a description of the change over time that has occurred to the boundaries of Tehran.

Questions

1. Is Tehran a growing or declining city? Explain your answer.
2. The colouring indicates large areas of barren land. Why is this the case on the outskirts of Tehran? (*Hint:* Where is Tehran?)
3. How has the vegetation cover of the area changed?
4. How has the road pattern changed by 2009?
5. Why do you think Tehran has not expanded into the south-east corner of the satellite image?
6. How has the growth of Tehran affected food security in the area?

Checklist

I have:

- translated the false colours
- identified patterns
- made logical inferences
- used distance and direction to locate places.

Skills questions

1. Satellite images are used to show:
   (a) the height of the land at a place
   (b) details of a small area
   (c) rainfall intensity
   (d) information for a vast area.
2. Interpreting satellite images includes being able to understand:
   (a) a legend
   (b) false colours
   (c) natural colours
   (d) contours.
3. Why are false colours often used on satellite images?
4. When looking for change over time, why might it be important to look at a satellite image carefully before making an interpretation?

learnON ONLINE ONLY

Watch this eLesson: Interpreting satellite images to show change over time (eles-1733)

Try out this interactivity: Interpreting satellite images to show change over time (int-3351)

13.10 Why is food being wasted?

13.10.1 What is the link between waste and food security?

What food have you thrown out today? Across the world, one-third of all food produced is wasted. In 2015 this food waste was valued at $750 billion! Around 1.3 billion tonnes is dumped or left to rot. And yet, over one billion people go hungry every day. If we could reduce our waste by half, it would be the equivalent of a 15 to 25 per cent increase in the amount of food available. That would go a long way towards improving food security.

To meet the growing demand for food by the middle of this century, it has been calculated that the world will need to produce as much food as has been produced over the past 8000 years. The world does produce sufficient food for everyone, but distribution and affordability prevent it from getting to everyone who needs it. However, dealing with wasted food would certainly help to reduce food vulnerability.

Food wastage also represents a waste of the resources used in production, such as land, fertiliser and energy. Waste can increase prices, making food less affordable. The World Bank has calculated that in sub-Saharan Africa, a region prone to food insecurity, a reduction of only one per cent wastage could save $40 million per year, with most of this saving going to the farmers.

A consequence of food wastage is the need to dispose of the waste, usually by dumping or burning. The greenhouse gases given off from global landfill sites amount to 3.3 gigatonnes per year. This figure is slightly less than the total greenhouse gases given off from the United States or China.

Developed nations alone waste over 222 million tonnes per year — only slightly less than the 230 million tonnes of food produced annually in the countries that make up sub-Saharan Africa.

FIGURE 1 Dumped surplus carrots and potatoes

Source: © Alistair Scott / Alamy Stock Photo

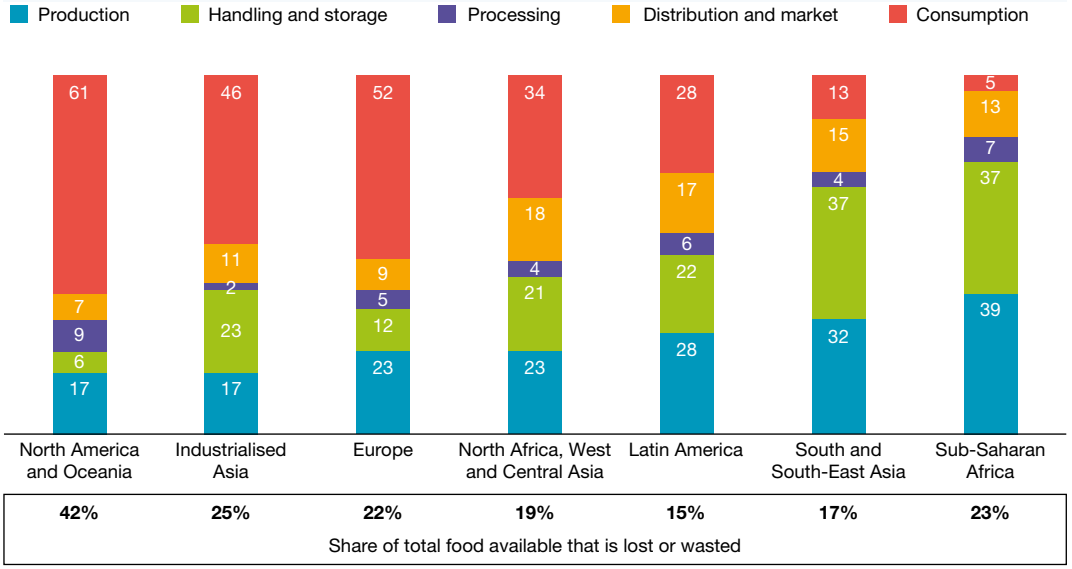
Where and why is food being wasted?

Food waste exists across all countries, regardless of their levels of development, although the causes of wastage vary. Figure 2 shows the breakdown of food wastage on a regional basis.

In developing nations, food losses are mostly related to a lack of food-chain infrastructure and a poor knowledge of, or investment in, storage technologies on farms. Other causes of waste are: lack of refrigeration; limited or non-existent road and rail networks to deliver food to markets; and a shortage of processing and packaging facilities. In India, up to 40 per cent of fresh food is lost due to a lack of cold storage in wholesale and retail outlets. Over one-third of the rice harvest in South-East Asia can be destroyed by pests or spoilage. Even if farmers can produce a surplus and store it, they are often forced to sell it to raise cash.

In contrast, in the developed world, food waste is more evident at the retail and home stages of the food chain. In this case, food is relatively cheap so there is little incentive to avoid waste. Consumers are used to purchasing food that is visually appealing and blemish free, so retailers end up throwing out perfectly edible, if slightly damaged, food. More and more people rely on ‘use by’ dates, so despite the food still being suitable to eat, it is discarded. Waste is also a part of the growing culture of ‘supersize’ or ‘buy one get one free’ advertising. Further waste can occur if the discarded food is sent to landfill when it could be used for animal feed or even compost.

FIGURE 2 World per capita food losses and waste by region (measured in kilograms and rounded to the nearest whole number). The average North American or European consumer wastes 95 to 115 kilograms per year, especially fruit and vegetables. The average level of food waste in sub-Saharan Africa or south and South-East Asia is only 6 to 11 kilograms per year. Poverty and limited incomes make food waste unacceptable.

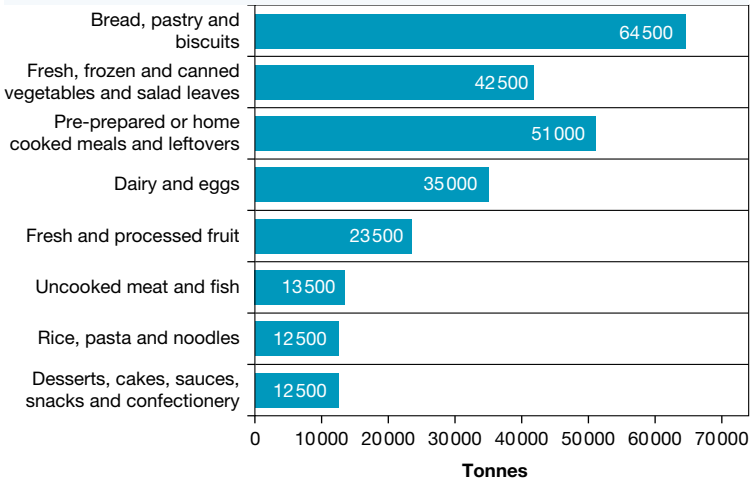


What is wasted in Australia?

Each year a minimum of 250 000 tonnes of food is wasted. If Melbourne's tallest building, the Eureka Tower, was a rubbish bin, this amount of waste would fill it. Each household effectively throws away $2200 per year. This could feed 367 000 families budgeting on $207 per week. Imagine the food that could be bought for that amount in a food insecure place!

Figure 3 represents some of the contents of the 'Eureka bin'.

FIGURE 3 Household food waste in Victoria



What can be done about food waste?

Reducing global food waste is a part of the new Sustainable Development Goals, a set of targets designed to develop a more sustainable future for the world. The specific target is to cut per capita food waste by 50 per cent by 2030. If this can be achieved, food security will be improved, greenhouse gases can be reduced and valuable land and water resources will not be wasted.

Here is a snapshot of what is happening around the world:

- In the United States, approximately one-third of the nation's food supply is thrown away annually. The government, in partnership with charities and the business sector, is targeting a 50 per cent cut in edible food waste per year. Reducing food waste by even 15 per cent could feed 25 million Americans each year; more than half of these people already live in food-insecure households. Large corporations such as Kellogg's and Nestlé have committed to slashing food waste in their manufacturing and retail systems.

- In France, an estimated 7.1 million tonnes of food is wasted each year: 67 per cent by consumers, 155 by restaurants and 11 per cent by shops. At the same time, 3.5 million French people are dependent on food handouts from charities. A new law now forces restaurants to provide a 'doggy bag' or containers in which customers can take home uneaten food. Shops are also banned from destroying food products and supermarkets must give away unsold food that has reached its use by date for distribution to charities.
- Seoul in South Korea has taken a different approach in an effort to reduce its food waste by 20 per cent. It is trialling a program whereby people are charged according to the weight of the garbage they produce. The more kilograms generated, the higher the bill. Newly designed bins with built-in scales are activated with ID cards.
- In 2011, Sweden decided to convert its food waste into a resource, with a national plan to convert 50 per cent of its food waste into biogas by 2018. The city of Malmo is already fuelling its fleet of 177 buses with 62.5 per cent of its biofuel requirements.

13.10 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Discover

1. In groups, and wearing disposable gloves, conduct a survey of the school rubbish bins after lunch. You may need to lay out newspaper, onto which you can tip the contents of the bins. Some groups could also deal with food litter around the grounds.
   (a) Construct a table so that you can record the different food types, such as fruit, cakes, biscuits and so on.
   (b) Collate your results with the other groups in your class, and then graph your data.
   (c) Write a summary of your findings. What food types were most and least represented and why?
   (d) If your school has a canteen, ask the manager to address the class and talk about issues such as wastage, use-by dates and health department regulations.
2. You could also do a home bin audit and follow the same procedure.
3. Visit a local food store, such as a supermarket, fresh food market, greengrocer or butcher. Interview them and find out what happens to their food waste. Report back to the class.
4. Design a poster or short animation to inform other school members about the issue of food waste.
5. Write a letter to the local newspaper voicing your thoughts on this matter.

13.11 Review

13.11.1 Review

Food security

1. Refer to figure 1 in subtopic 13.3 and a map of the world (you can use doc-11392 in the Resources tab).
   (a) Construct a three-colour bar graph to list the number of countries in each world region (Europe, North America, South America, Central America, Asia, sub-Saharan Africa, North Africa, Middle East and Oceania) that have a low, medium or high to extreme risk of food insecurity.
   (b) Which regions of the world are most represented in the low-risk category?
   (c) Which regions of the world are most represented in the high- to extreme-risk category?
   (d) Compare those ***places*** at extreme risk shown in figure 1 in subtopic 13.3 with an atlas map of world GDP and an atlas map of infant mortality or life expectancy. Write a detailed summary of your observations, using country names and data in your answer.
2. Each member of the class should select a country in Africa that is shown to be at high or extreme risk in figure 1 in subtopic 13.3. Conduct research to find out the leading causes of their food shortages. Collate the results, and then, using a series of symbols, create a map of Africa to show the main factors contributing to food shortages in these countries. Summarise your map with a written description.

Famine in Somalia

3. (a) Refer to section 13.5.1 on the famine in Somalia. Create a mind map diagam to show the ***interconnections*** between the different factors contributing to the famine.
   (b) Of the range of factors contributing to the famine, which do you consider to be the three most influential? Rank the top three and justify your ranking.
4. Use the **Fleeing Somalia's drought** weblink in the Resources tab to watch a slide show about Somalia's famine. Select three images and write annotations for these based on what you have learned from the case study on Somalia.

Land

5. (a) Refer to figures 3a and 3b in section 13.6.1. Describe three ***changes*** that have taken place in Tehran over time.
   (b) What is the ***interconnection*** between urbanisation and food security?
6. Read the article extract below, then answer the questions that follow.

Paving devours farmland faster than foreign buyers

by Natasha Bita

Australians have lost five times more farmland to urban sprawl than to foreign buyers, with 89 million hectares vanishing in a generation.

Housing subdivisions, national parks, forestry plantations and mining leases have chewed up 18 per cent of Australia's agricultural land since 1984.

The Planning Institute of Australia has warned a federal government taskforce drafting the nation's first 'food plan' that the conflict over rural land is 'one of the most significant issues facing food production'.

'Urban development is paving over farmland on the edge of our metropolitan cities,' the institute says in its submission.

'Australia's agricultural land is a scarce and finite resource. There is a need to ensure that the land that grows the food is preserved for that purpose.'

Foreigners have almost doubled their stake in Australian farms, with full or part-ownership of 11.3 per cent of farmland in 2010 compared with 5.9 per cent . . . in 1984.

'Two thirds of the perishable vegetables grown in Australia are grown on the metropolitan fringe of the capital cities and the coastal areas of Queensland. That's where the best soil is, and we're running out of land to grow food.'

The Australian, 21 January 2012

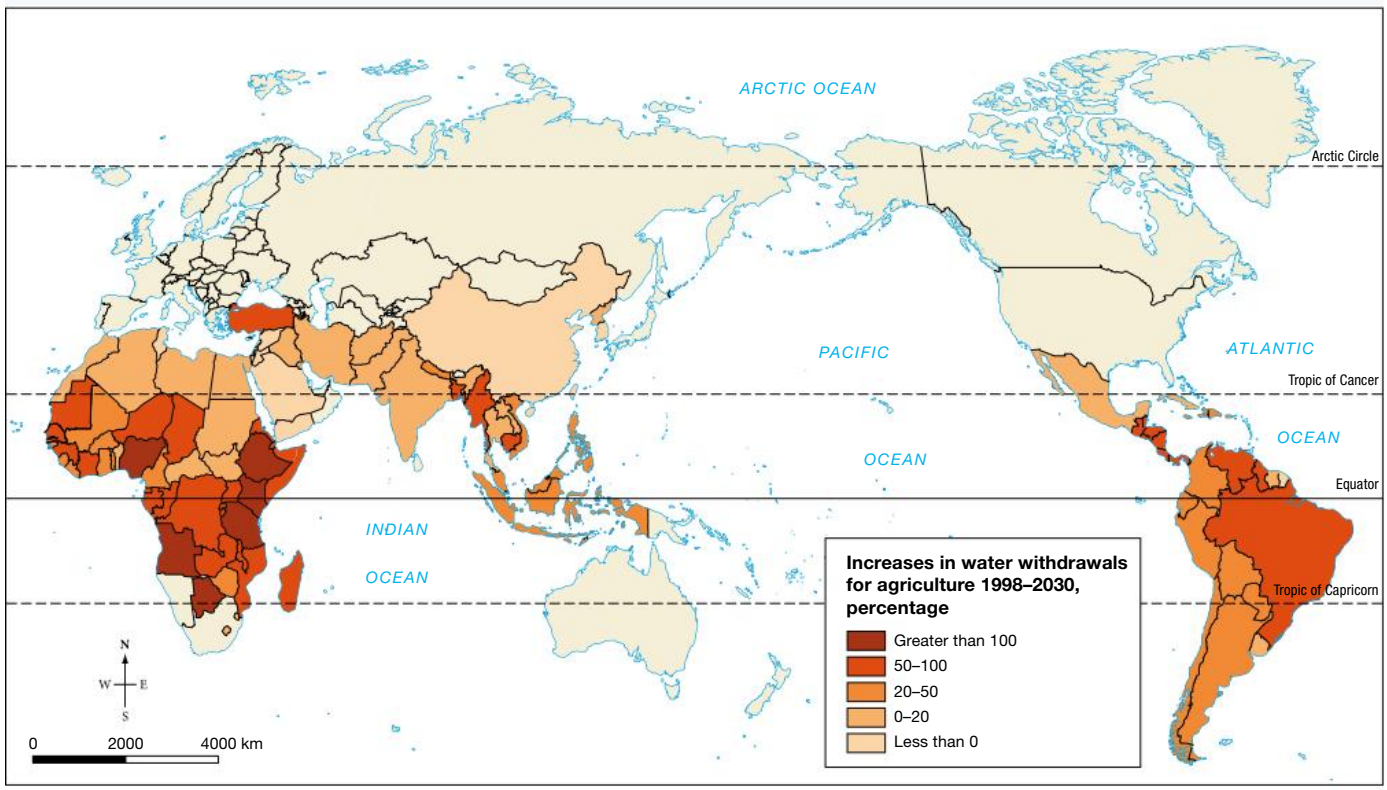
(a) What land uses have taken over from farmland since 1984?
(b) What types of crops need to be grown close to cities?
(c) Why do you think Australia's agricultural land is a scarce and finite resource?

7. Foreign investment in Australian farmland increased from 5.9 per cent in 1984 to 11.3 per cent in 2011. How might foreign owners benefit from owning farmland in Australia? How might Australia benefit?
8. Refer to figure 2 in subtopic 13.6. The original land use for this location was tropical rainforest.
   (a) Why might this area have been cleared?
   (b) Is this a suitable landscape for such extensive clearing? Explain your answer.

Water

9. Approximately 20 per cent of the protein that humans eat comes from animal-based products. Scientists suggest that if people reduce their meat consumption to five per cent of their daily diet, this will allow more water to be available for plant-based food production. Keep a record of your daily food intake over several days and calculate (using an online kilojoule counter) what percentage of your diet is made up of meat. How does this compare with others in your classroom? Now plan a three-day menu in which only five per cent of your diet is made up of meat-based products.
10. Study the information in figure 1.

FIGURE 1 Predicted increases in water use for agriculture 1998–2030. There will be increases greater than 100 per cent in six countries, and increases less than 20 per cent in 41 countries.



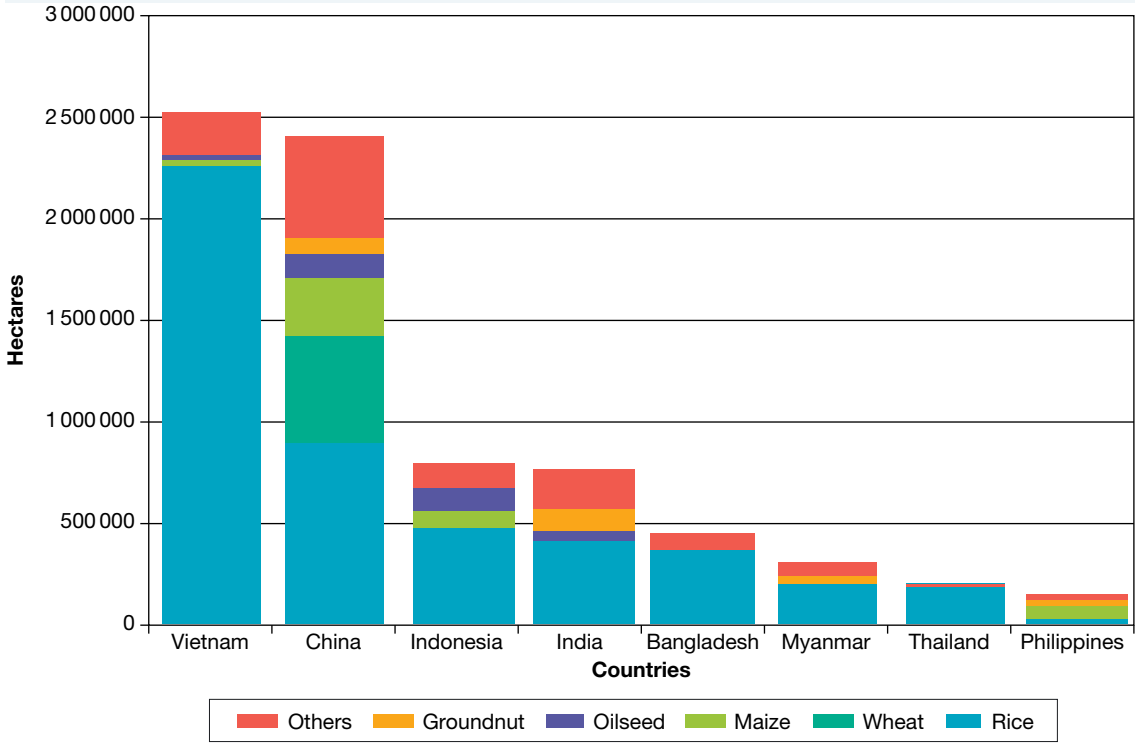
Source: Spatial Vision

(a) Describe the distribution pattern of countries that are predicted to withdraw over 100 per cent more water in the years to 2030.
(b) Suggest a reason why Australia, the United States and countries in Europe are not in this category.

Climate change

11. Refer to figure 2 to answer the questions that follow.

FIGURE 2 Countries in Asia and the Pacific that will lose over 100 000 hectares of cultivated cropland if there is a one-metre rise in sea level



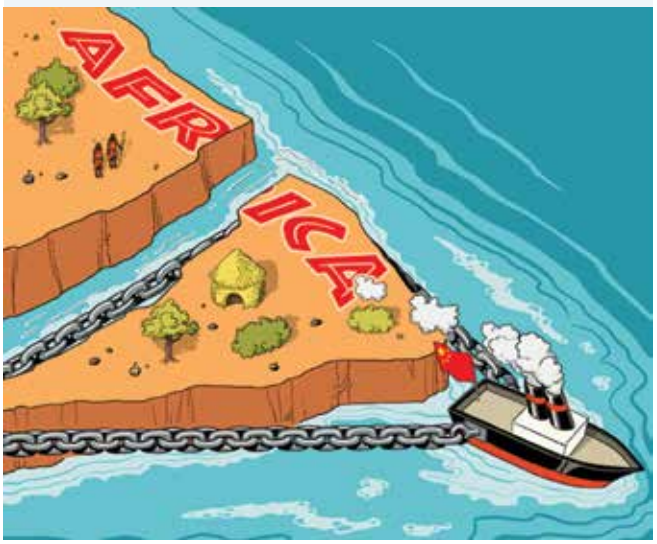
Source: © Asian Development Bank

(a) Which type of cropland is predicted to be the most ***changed*** by a one-metre rise in sea level in Asia?
(b) Using data in your answer, list the three countries that will be most at risk of losing cropland.
(c) What might be some of the repercussions for food production in those countries?

13.11.2 Reflect

12. What is the cartoon in figure 3 trying to tell us?
13. What would you suggest a host country should do to ensure its own food security?
14. *Land grabs are the solution to establishing a country's food security.*
    Provide an argument for this viewpoint and an argument against this viewpoint. Ensure that your argument is supported with evidence and is logical.
15. *Australia's dinner plate can often represent a multinational society. In general we produce, import and can afford a wide range of food items.*
    To what extent is this statement true? Review the foods your family commonly eats. Explain.

FIGURE 3



TOPIC 14
2050 — food shortage or surplus?

14.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

14.1.1 Introduction

Currently we produce enough food to adequately feed everyone in the world. However, it is estimated that in 2015 about 795 million people or almost one in seven went hungry. The world's population is expected to grow by another two billion people in the next 30 years. If we want to stop the number of hungry people from increasing, we will need improvements in food production, new sources of food, better aid programs, and different attitudes to food consumption and waste.

- Twenty-five per cent of people in sub-Saharan Africa are undernourished.
- Use of fertilisers will expand in Latin America, East Asia, North America and South Asia.
- We can act to decrease hunger in developed and less developed regions.
- Could Australia become the food bowl of Asia?
- Should farmers be stewards of the environment?
- Chinese people now eat a quarter of the world's supply of meat.
- Poor nutrition causes 45 per cent of all deaths in children under five in developing nations.
- Home-grown vegetables do not necessarily have a smaller carbon footprint than those from a supermarket.
- Biofuel opportunities will mostly occur in developing regions, providing many jobs.
- Can we feed the 9.5 billion people expected to live on the planet in 2050?

Starter questions

1. Look at the photo and annotations on the previous page. Make some predictions about the type of food you might eat in the year 2050 and how it might be produced.
2. Ask your parents or grandparents what type of food they ate when they were young. Did they grow any of their own food?
3. Does your family produce any of its own food? Why or why not?
4. Do you think we have food shortages in Australia? Why or why not?
5. Which countries in the world face food shortages today?

INQUIRY SEQUENCE

14.1 Overview 290
14.2 Can we feed the future world population? 291
14.3 Can we improve food production? 294
14.4 What food aid occurs at a global scale? 298
14.5 **SkillBuilder:** Constructing a box scattergram online only 301
14.6 Do Australians need food aid? 301
14.7 Is trade fair? 304
14.8 **SkillBuilder:** Constructing and describing proportional circles on maps online only 306
14.9 How do dietary changes affect food supply? 307
14.10 Can urban farms feed people? 309
14.11 **Review** online only 312

14.2 Can we feed the future world population?

14.2.1 What is the problem of hunger?

One in seven people in the world does not have enough food to lead an active and healthy life, yet over one billion people are overweight. How can we best manage the challenge of ensuring that everyone in the world has access to a healthy and adequate diet?

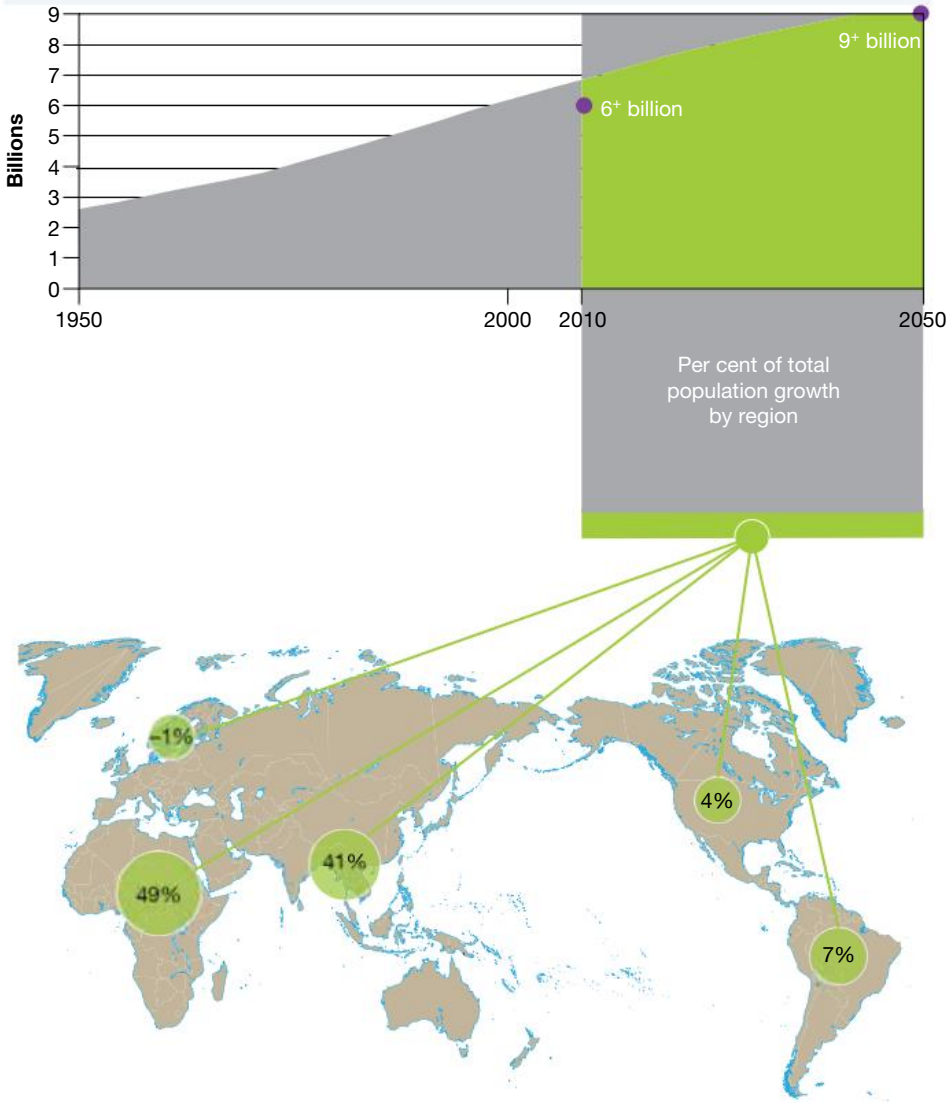
14.2.2 What are the impacts of hunger?

The distribution of the world's population and the availability of arable land per person is uneven. Regions with the fastest growing future populations are also those where there is limited arable land per person (see figure 1).

The impact of hunger on people cannot be overstated. Hunger kills more people each year than disease (see figure 2). It is estimated that we will need to produce between 70 and 100 per cent more food in order to feed future populations. New ideas, knowledge and techniques will be needed if we do not want millions more people to suffer malnourishment, starvation and vulnerability to disease. The challenge, though, is to do this in a way that is also sustainable. However, population growth and limited supplies of arable land will affect how much food can be produced.

One solution to feeding people who live in crowded spaces, such as Asia, or in environmentally challenging spaces, such as sub-Saharan Africa, is to increase the amount of trade in food products. This will involve moving food from places with crop surpluses (North America, Australia and Europe) to regions that are crowded or less productive. This means there will be an increase in the interconnection between some countries.

FIGURE 1 Population growth by world and region, 2010–50



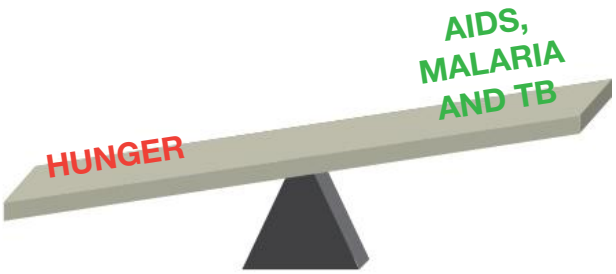
Source: Re-drawn from an image by Global Harvest Initiative (*2011 GAP Report®: Measuring Global Agricultural Productivity*), data from the United Nations.

14.2.3 Plumpy'nut — a short-term solution to malnutrition

In 2005 a revolutionary approach to treating malnutrition was released. This is a ready-to-use therapeutic food (RUTF) called Plumpy'nut. It is a sweet, edible paste made of peanut butter, vegetable oils, powdered milk, sugar, vitamins and minerals. Its advantages are that it:

- is easy to prepare
- is cheap (a sachet costs about $2.50)
- needs no cooking, refrigeration or added water
- has a shelf life of two years.

FIGURE 2 Hunger is the world's number one health risk, killing more people each year than AIDS, malaria and tuberculosis combined.



Children suffering from malnutrition can be fed at home without having to go to hospital. It is specially formulated to help malnourished children regain body weight quickly, because malnutrition leads to stunting of growth, brain impairment, frailty and attention deficit disorder in children under two years of age.

Plumpy'nut is not a miracle cure for hunger or for malnutrition; it only treats extreme food deprivation, mainly associated with famines and conflicts. It is not designed to reduce chronic hunger resulting from long-term poor diets or malnutrition. Since its introduction, Plumpy'nut has lowered mortality rates during famines in Malawi, Niger and Somalia. Most of the world's peanuts are grown in developing countries, where allergies to them are relatively uncommon. Manufacturing plants have been established in a dozen developing countries, including Mali, Niger and Ethiopia. These factories provide employment and ensure ease of access when needed. The patent for Plumpy'nut is owned by Nutriset, a French company. There are some concerns that this gives Nutriset the power to entirely control the production and distribution of Plumpy'nut. Nutriset has been asked by Médicens sans Frontières (Doctors without Borders) to remove its patent, which would allow open production and distribution of this life-saving product.

FIGURE 3 Plumpy'nut benefits children.

14.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Examine figure 1.
   (a) Which region is predicted to decrease in population by 2050?
   (b) Which two continents are expected to have the greatest increase in population?
   (c) What is the predicted world population in 2050?
   (d) How does a growing world population put pressure on food shortages?

Explain

2. Explain why you think hunger may threaten people's health and be responsible for so many deaths.
3. What other geographic factors can cause shortages of food?
4. Outline the advantages and disadvantages of using Plumpy'nut or other RUTFs to treat childhood malnutrition in developing countries.
5. What may need to happen to ensure there is enough food in the future for people who live in ***places*** with growing populations and limited arable land?

Discover

6. As well as affecting people's health, a shortage of food can have social and political effects. Undertake research into the series of food riots that occurred in a number of countries around the world in 2015.
   (a) Where did these riots occur?
   (b) What were the causes of these riots?
   (c) Why might governments need to prevent this situation from occurring again?
7. What foods are commonly used as food aid worldwide?

Predict

8. Lack of food has been a factor in pushing people to leave their homes and go to cities in search of employment and food. Predict the ***places*** of the world where this is most likely to happen.

Think

9. Draw a poster or advertisement that informs Australians about Plumpy'nut and seeks donations for its use.

14.3 Can we improve food production?

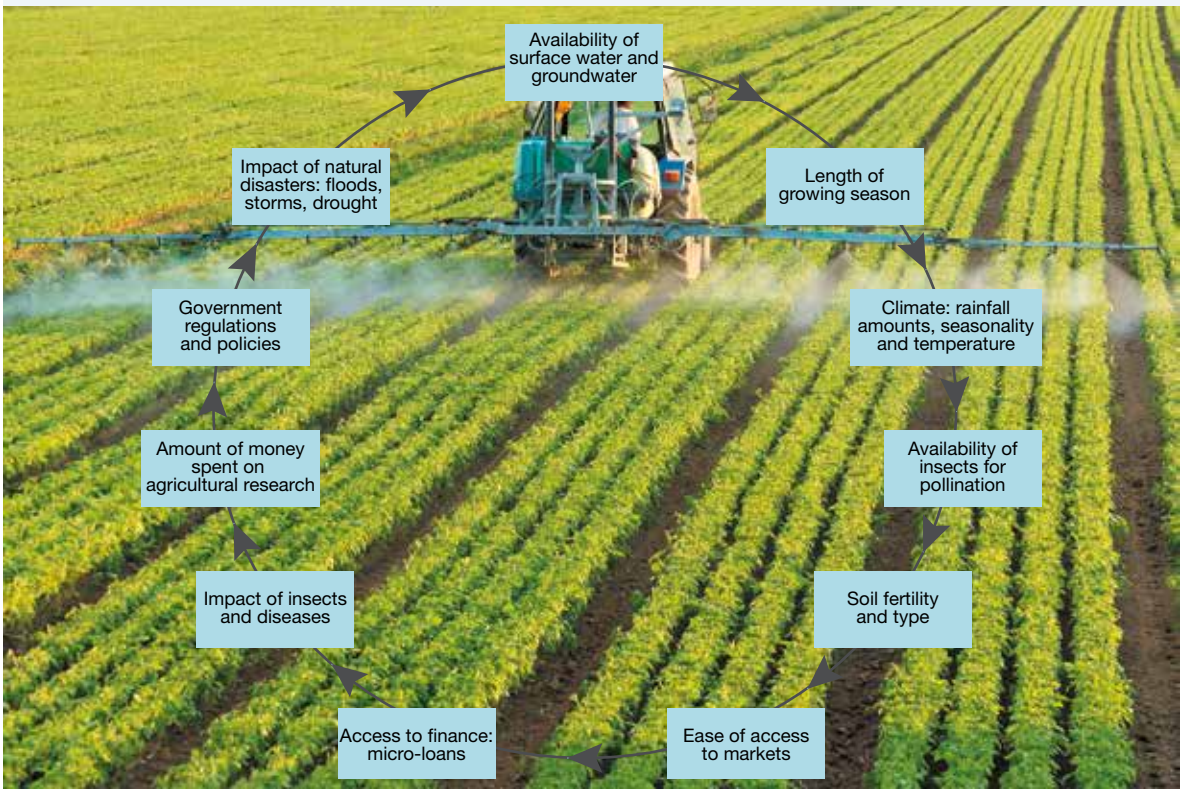
14.3.1 How can we improve food production?

Over 70 per cent of the world's poor live in rural areas, and improving their lives would create greater food security. If poor farmers can produce more food, they can feed themselves and provide for local markets. Improved infrastructure, such as roads in rural regions, would enable them to transport their produce to market and increase their incomes. Preventing hunger on a global scale is important, but action is also needed on a local scale.

Future changes to food production

Farming is a complex activity, and farmers around the world face many challenges in producing enough food to feed themselves and to create surpluses they can sell to increase their incomes. As urban areas grow, the amount of arable land available decreases. According to the United Nations Food and Agriculture Organization (FAO), the world has an extra 2.8 billion hectares of unused potential farmland. This is almost twice as much as is currently farmed. However, only a fraction of this extra land is realistically available for agricultural expansion, owing to inaccessibility and the need to preserve forest cover and land for infrastructure.

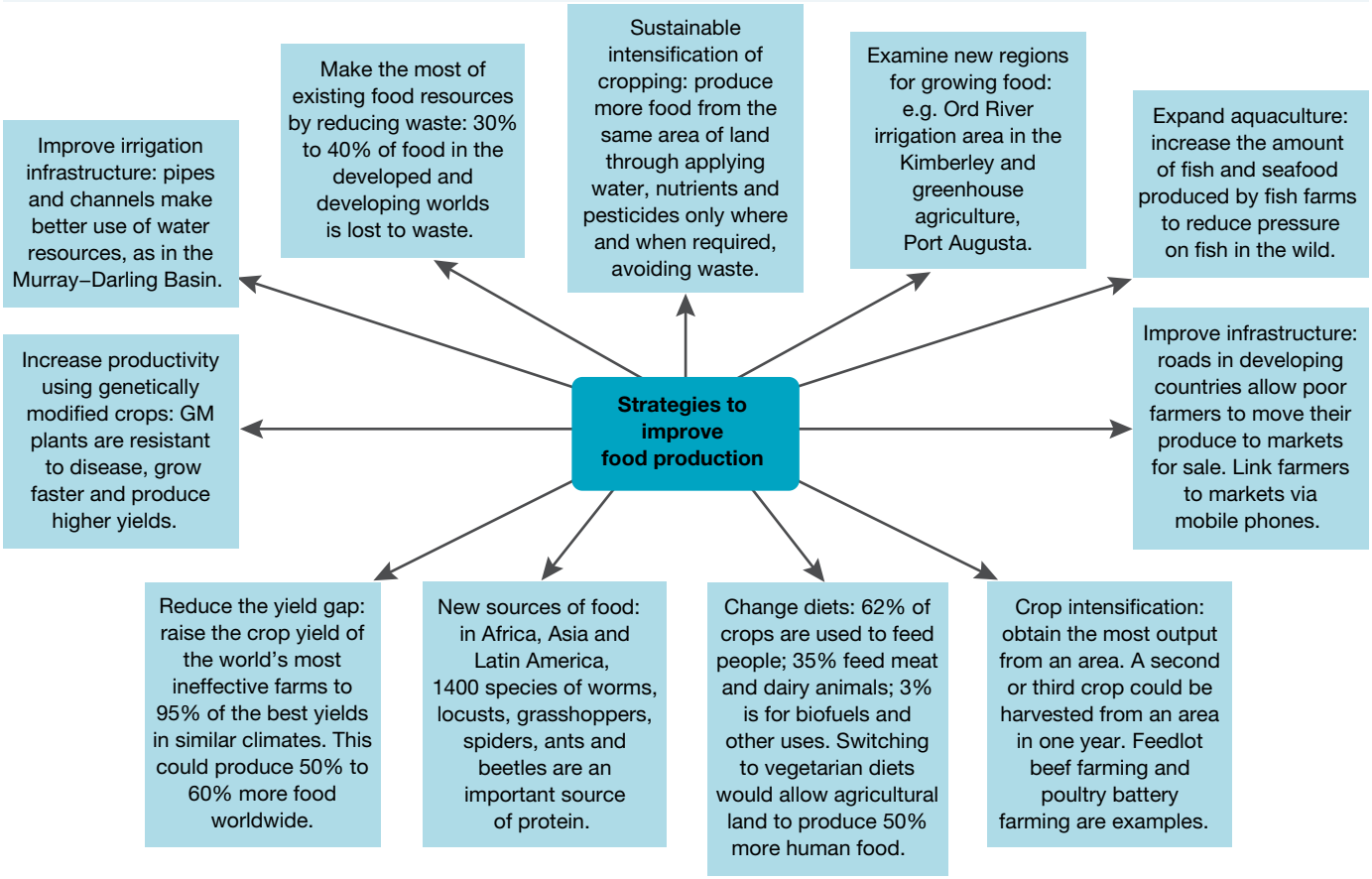
FIGURE 1 Factors affecting farming yields



In Australia there are hopes to expand the agricultural output from the Ord River irrigation scheme in the Kimberley region of Western Australia.

The growing populations of the future will be found in places where expansion of agricultural land is already limited. Consequently, increased food production will need to come from better use of current agricultural areas, better use of technology, and new ways of thinking about food production and approaches to farming. Figure 2 outlines some strategies that may be used to improve food production.

FIGURE 2 Strategies for improving sustainable food production



Strategies for improving food production

The strategy that is likely to be the most important in increasing future crop production is called closing the **yield gap**. This means that farmers who are currently less productive will need to increase their yields so that their outputs are closer to those of the more productive farmers. There is a serious yield gap in more than 157 countries. If this were achieved, larger amounts of food would be available without needing more land. There are wide geographic variations in crop and livestock productivity. Brazil, Indonesia, China and India have all made great progress in increasing their agricultural output. Much of the increase has been achieved through more efficient use of water and fertilisers.

The use of **genetically modified** (GM) foods has increased, and this has increased crop yields. However, there is some opposition to GM crops because of concerns about:

- their safety
- loss of seed varieties
- potential risks to the environment and people's health
- the fact that large companies hold the copyright to the seeds of GM plants that are food sources.

14.3.2 Solving problems and coming up with solutions

Because agriculture uses 60 to 80 per cent of the planet's increasingly scarce fresh water resources, any method that can produce food without needing fresh water at all is a great advance.

Port Augusta is located in a hot, arid region of South Australia, and is not normally associated with agriculture. However, one company, Sundrop Farms, is using this region's abundant renewable resources of

sunlight and sea water to produce high-quality, pesticide-free vegetables, including tomatoes, capsicums and cucumbers, and it does so all year round.

Large mirrors concentrate the sun's energy and the collected heat creates steam to drive electricity production, heat the greenhouse, and desalinate sea water, producing up to one million litres of fresh water a day for crop irrigation.

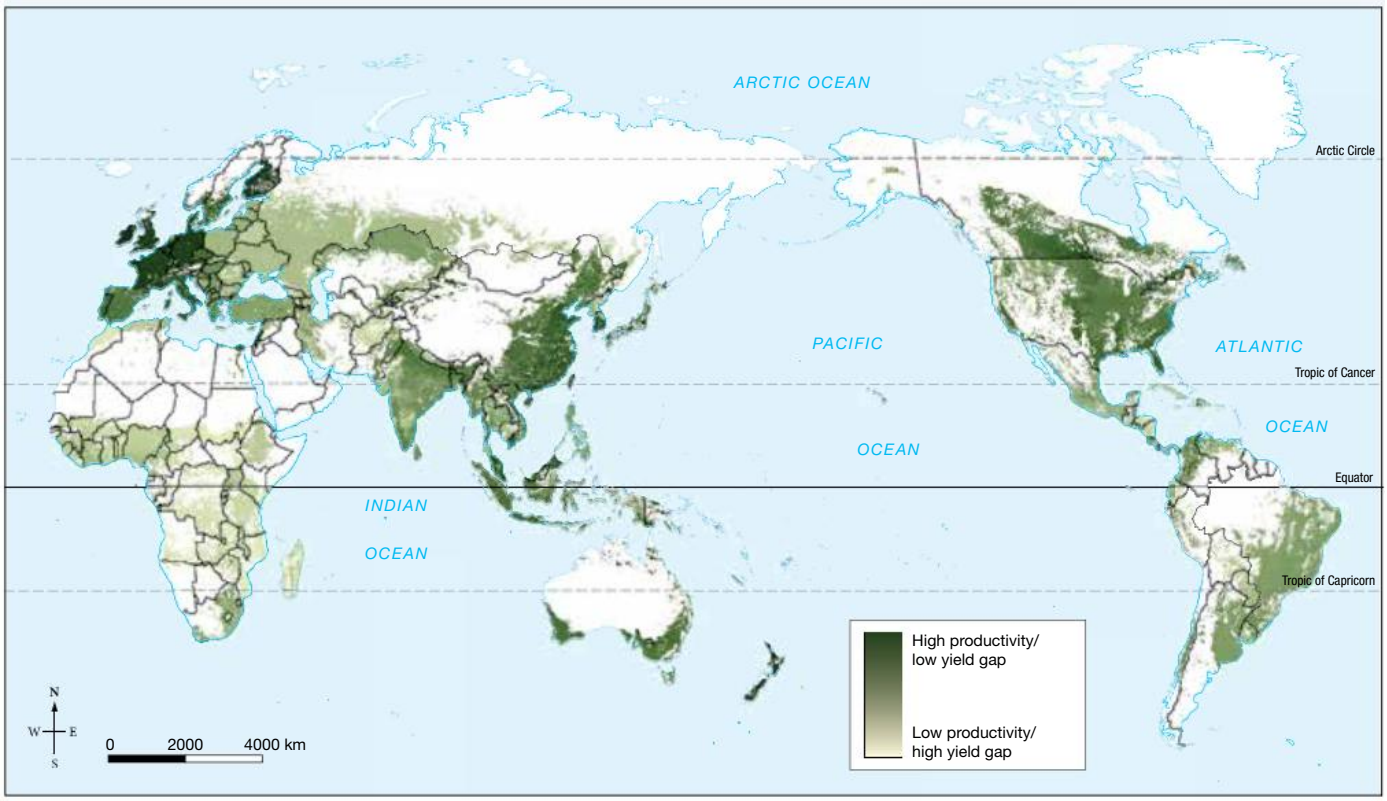
Experimental greenhouse in Port Augusta

The current experimental greenhouse, covering 2000 square metres, is operating on a small scale. A new $150 million greenhouse will be completed approximately 10 kilometres from the site in 2017. This new project aims to produce approximately 15 000 tonnes of truss tomatoes per year, which equates to about 10 per cent of Australia's demand. The new greenhouse uses renewable energy to be not just carbon and water neutral, but positive. It is hoped that this type of technology can be used in many more places in Australia and around the world that have hot, arid climates previously unsuitable for horticulture. The technology has the potential to supply millions of people with healthy food in a sustainable manner while also using limited fossil fuel resources.

Australian farmers see technology as a means of decreasing production costs and increasing crop production. Additional technologies in Australian agriculture include the following.

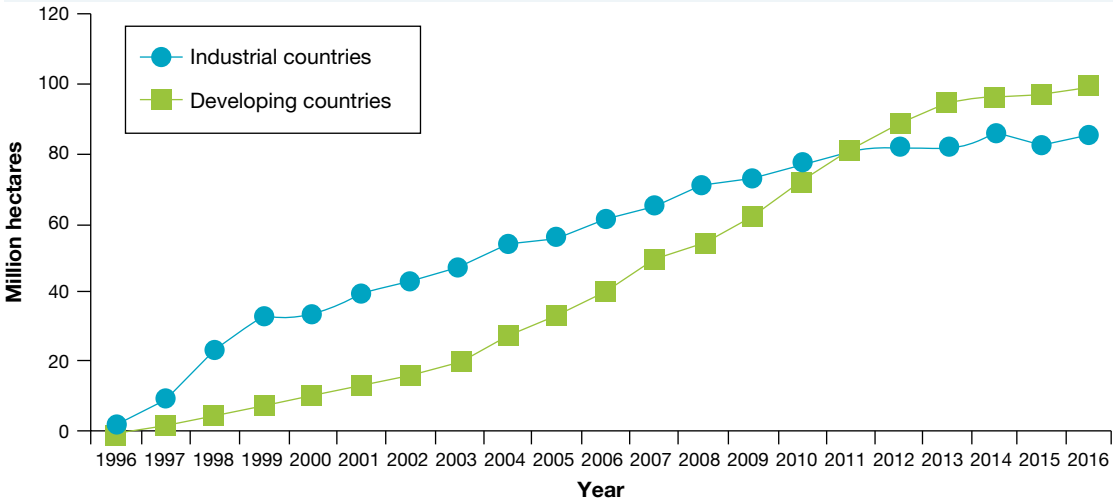
- Robots are being tested to determine whether they can be used in complex jobs such as watering or harvesting. This would be of advantage in the horticultural sector, which is the third largest sector in agriculture, with an export trade worth $2.1 billion in 2014–15.
- Technology such as satellite positioning is being used to determine the optimal amounts of fertiliser to use on crop farms, which could increase profitability by as much as 14 per cent.
- Robots and an unmanned air vehicle have passed field tests at an almond farm in Mildura, Victoria. They are fitted with sensors, vision, laser, radar and conductivity sensors — including GPS and thermal sensors.

FIGURE 3 Yield gap for a combination of major crops, 2015



Source: Food and Agriculture Organization of the United Nations

FIGURE 4 Global area of genetically modified crops in industrial and developing countries 1996–2016 (millions of hectares)



Source: James, C. 2016. Global Status of Commercialized Biotech/GM Crops: 2016, ISAAA Brief 52, Ithaca, NY, USA, http://www.isaaa.org.

FIGURE 5 The world's first Sundrop Farm is situated in Port Augusta, South Australia

14.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. List three different strategies, other than closing the yield gap, for improving food production.
2. What is meant by the term *yield gap* and why is it important that this gap be narrowed to increase future crop yields? See figure 3.
3. What is meant by the term *genetically modified* (GM)?
4. Examine figure 4. What ***changes*** have there been in the production of genetically modified foods in (a) developed countries and (b) developing countries? Use the data from the graph to support your answer.

5. (a) Referring to figure 3, which ***places*** have the highest gap yields?
   (b) Which places in figure 3 have the lowest gap yields?

Explain

6. Explain the advantages and disadvantages of locating the large greenhouse near Port Augusta. You may need to consult your atlas.
7. Select one of the strategies outlined in figure 2 that can be used to improve food production. Explain this strategy in your own words and outline some of the strengths and weaknesses of this strategy.

Predict

8. Many Australian cities have large housing estates on their outskirts. This land was often used for market gardens or farmland. What impact might the loss of this productive land have on the price of food?
9. Predict what the impact might be on people and ***places*** if the greenhouse method of farming shown in figure 5 were to become more readily available. What might be the effects on ***places*** where the yield gap is large compared to ***places*** that are currently more productive?

Think

10. Annotate key aspects of the Port Augusta landscape (greenhouses, solar collector, sandy soil, flat and barren landscape) shown in the photograph in figure 5.
11. Some areas of Australia that are currently national parks or marine parks may be sought after as agricultural land in future. Outline your views on this.

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Try out this interactivity: More, or less, food (int-3329)

14.4 What food aid occurs at a global scale?

14.4.1 Who needs food aid and how is it delivered?

The World Food Programme (WFP) is a voluntary arm of the United Nations. It reaches more than 76 million people, in more than 81 countries, with food assistance after disasters and conflicts. Food aid is food, money, goods and services given by wealthier, more developed nations to less developed nations for the specific purpose of helping the poor.

People who need food aid include:

- poor people who cannot buy food even if it is available, as they are often trapped in a cycle of hunger and poverty
- people who have fled violence or civil conflict
- people devastated by natural disasters.

TABLE 1 Major funding contributors to WFP in 2015 (US$)

All donors & funding sources		
1	USA	2 008 800 185
2	United Kingdom	456 855 096
3	Germany	329 258 331
4	Canada	261 645 796
5	European Commission	250 347 378
6	Japan	196 773 084
7	UN CERF	159 928 948
8	Saudi Arabia	151 249 675
9	Netherlands	101 464 033
10	Private Donors	98 332 463

Figures current as at 24 July 2016

The WFP provides different types of food aid to people after natural disasters such as cyclones, floods and earthquakes. Some relief aid is provided in the short term as emergency food. Project food relief is often required over lengthy periods, typically after civil war or prolonged drought. Project food aid is geared towards future disaster prevention. Program food aid is organised between national governments.

14.4.2 Who gives food aid?

The major donor countries to the WFP in 2015 are shown in table 1.

14.4.3 Who receives food aid?

In 2014–15, the WFP worked on six simultaneous Level 3 emergencies including providing food assistance to 2.2 million people affected by conflict in Iraq; more than one million people affected by Typhoon Haiyan in the Philippines; over two million people in South Sudan; more than million people disrupted by the Ebola outbreak in Guinea, Sierra Leone and Liberia; and over 4.9 million people displaced by war in Syria. The WFP directly helped over 66.8 million women and children, 14.8 million internally displaced people and over 68 million refugees. In total, the WFP provided more than 3.3 million tonnes of food aid.

FIGURE 1 How the World Food Programme works

CASE STUDY

Cash vouchers and school feeding programs

Where food is available but people simply cannot afford to buy it, aid in the form of cash vouchers from the WFP can be exchanged for food and other essential commodities. They allow recipients greater choice in the types of food and other commodities they obtain. Cash has benefits for local economies because the money is spent within the community. Recently, cash voucher programs have been enhanced through the use of mobile phones, which have been used to provide instant payments to both beneficiaries and the shopkeepers who redeem vouchers. In 2014–15, the WFP provided school meals to over 17 million children.

Another program provides school children with either full meals (breakfast and/or lunch) or nutritional snacks, such as high-energy biscuits. In some cases, school meals are provided alongside take-home rations that benefit the whole family and provide an additional incentive for sending children to school.

In 2015, Australia funded school feeding programs in Bangladesh, Myanmar, Laos and Cambodia. These have had strong positive impacts on both the children and the wider community. School rates of enrolment increased and regular attendance improved. Households also benefited through a reduced need to purchase food. Australia will contribute more than $167.5 million of funding through the World Food Programme from 2015 to 2020. This includes funding provided for the food crises after Tropical Cyclone Pam in Vanuatu and the Nepal earthquake.

14.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Refer to figure 1. How many countries received food aid in 2014?
2. Refer to table 1. How much food aid did Japan give to the WFP in 2015?
3. Which regions of the world receive the greatest food aid? Suggest reasons for this.

Explain

4. Explain why the WFP is so active in school feeding and emergency aid programs.
5. Refer to the case study ‘Cash vouchers and school feeding programs’.
   (a) Locate the recipient countries on a world map.
   (b) List the advantages and disadvantages of cash vouchers.

Discover

6. Select a major donor of food aid from table 1. What are the main population characteristics of this country, such as life expectancy, literacy levels and death rates? Discuss your findings in class.

Predict

7. How might food aid ***change*** when a donor country experiences a major economic downturn?
8. Predict the likely consequences for children who suffer from malnutrition. Present your information in an appropriate diagram.

Think

9. Should Australia’s food aid commitment be increased? Write a letter to your federal member of parliament, outlining your views on increasing Australia’s food aid contribution.

14.5 SkillBuilder: Constructing a box scattergram

WHAT IS A BOX SCATTERGRAM?

online only

A box scattergram is a table with columns and rows that displays the relationship between two sets of data that have been mapped. Box scattergrams are a useful way of summarising data from maps.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

TABLE 1 A box scattergram showing the relationship between undernourishment and aid received per person

Hunger level (% undernourished)	Aid received per person (US$)			
	No data	Less than 20	20–99	Over 100
35 +				• Congo • Mozambique
25–34			• Chad • Angola	
15–24				
5–14		• Nigeria	• Niger	
Less than 5		• South Africa • Algeria • Libya		
No data				• Mauritania

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Watch this eLesson: Constructing a box scattergram (eles-1734)

Try out this interactivity: Constructing a box scattergram (int-3352)

14.6 Do Australians need food aid?

14.6.1 Who needs food aid in Australia?

In 2015, it was estimated that about 2.5 million, or 13.9 per cent, of Australians are living below the internationally accepted poverty line. This includes almost 603 000 children or 17.7 per cent of the total Australian child population. The prices of essentials — food, health, education, housing, utilities and transport — have climbed so much in recent years that people who are already struggling are unable to cope. They may need food aid. The economic climate saw people turning to charity who would never have dreamed of seeking such support in the past. It is not just traditionally vulnerable groups, such as the homeless, who are seeking food relief; it is also the aged, single parents and the 'working poor'.

In 2014 it was reported that:

- one in 10 Australians on unemployment benefits was unable to obtain a substantial meal each day
- two million people across the country could not secure enough food for their families
- nine out of 10 welfare agencies, from 600 interviewed, claimed they could not meet the demand for food, and there had been an 11 per cent increase in welfare agencies seeking food
- 105 000 Australians were homeless
- between 2010 and 2012, poverty increased by over 1 per cent
- 40.1 per cent of people on social security payments were living below the poverty line
- one in four pensioners lived close to the poverty line
- food banks provided enough food for 32 million meals per year.

Redistributing food through collection and food agencies is a good way to make better use of food resources.

The services of groups such as Meals on Wheels may be in greater demand as Australia's population ages (see figures 1 and 2). In 1997, the **median age** was 34 years, but this is projected to be 44–46 years in 2051. In 1997, people aged 65 years and over comprised 12 per cent of the population, and this is projected to rise to 24–26 per cent in 2051.

FIGURE 1 Australia's population pyramid, 2016

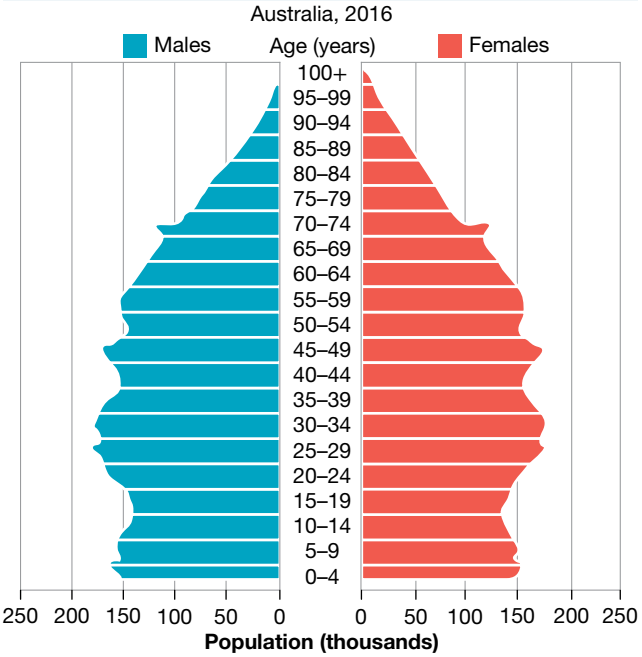


FIGURE 2 Australia's projected population pyramid, 2050

CASE STUDY 1

Food rescue

Food Rescue is one of several programs, operated in Western Australia by UnitingCare West, designed to support the needy in our community. Food is sourced from donations by cafes, restaurants, retailers, wholesalers and primary producers. It is then packed and distributed by helpers to a variety of people including the homeless, women and children in crisis, refugees and those on low incomes. The operation relies on philanthropic donations, business sponsorship and volunteers. One significant initiative is the Cargo Cart project which operates in the Perth CBD. Daily collections of unsold wraps, sandwiches and rolls allow food that might have been sent to landfill to find its way to vulnerable and disadvantaged sectors of the community.

FIGURE 3 Sponsored Cargo Cart in Perth CBD

CASE STUDY 2

Meals on Wheels

Meals on Wheels began in the United Kingdom during World War II. In Australia, it began in Melbourne in 1952, and it plays an important role in helping aged and disabled people to remain in their homes. Some people may not be able to get out and about, so over 78 000 volunteers help to deliver meals to them. By providing nutritious, relatively cheap meals, costing between $4.50 and $9.00, Meals on Wheels helps to make it possible for people to maintain their independence. Some 14.8 million meals are served annually to 53 000 people across the nation. The social interaction and regular visits are an important part of this service.

FIGURE 4 Volunteers for Meals on Wheels

CASE STUDY 3

Outback Australia

In September 2011, Indigenous Australian peoples in South Australia were suffering food shortages because they could not afford to buy food. The Red Cross and the South Australian Government were forced to send pallets of food to impoverished people living in the Anangu Pitjantjatjara Yankunytjatjara (APY) lands in South Australia's far north. Shops in the APY lands were full of food, but people were going hungry because of the high cost of freighted food. In June 2010, essential foods in remote community stores were more than double the price of those in Adelaide. One suggested strategy for improving food security in such places is the establishment of community gardens.

APY lands program

Since 2014, the APY lands program has been funded solely by non-government organisations (NGOs). The program now focuses on improving freight efficiency, stores management, cold storage upgrades and the supply of more generators for a reliable source of power.

14.6 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Examine figures 1 and 2.
   (a) How many Australians were over 65 years of age in 2015?
   (b) How many are expected to be over 65 years in 2050?
2. How many people were living in poverty in Australia in 2014?

Explain

3. Explain why there might be difficulties with access to food in 2050 if 25 per cent of the population is over 65.
4. Explain the importance of volunteers in food redistribution.
5. Explain how Australia's size could lead to food shortage in some ***places***.

Discover

6. Conduct your own research into a local organisation that provides food aid. Present your findings in an appropriate format.

7. Use the internet to research **Australian poverty** and discover other aspects of poverty in Australia.

Predict

8. Predict whether Meals on Wheels will experience an increase or decrease in its future clientele. Apart from the ageing population, what other factors might ***change*** the need for Food Rescue or Meals on Wheels in future?
9. What would be your family's reaction if the cost of food doubled because of freight costs? What steps could improve the situation in outback areas?

Think

10. Have your attitudes to redistributing food ***changed*** as a result of your reading and class discussion?
11. 'When bills have to be paid, food becomes a **discretionary item**' (Food Bank Australia 2011). If household bills have to be paid before buying food, what are the likely consequences for families and organisations supplying food aid?

14.7 Is trade fair?

14.7.1 Why is trade not fair for everyone?

As people become more concerned about the level of poverty and hunger in the world, they sometimes seek ways to improve the situation. Trade is the way countries sell what they have produced and buy what they need. On a global scale, this does not mean that trade is mutually beneficial. Trade usually favours countries that are the strongest economically, and it disadvantages those countries that are poor.

FIGURE 1 Why Fairtrade is important

Trade is not a level playing field. It favours the strongest countries, often to the disadvantage of the poor and weak. Strong or developed countries are able to:

- stockpile or dump crops so that they sell for a maximum price
- negotiate some political advantage
- refuse to sell crops if they have a shortage, so some nations go hungry
- dump crops of low quality onto poorer nations.

In contrast, fair trade is a consumer-driven movement to promote fair prices and reasonable conditions for producers in developing regions. It tries to ensure, for example, that a group of farmers is able to sell its crop for a guaranteed price. Fair trade is seen by some as **active consumerism**. In addition to the general movement known as fair trade, there is an organisation called Fairtrade International. This is a group of 25 organisations trying to ensure a better deal for producers.

14.7.2 Why do small farmers turn to Fairtrade certification?

In Ghana, cocoa farmers with 2- to 3-hectare plots of land face a number of problems.

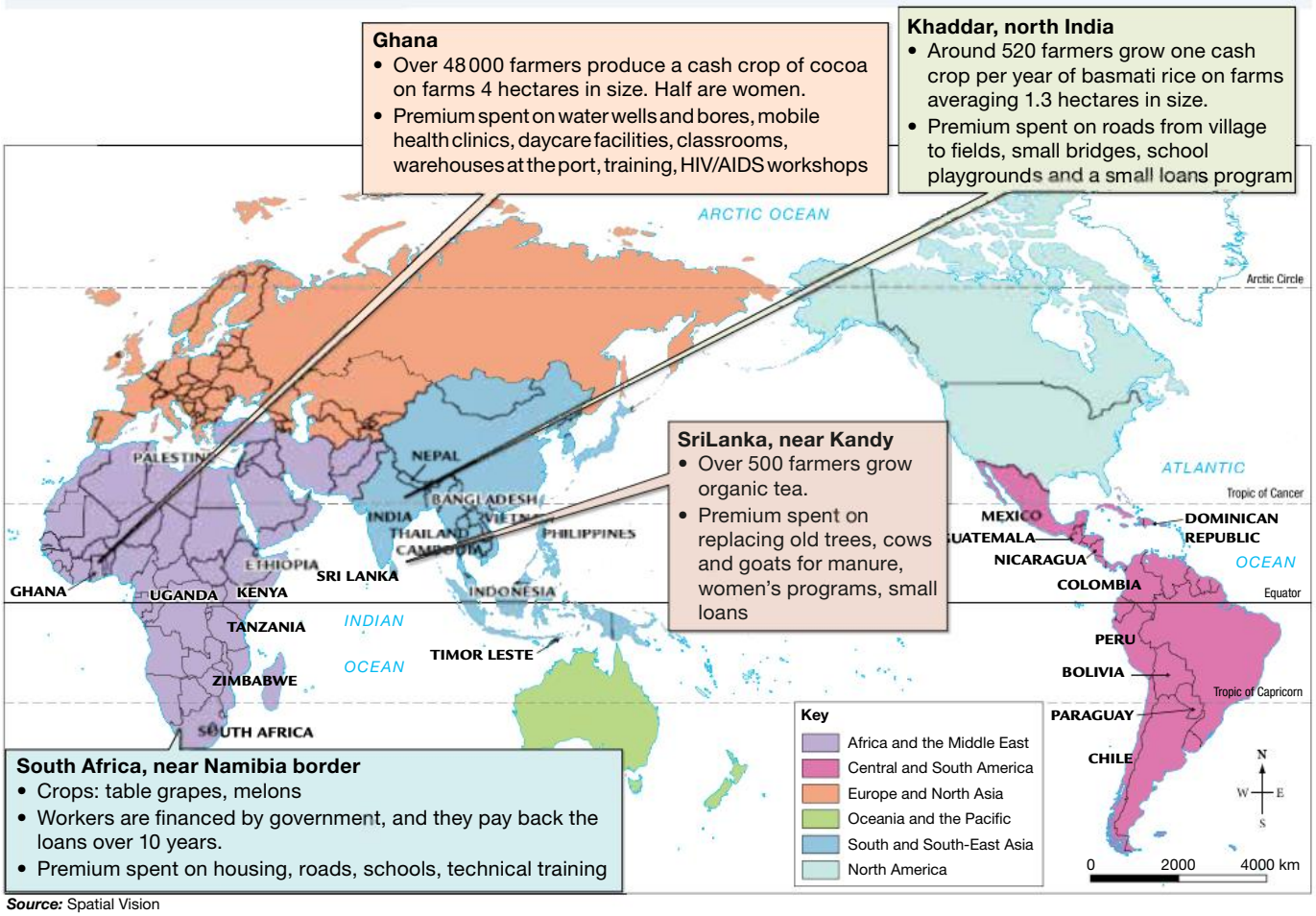
- They may grow one main cash crop for low prices that do not even cover the costs of production; they may also grow some vegetables for family use and extra income.
- They face expensive production inputs (tools, fertilisers and pesticides) and family costs (education, medicine, food and clothes).
- Poor education makes it difficult for them to try different crops that could earn them more money.
- The use of child and slave labour is common in cocoa-producing West African countries.
- Technical, financial and scientific advice is limited.
- Credit is a key issue for farmers with **seasonal crops** like cocoa. Farmers need money for food and immediate needs, as well as pre-financing for planting and cultivation of their crop. Most borrow money from family, and a small percentage take a loan.
- There are taxes or tariffs on products.

As a consequence, many farmers are turning to Fairtrade as a means of improving their livelihoods.

Where are Fairtrade farmers found?

Countries with Fairtrade organisations are in the poorer nations. They are frequently found in Asia, Africa and South America (see figure 2). These farmers produce crops such as grapes, cocoa, coffee, tea, dried fruits, bananas, sugar, rice, nuts and handicrafts. The consumers who are likely to buy crops produced by Fairtrade farmers are located in the wealthy nations, because they have the ability to pay a little more to buy their goods.

FIGURE 2 Map showing Fairtrade producer countries. The annotations describe how selected producers use their Fairtrade premium — a sum of money paid in addition to the Fairtrade price, to be invested in social, environmental or economic development projects, decided by farmers or plantation workers.



Source: Spatial Vision

Do farmers benefit from Fairtrade?

Fairtrade farmers enjoy the certainty of having a fixed price and a guaranteed market for their product. This gives them the ability to undertake farming improvements. The Fairtrade Premium provides money for infrastructure, training, education and medical services. It also allows women farmers access to international trade. In Ghana, training of farmers improved the yield by as much as 50 per cent, and it improved school attendance for children by 26 per cent. Fairtrade also benefits the environment, as many of the farming groups produce organic crops.

14.7 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Refer to figure 2.
   (a) Which countries have Fairtrade farmers?
   (b) On which continents are most Fairtrade consumers found?

Explain

2. In Ghana, improving farmer education led to an increase in crop yield of 30 to 50 per cent, as well as improved school attendance. Explain this connection.
3. Read the annotations on figure 2. What similarities are there between Fairtrade farmers in different ***places***?
4. What does being an 'active consumer' mean? Why are some willing to pay more for Fairtrade chocolate?

Discover

5. Investigate your favourite chocolate brand. Who owns the brand, and what are their attitudes to Fairtrade chocolate? Write a letter to them expressing your views about Fairtrade cocoa.
6. Research an example of a Fairtrade crop. What are the advantages and disadvantages of Fairtrade?

Predict

7. Predict the future of Fairtrade. What factors might affect your prediction?

Think

8. Undertake a class debate on the topic, 'Fairtrade farmers will improve the future food supply'.
9. Analyse figure 1. What makes it an effective poster? Alternatively, design a poster about one of the Fairtrade crops. Include ***change*** or ***place*** or ***sustainability*** in your poster.

14.8 SkillBuilder: Constructing and describing proportional circles on maps

online only

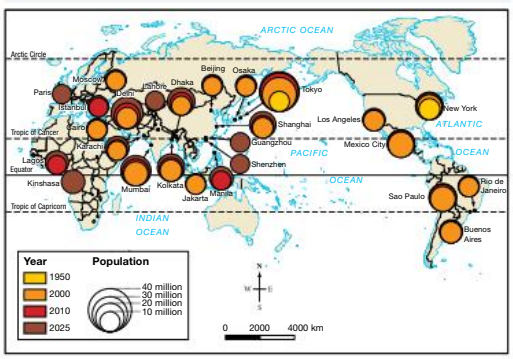
WHAT ARE PROPORTIONAL CIRCLE MAPS?

Proportional circle maps are maps that incorporate circles, drawn to scale, to represent data for particular places.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 Growth of megacities over time, 1950–2025 (projected)



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Watch this eLesson: Constructing and describing proportional circles on maps (eles-1735)

Try out this interactivity: Constructing and describing proportional circles on maps (int-3353)

14.9 How do dietary changes affect food supply?

14.9.1 How are diets changing?

According to the Red Cross, 1.5 billion people in the world are dangerously overweight, while 925 million people are underfed. People in both of these categories have health problems. Diets have changed over time and continue to change. This is especially the case in China and India, where the standard of living is rising and people can afford access to a wider variety of foods.

Modern diets have been changing and are expected to change in future (see figure 1). One-third of the world's grain crop is fed to animals to produce meat. Some people consider this wasteful, as it takes about 11 times as much grain to feed a person if it passes through a cow first. While 1500 litres of water is needed to produce 1 kilogram of cereal, 15 000 litres is needed to produce 1 kilogram of meat.

FIGURE 1 Changing diets in developing countries

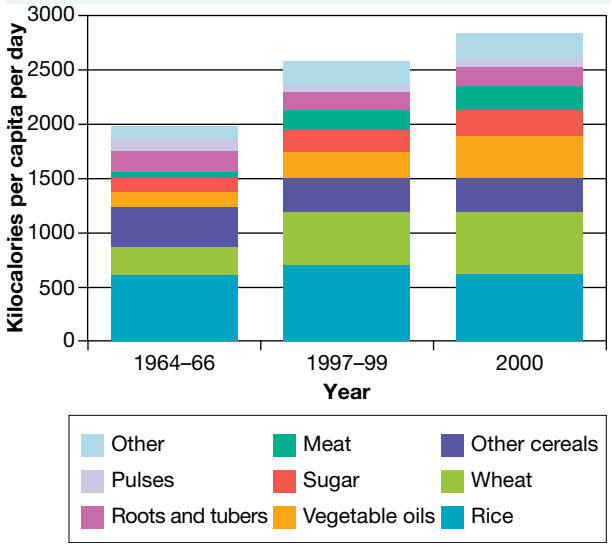
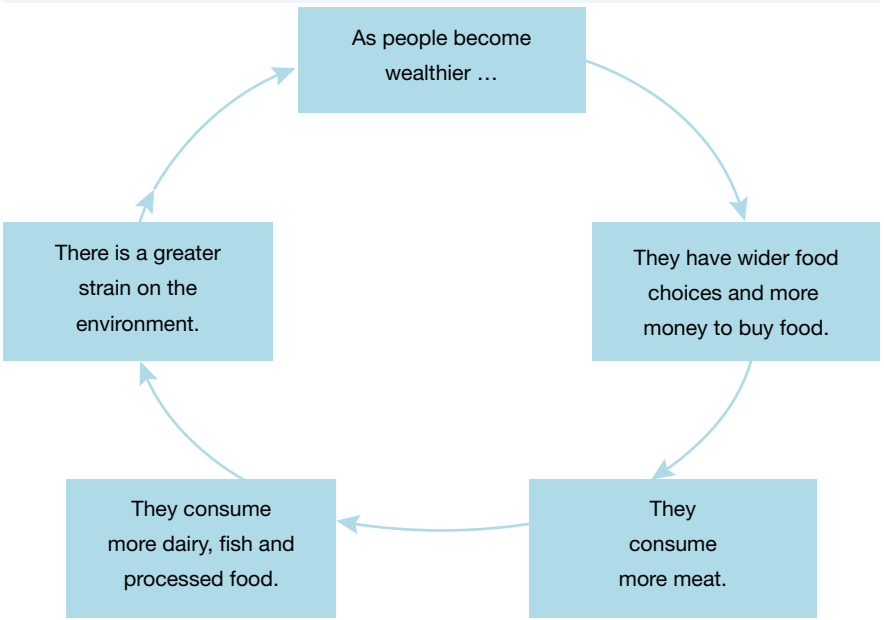


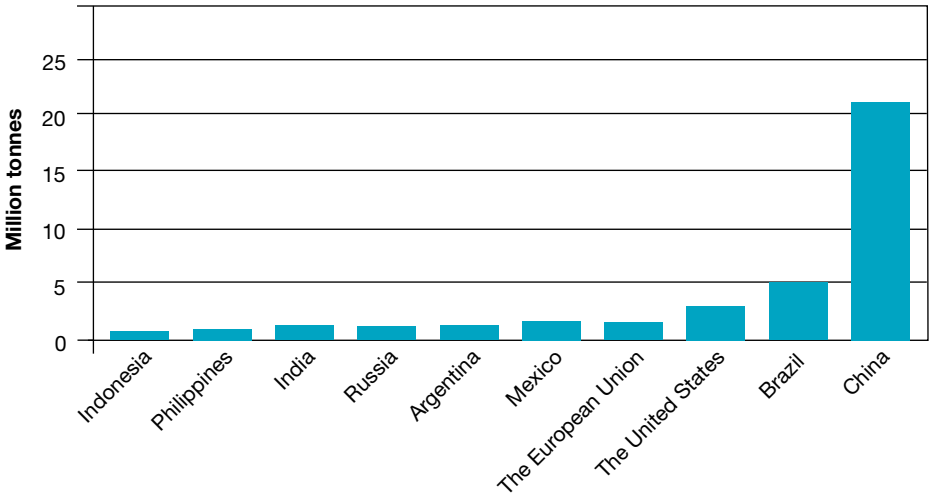
FIGURE 2 Impacts of dietary changes



Changing diets in Asia

Rice is a valuable source of protein, but as people's incomes grow, per capita rice consumption is expected to decline. Rice is being substituted by food containing more protein and vitamins and by more processed foods. Japan, Taiwan and the Republic of Korea have already made this dietary change, and the rest of the Asian countries are expected to follow as their economies change and people's incomes increase.

FIGURE 3 Forecast growth in meat consumption, 2011–2021



For centuries, the typical Chinese diet was rice and vegetables, occasionally supplemented by small amounts of meat or fish. In 1962, the average Chinese person ate 4 kilograms of meat a year. By 2005, this figure was 60 kilograms and rising (see figure 3). North Americans currently consume the most meat of any country, eating an average of 312 grams per person, per day. This is significantly more than the global average of 113 grams per person.

How can dietary change enable sustainable food production?

Meeting the needs of future populations is not just the responsibility of farmers and producers. We as consumers can also contribute. Attitudes may need to change towards what and how we eat.

- If we are to feed nine billion people sustainably in 2050, it is unlikely to be on a **Western-style diet**, which is rich in meat.
- The world produces enough food to feed 10 billion people. However, a significant portion of our crops is used to feed animals or is used as biofuel to produce energy.
- A switch to a diet containing more plant material would allow land currently used to produce animal feed to instead grow crops to feed humans. Although such a huge change is unlikely, even a small shift can have an impact.
- The Meatless Monday campaign encourages people to go without meat for one day per week. This small change would benefit human health and the health of the planet. Meat production requires a large amount of land, water and energy. Cattle are the largest source of methane gas, which is one of the main contributors to greenhouse gases.
- It is estimated that there are 23 000 edible plants that we do not eat yet. Old foods such as quinoa (pronounced *keen-wah*) could be included in our diets. A crop from South America, quinoa was used over 4000 years ago by the Incas. It has high nutritional value, and grows in a wide variety of climatic conditions. Another advantage of the crop is that all parts of it can be eaten. Peru and Bolivia supply 99 per cent of the world's rapidly expanding quinoa demand. Many countries are investigating its suitability for their locations. The FAO designated 2013 as the International Year of Quinoa.

14.9.2 Can Australia be a food bowl for Asia?

By 2020, it is predicted that half of the world's population will be living in countries in Asia. Four billion people across Asia will experience economic growth of about 10 per cent per year, representing unparalleled opportunities for Australian farmers and the Australian economy. As Asian societies become more affluent, the people are requiring higher standards of living and this includes more and varied foods and a

greater quality of fibre. Australian farmers are reported to have clean and green agricultural systems and this, coupled with our location, should provide an economic advantage for our farmed goods.

'We have the potential for a new golden era of Australian agriculture, given the rise of Asia,' our prime minister said in 2012. The challenge for Australian farmers will be in meeting this booming global need for food and fibre by increasing production at a time when we have less arable land, less water and fewer people working in agriculture.

14.9 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Refer to figure 1. What crops are people eating more of? What crops are they eating less of?
2. Refer to figure 2. What is the ***connection*** between diet and economic development?
3. Refer to figure 3. Describe the ***changes*** in meat consumption by North Americans and Chinese over time.

Explain

4. Why have people's diets ***changed*** over time?
5. Explain the ***interconnection*** between food and your family traditions and celebrations.

Discover

6. How has your family's diet ***changed*** over time? Ask your parents and family to describe foods and cooking methods from when they were young.

Predict

7. Predict what the consumption of meat in China and the United States might be in 2020. What did you base your prediction on?
8. Predict where your foods might come from in 2050. Could aquaponics or vertical farming be a source of your future food?

Think

9. A United Nations report stated that 'As ***changing*** the eating habits of the world's population will be difficult and slow to achieve, a long campaign must be envisioned, along with incentives to meat producers and consumers to ***change*** their production and dietary patterns. Healthy eating is not just important for the individual but for the planet as a whole'. Design a television commercial to promote a Meatless Monday campaign.
10. What might be some of the issues confronting Australia as it attempts to become the 'food bowl of Asia'? What advantages does Australia have in this attempt? How might a farmer react to this suggestion?

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: What are we eating? (int-3331)

14.10 Can urban farms feed people?

14.10.1 What are the advantages of urban farming?

In many industrialised countries, it takes over four times more energy to move food from the farm to the plate than is used in the farming practice itself. Properly managed, urban agriculture can turn urban waste (from humans and animals) and urban wastewater into resources, rather than sources of serious pollution.

In 2000, about 15 to 20 per cent of the world's food supply came from urban gardens; in 2015, over 800 million people practised urban agriculture contributing to more than 20 per cent of all global agricultural production.

Farming is usually associated with rural areas, but a growing trend in food production is urban farming. This involves the growing of plants and raising of animals within and around cities, often on unused spaces — even the rooftops of buildings.

Benefits of urban farming include:

- increasing the amount, variety and freshness of vegetables and meat available to people in cities through sustainable production methods
- improving community spirit through community participation, often including disadvantaged people
- incorporating exercise and a better diet into people's lives, leading to improved physical and mental health
- using urban waste water as a resource for irrigation, rather than making it a source of serious pollution
- spending a smaller percentage of people's income on food.

Urban farming could become more important with rapid urbanisation. By 2020 the developing countries in Africa, Asia and Latin America will be home to 75 per cent of all urban dwellers. They will face the problems of providing enough food and disposing of urban waste.

CASE STUDY 1

Container fish farming

On a smaller scale, a German company has developed a sustainable form of aquaculture that can be used in small spaces in cities. It is called **aquaponics**. Fish swim in large tanks in a recycled shipping container (see figure 1). These structures can be located on rooftops and in car parks. The fish waste fertilises tomatoes, salad leaves and herbs growing in a greenhouse mounted above the tank, and the plants purify the water, which is returned to the tanks.

These sustainably produced fresh vegetables and fish can be delivered to nearby city markets and shops, reducing the distance that the products have to travel. The aquaculture containers can be set up almost anywhere, and farmers only need to feed the fish and to keep the fish-tank water topped up. Electric pumps move the ammonia-rich water into the **hydroponic** vegetable garden in the greenhouse.

FIGURE 1 Urban farming – fish and agriculture

CASE STUDY 2

Kolkata sewage ponds

The East Kolkata wetlands (see figure 2) cover 12 500 hectares and contain sewage farms, vegetable fields, pig farms, rice paddies and over 300 fishponds. With a population of over 14 million, the Indian city of Kolkata produces huge volumes of sewage daily. The wetlands system treats this sewage, and the nutrients contained in the waste water then sustain the fish ponds and agriculture. About one-third of the city's daily fish supplies come from the wetlands, which are the world's largest system for converting waste into consumable products. The wetlands are also a protected **Ramsar site** for migratory birds. However, the area is now under pressure from urban growth and from the subsequent increase in waste that it needs to treat.

FIGURE 2 The Kolkata wetland system

14.10 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What are the main features of urban farming?
2. What functions do the East Kolkata wetlands perform?
3. How do communities benefit from urban farms?

Explain

4. Suggest what the advantages and disadvantages might be of producing food on the rooftop ***spaces*** of city buildings. What factors might influence the types of food that could be produced on rooftops?

Discover

5. Use the internet to research **vertical farming**.
   (a) Draw an annotated diagram to illustrate vertical farming.
   (b) Research an urban farming project in a city. Present it as a PowerPoint presentation.

Predict

6. (a) Predict the ***places*** in the world likely to have vertical farms.
   (b) Explain why you selected these ***places***.
7. (a) Could urban farms encourage agricultural tourism?
   (b) In future, would you consider visiting an urban farm while on holiday?
   (c) Examples of urban farms as agritourism already exist. Can you name any such ***places***?

Think

8. Write a letter to the minister for planning, suggesting that urban farming ***spaces*** should be included in every new urban development.
9. Design a new housing estate with a community garden. What would be needed in order to set up a community garden?
10. When investigating urban farms and people's gardening activities in Denver, United States, researchers found that:
    - people's community pride improved
    - graffiti and vandalism decreased
    - gardeners felt a greater ***connection*** with their local ***place***.

    Are these worthwhile results from urban farming? Explain.

14.11 Review

online only

14.11.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

14.11.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

14.5 SkillBuilder: Constructing a box scattergram

14.5.1 Tell me

What is a box scattergram?

A box scattergram is a table with columns and rows which displays the relationship between two sets of data that have been mapped. The distribution becomes clear, although in a generalised way, as there are usually only four to five categories of data.

Why is a box scattergram useful?

Box scattergrams are a useful way of summarising data from maps. You are able to put the data into categories in a table (a series of boxes) and then, when analysing the information, you can discuss the different categories. Using box scattergrams is a technique that allows you to think carefully about features and see the relationships between data. You will find these useful when drawing together data that may initially seem quite complex.

Box scattergrams are useful for:

- summarising data shown on maps
- presenting data during an oral presentation
- planners conveying complex ideas and social differentiation between countries
- economists showing the interconnection between features.

Model

TABLE 1 A box scattergram showing the relationship between undernourishment and aid received per person

Hunger level (% undernourished)	Aid received per person (US$)			
	No data	Less than 20	20–99	Over 100
35 +				• Congo • Mozambique
25–34			• Chad • Angola	
15–24				
5–14		• Nigeria	• Niger	
Less than 5		• South Africa • Algeria • Libya		
No data				• Mauritania

A good box scattergram:

- is drawn as a table
- has appropriately labelled axes
- accurately displays two sets of mapped data
- includes a clear title.

14.5.2 Show me

How to construct a box scattergram

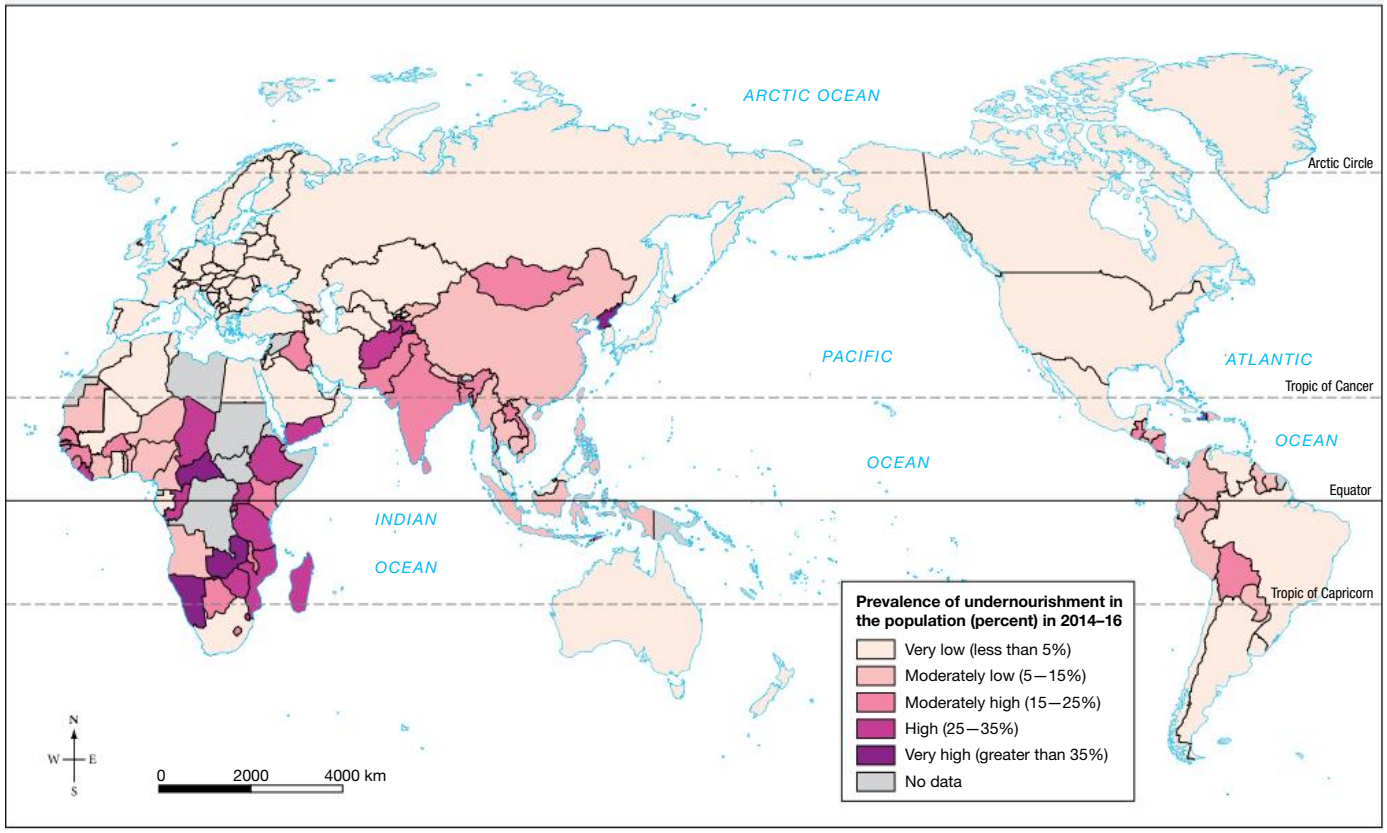
You will need:

- two maps
- a ruler
- an atlas.

Procedure:

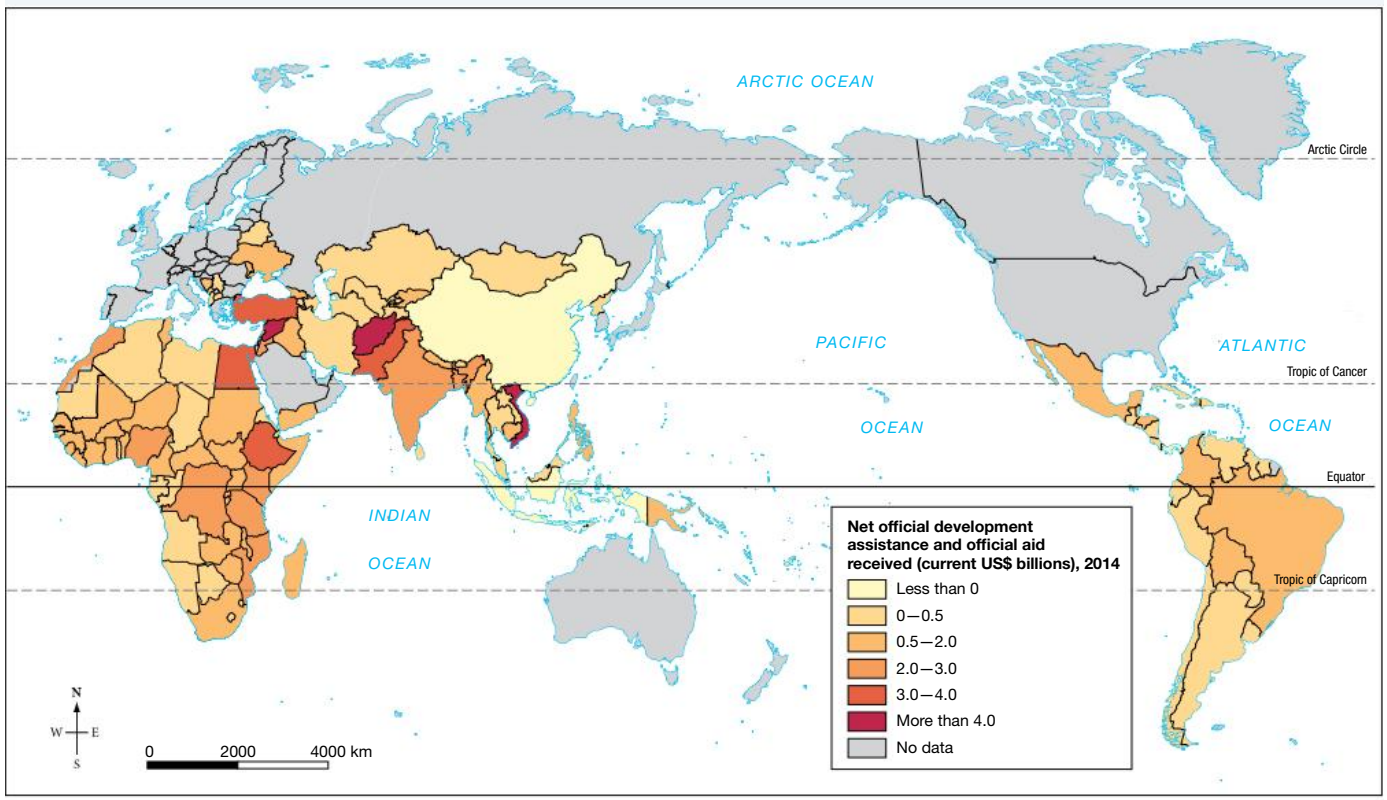
You will need the two maps of data shown in figures 1 and 2.

FIGURE 1 World hunger map, 2015



Source: World Food Programme, 'Hunger Map 2015'

FIGURE 2 Net official development assistance and official aid received (current US$)



Source: World Bank

STEP 1

Construct a table or series of boxes with enough spaces for all the titles, columns and rows and all the categories of the data shown in the legends of both maps. Figure 1 has six categories and figure 2 has seven categories.

STEP 2

In the left-hand column, enter the title and units of measurement from figure 1. Table 2 shows this step. Place the lowest numbered category at the base of the column.

TABLE 2 A box scattergram layout

Hunger level (% undernourished)	Aid received (US$ billions)						
	No data	Less than 0	0–0.5	0.5–2.0	2.0–3.0	3.0–4.0	More than 4.0
35 +							
25–34							
15–24							
5–14							
Less than 5							
No data							

STEP 3

In the base row, enter the title and units of measurement from figure 2. Place the lowest numbered category on the left-hand side. This step is shown in table 2.

STEP 4

To plot the data, find the two categories for a place on the map and put the country name in the appropriate square of the table. Continue this with as many countries as necessary. The box scattergram in table 3 shows ten African countries.

TABLE 3 Ten selected African countries, showing the relationship between undernourishment and international aid received per person

Hunger level (% undernourished)	Aid received (US$ billions)						
	No data	Less than 0	0–0.5	0.5–2.0	2.0–3.0	3.0–4.0	More than 4.0
35 +			Namibia	Zambia			
25–34			Chad		Tanzania	Ethiopia	
15–24			Botswana				
5–14							
Less than 5			Algeria	South Africa		Egypt	
No data					The Democratic Republic of Congo		

STEP 5

Complete the box scattergram with a suitable title. The title for table 1 would be: Relationship between undernourishment and aid received per person.

14.5.3 Let me do it

Developing my skills

Using the data in figure 1, complete a box scattergram showing the distribution of hunger in Asia and the amount of US aid sent to Asia.

Questions

1. Which Asian countries have a hunger level of over 15 per cent but receive less than US$100 million in US aid?
2. Which countries receive less than US$10 million in US aid and suffer from hunger within their borders?
3. Why might some countries receive high levels of US aid even though hunger is not a key problem there? Identify the countries that fit this category.
4. Some Asian countries have no difficulty in feeding their population and receive no US aid. Name these countries and suggest why no aid is provided.
5. Describe the pattern of hunger across Asia. Does the US aid pattern correlate with this pattern?

Checklist

I have:

- drawn a table
- labelled each axis appropriately
- shown two sets of mapped data accurately.

Skills questions

1. Box scattergrams are used to show:
   (a) detailed information about a place
   (b) unique information about a place
   (c) generalised information about a place
   (d) anomalies about a place.
2. A box scattergram always includes mapped information about:
   (a) two features
   (b) three features
   (c) four features
   (d) five features.
3. Why do you have to take great care when entering data in a box scattergram?
4. What is the value of a box scattergram to your learning?

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Watch this eLesson: Constructing a box scattergram (eles-1734)

Try out this interactivity: Constructing a box scattergram (int-3352)

14.8 SkillBuilder: Constructing and describing proportional circles on maps

14.8.1 Tell me

What are proportional circle maps?

Proportional circle maps are maps that incorporate circles, drawn to scale, to represent data for particular places.

Why are proportional circles useful?

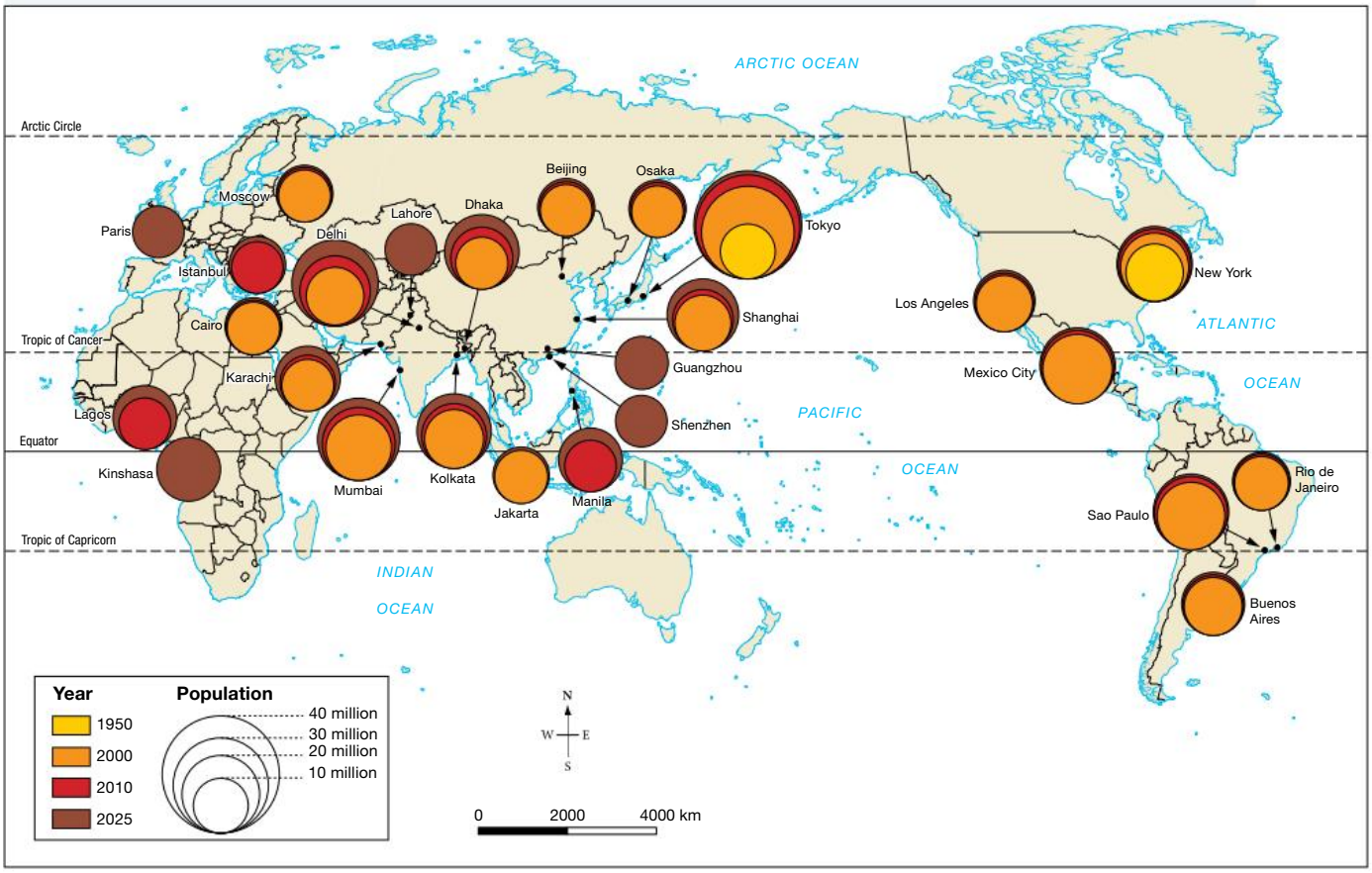
Proportional circles are useful as an immediate visual pattern, especially when the figures being handled are large. Different-sized circles on a map reflect different values or amounts of something. Proportional circles provide an easy way to interpret patterns, give an instant impression and allow us to compare data for different places. In class, you might use these to show population size, agricultural production of a specific crop, or endangered species.

Proportional circles are useful for:

- geography students wanting to gain a quick impression of varying amounts over space
- geography students showing relationships on a map
- economists showing the level of production across a region
- tourism authorities showing the numbers of tourists
- emergency management organisations showing the quantities of water moving through a catchment.

Model

FIGURE 1 Growth of megacities over time, 1950–2025 (projected)



Source: Spatial Vision

The growth of megacities has been most noticeable across Asia, with 11 of the 18 megacities identified in 2000 located in that region. The only megacities in 1950 were Tokyo and New York, and by 2025 Tokyo is predicted to be the largest megacity. By 2025 Asia will have 14 megacities, with Lahore, Guangzhou and Shenzhen reaching megacity status between 2010 and 2025. In 2010, North America and South America each had three megacities, Africa had two and western Europe one. By 2025, Africa will have three megacities. Australia/Oceania had no cities of this size in 2000, and is not predicted to have any by 2025.

A good proportional circle map:

- is drawn in pencil with a mathematical compass
- has circles that are accurately drawn according to the scale provided in the legend
- includes a key/legend to show the proportions of the circles
- has a title.

A description of a proportional circle map:

- effectively communicates differences in values over space
- identifies places
- uses directions.

14.8.2 Show me

How to draw and describe proportional circles

You will need:

- a base map
- a set of data
- a calculator
- a light-grey pencil
- a mathematical compass for drawing circles
- an atlas
- coloured pencils.

Procedure:

To complete a proportional circle map, you need a set of data and a base map onto which to draw the circles.

Constructing a proportional circle map

STEP 1

Study the data and decide how many categories or circle sizes you need in order to include the highest and the lowest values to be represented by the circles. You should have no more than five categories. The key in figure 1 has only four categories: 10, 20, 30 and 40 million. Notice, however, that there are more sizes shown on the map itself. We have to estimate what number, or value, those other sizes represent. For example, Tokyo's population in 2015 is about 35 million. Step 3 shows how sizes are calculated.

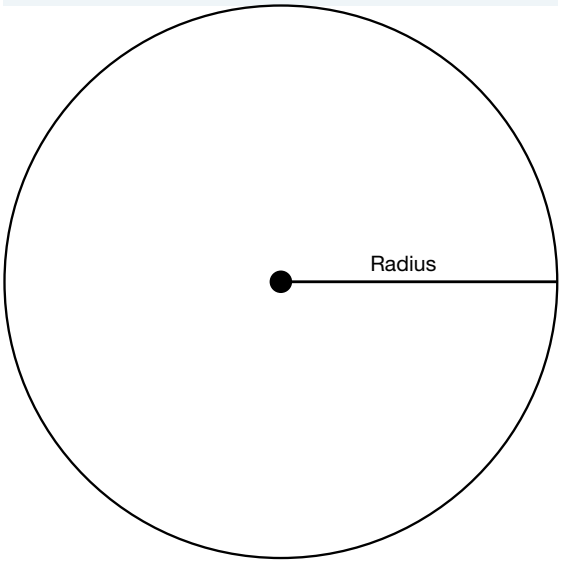
STEP 2

Determine the size of the circles that you wish to use. Don't make these too ridiculous for the map base you are given. They should not be too large and not too small.

STEP 3

Take a table of data and rank the values from highest to lowest. For example, in 2000 the largest megacity, Tokyo, had 26.4 million people. Manila had the lowest population with 10.9 million people. Work out the square root ($\sqrt{}$) of each value, leaving off the millions. For Tokyo the square root of 26.4 is 5.1 and for Manila the square root of 10.9 is 3.3. These numbers then give you the measurement of the radius of your proportional circles.

FIGURE 2 The radius of a circle



STEP 4

Construct a scaled group of circles as seen in the legend for figure 1. To do this, allow one millimetre to represent one unit. If you were drawing Tokyo's population for figure 1, you would draw your largest circle with a radius of six millimetres to ensure that the largest megacity, Tokyo, could be plotted with a radius of 5.1 (see step 3). Use the mathematical compass and the ruler, and set the compass to six millimetres. On your map base, draw a circle with a six-millimetre radius. Your smallest circle would need a radius of three millimetres to include Manila (see step 3). All other data in the table will fit somewhere between these two sizes.

STEP 5

Map all the megacities on the base map according to these scaled proportional circles. Take care with the use of the mathematical compass to ensure that your circles are accurate and neat. Using an atlas, place circles as close as possible to the location they represent. You may use an arrow if there are too many circles near each other.

STEP 6

You will need to adjust the measurements for the circles according to the data set for each type of map you plot.

STEP 7

Complete the map with the geographical conventions of BOLTSS.

Describing a proportional circle map

STEP 8

To interpret your mapped data, you need to look for patterns. Where are the largest circles? Where are the smallest circles? Are there any groupings of circles? Are there any patterns that can be identified, such as radial, linear, clustered or sporadic?

14.8.3 Let me do it

Developing my skills

Using the data on Fairtrade purchases in table 1, complete a proportional circles map to show the level of Fairtrade purchases across the world in 2010. Describe the distribution pattern revealed by your map.

Questions

1. Which continent has the greatest number of Fairtrade workers?
2. Which continent/s do not have Fairtrade workers?

3. Describe the pattern of Fairtrade worker numbers across the world.
4. Explain why Fairtrade workers are only found in developing countries.
5. Are there any countries in this list that surprise you with the number of Fairtrade workers? Explain your answer.

TABLE 1 Top ten countries for Fairtrade farmers and workers, 2015

Country	2015 (€)
Kenya	295 400
Tanzania	164 100
India	139 400
Ethiopia	138 000
Ghana	104 400
Peru	61 300
Colombia	49 100
Uganda	47 600
Mexico	40 300
Cote d'Ivoire	34 300

Source: http://fairtrade.se/wp-content/uploads/2012/09/150211-Fairtrade-By-The-Numbers-2015-final.pdf

Checklist

In drawing a map of proportional circles I have:

- drawn in pencil using a mathematical compass
- drawn circles that are accurate according to the scale provided in the legend
- included a key/legend to show the proportions of the circles
- included a title.

In describing a map of proportional circles, I have:

- effectively communicated differences in values or amounts of something over space
- identified places
- used directions.

Skills questions

1. Proportional circles are used to show:
   (a) a value
   (b) the location of a ***place***
   (c) the ***scaled*** amounts of a value
   (d) ***places*** and times.
2. A proportional circle map always includes:
   (a) actual total values
   (b) standards of living
   (c) patterns represented through ***scaled*** visuals
   (d) a global base map.
3. What is the purpose of calculating the square root of the numbers when planning the size of your proportional circles?
4. Why might it be important to have good skills with a mathematical compass?

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Watch this eLesson: Constructing and describing proportional circles on maps (eles-1735)

Try out this interactivity: Constructing and describing proportional circles on maps (int-3353)

14.11 Review

14.11.1 Review

1. Use the **World Hunger Map 2015** weblink in the Resources tab to answer the following questions.
   (a) How much does it cost to provide enough nutrition to feed a child each day?
   (b) It has been estimated that the cost of hunger to developing nations is US$450 million a year. List some of the effects of hunger on people.
   (c) Into which category of hunger do these countries fit: Australia, Indonesia, Cambodia, Ethiopia, Brazil and France?
2. Name four problems that the world faces when it comes to producing enough food to feed everyone sustainably by 2050.
3. Construct a graphic showing eight cartoon-style people from around the world. Each person will have a speech bubble. In the speech bubbles, place a positive statement to show that it will be possible to feed the world in 2050.

Potato yield

Potatoes are the world's most important non-grain food crop, and they are essential to global food security. China and India are currently the world's largest and third largest producers of potatoes respectively. Together, they account for almost a third of the world's total production. However, crop yield in China and India is relatively low compared to the United States and Europe. In 2008, potato crop yields in the United States were 44 tonnes per hectare — almost three times higher than in China, which had 15 tonnes per hectare. The lower crop yields in China and India are owing to the low quality of their seed potatoes. Less than 20 per cent of China's potato acreage is covered by virus-free seed potatoes. As a result, there is enormous potential for increasing potato crop yields in Asia through genetic improvement.

4. (a) Describe the yield gap between developed and developing countries.
   (b) What would act as incentives for China and India to ***change*** their crop yield?
5. Use the **Story of agriculture and the green economy** weblink in the Resources tab to answer the following questions.
   (a) List five things that you learned from this clip and share them in groups.
   (b) Identify three suggested ways in which farmers can ***change*** their farming.
6. Consider requesting ***changes*** in your school canteen, such as buying Fairtrade chocolate, coffee or tea. Outline reasons you would give to support your request.
7. Use the **World Food Program** weblink in the Resources tab to answer the following questions.
   (a) Prepare a case study on one of the ***places*** in which the World Food Program (WFP) is currently working. Check the *Hotspots* section on the website.
   (b) Outline the actions that the WFP is taking at this ***place***.
   (c) Outline why these actions are necessary.
8. Research the population characteristics of one ***place*** where Australia has school feeding programs. Consider life expectancy, literacy levels and death rates, or some other indicators you think are important.
9. Write a letter to your local member of parliament, outlining your views on Australia's aid programs.

Sacred Heart Mission

The Sacred Heart Mission is located in St Kilda, Melbourne. It is an example of a local-scale organisation seeking to decrease homelessness and the food shortage associated with it. Sacred Heart Mission aims to ensure that homeless and disadvantaged people have access to life's necessities, including housing, food and health care, and that they can connect with their community. As part of the Mission's service to the homeless, it provides breakfast and lunch free of charge, 365 days a year. A professional kitchen staff of seven and a team of 15 volunteers prepare food each day. The program relies on food donations that come from a wide range of businesses across Melbourne.

10. (a) What might happen to some of the 53 000 people living independently in Australia if Meals on Wheels could not deliver meals to them?
    (b) What types of consequences might this have?
    (c) The hungry are not all located in the world's poorer countries. In your area, undertake an investigation into a charitable organisation, like the Sacred Heart Mission, which helps people to meet their food needs.

The future of food

11. Section 14.3.2 discusses one possible way of improving ***sustainable*** food supplies: building a greenhouse that uses salt water.
    (a) What resources are needed to establish this type of agriculture?
    (b) Undertake research and describe the following characteristics of Port Augusta: location, climate, population and economic activities.
    (c) Why would this be an important ***change*** in a ***place*** such as Port Augusta?
    (d) Predict what the impact might be on people and ***places*** if the greenhouse method of farming were to become more readily available.
    (e) Which water-stressed ***places*** of Australia might be able to ***sustainably*** use this type of production?
12. Explain how an individual's choice of diet can influence their own health and the health of the planet.
13. Some countries, such as China, Saudi Arabia and South Korea, which cannot produce enough food for their needs, are buying agricultural land in other countries. Investigate examples of this and outline the advantages and disadvantages of this scheme for the countries involved.
14. Study figure 1 and then answer the questions that follow.

FIGURE 1 The importance of urban farming

Dakar produces more than 60 per cent of the nation's poultry, milk and vegetables.

Source: © Photo taken by Jerry Miner, GlobalHort

Source: Spatial Vision

New York's urban gardens provide space, community areas and food.

Source: © Citizen of the Planet/Alamy Stock Photo

South Africa's urban gardens are educational and cultural places.

Source: © Photo by www.abalimi.org.za

Hanoi's gardens produce over 80 per cent of the city's vegetables and 50 per cent of its pork and poultry.

Source: © Photo by Tuoi Tre

(a) What are examples of urban farming in your locality?
(b) Which city has established tourism based on urban farming?
(c) How can urban gardens be places of education?
(d) Explain why more ***space*** in cities may need to be set aside — either vertically or horizontally — for urban farming in future.
(e) Research and create an annotated map of urban farming in different ***places***.

15. Design and annotate your own vertical urban farm concept for 2050.
16. Construct a concept map, using an appropriate computer program, and include the main ideas from this topic. Include any research and fieldwork data as well.

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Explore more with these weblinks: World Hunger Map 2015, Story of agriculture and the green economy, World Food Program

14.11.2 Reflect

17. There are many controversial issues involved with food supply. What are your opinions on the following issues of interconnection?
    (a) Live animal exports to overseas countries
    (b) Australia selling farmland to overseas countries
18. Investigate a place in Australia that depends on irrigation to produce food, such as the Murray–Darling Basin or the Ord River region of Western Australia.
    (a) What crops are produced there using the irrigation water?
    (b) List the positive and negative consequences of this use of irrigation.
    (c) Is this type of farming environmentally sustainable in Australia?
19. Discuss the issues that may arise as the consequences of a country deciding to slash its overseas food aid program by half.
20. *A Western diet is going to be unsustainable in the future.*
    Provide an argument supporting this statement and a counter argument for the statement.

TOPIC 15 Geographical inquiry: Biomes and food security

15.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

15.1.1 Scenario and your task

Everyone in the world depends completely on the Earth's biomes for the services they provide — from our food and water supply to the regulation of our climate. Over the past 50 years, people have had a more rapid and more extensive impact on these biomes than during any other time in human history. Our demand for food, water, fibres, timber and fuel has driven these changes. The results have contributed to improvements in human wellbeing and economic development, but there has also been detrimental change to many of our major food-producing biomes.

Your task

Your team has been selected to create a website that not only grabs people's attention but also informs them of the importance of one particular biome as a producer of food, and the current threats to food production. Looking into the future, you will also suggest more sustainable ways of managing this biome.

15.2 Process

- Watch the introductory video lesson. You can complete this project individually or invite members of your class to form a group.

15.2.1 Process

You will need to research the characteristics of a biome and address the following four key inquiry questions:

- What is the biome and what are its characteristics and distribution across the world's spaces?
- How can we sustainably feed future populations using this biome?
- In what ways has food production changed this biome? Include examples and/or case studies.
- What are the main types of food production in this biome? How are foods produced?

Each group should decide how to divide the workload so that each of the four inquiry questions is studied.

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Watch this eLesson: Biomes and food security (pro-0148)

15.2.2 Collecting and recording your information and data

- Once you have chosen your biome and divided the key questions among the team, it is time to start researching information. For your own key question, break it down into several minor questions that can become subheadings to form the structure of your research. As a group, check each person's research structure to ensure that it follows the inquiry sequence.

When researching, look for maps, graphs and images that support your key question or that of another team member. You should also look for data or statistics that you can show visually in the form of maps, diagrams or graphics.

15.2.3 Analysing your information and data

- Once you have researched and collected relevant information, you need to review it, ensure that you understand the material and then use it to answer your key questions. From maps and graphs, describe any patterns or trends that you identify. If using photographs, write clear annotations for each one, highlighting particular features.
- Access the website model and website-planning template from the Resources tab to help you build your website as well as images and audio files to help bring your site to life.
- Use the website-planning template to create design specifications for your site. You should have a home page and at least three link pages per topic. You might want to insert features such as 'Amazing facts' and 'Did you know?' into your interactive website. Remember the three-click rule in web design — you should be able to get anywhere in a website (including back to the homepage) with a maximum of three clicks.

15.2.4 Communicating your findings

- You will need to access FrontPage, Dreamweaver, iWeb or other website building software to build your website. Remember that less is more with website design. Your mission is to engage and inform people about a topic they may never have thought about. You want people to take the time to read your entire website.

15.3 Review

15.3.1 Reflecting on your work

- Think back over how well you worked with your partner or group on the various tasks for this inquiry. Reflect on your contribution to the team by completing the Reflection template in the Resources tab. Determine strengths and weaknesses and recommend changes you would make if you were to repeat the exercise. Identify one area where you were pleased with your performance, and an area where you would like to improve. Write two sentences outlining how you might be able to do this.
- Print out your Research Report from the Resources tab and hand it in with your website and reflection notes.

UNIT 4
GEOGRAPHIES OF INTERCONNECTIONS

16 How do we connect with places? 319

17 Tourists on the move 341

18 Buy, swap, sell and give 366

TOPIC 16 How do we connect with places?

16.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

16.1.1 Introduction

Geography is the study of people and their connections with places. The way we interact with places is dynamic: we change places and places change us. In a world of over seven billion people, we have many different perceptions of what a place is like, how it is used and how it could be improved. More people are on the move, too. Their journeys may be on foot or by plane as they visit and interact with new places. With rapid developments in ICT, some of those places may be imagined. What do our connections look like today, and how will they change tomorrow?

An Elder explains the meaning of an indigenous rock art cave painting in Cooktown.

Starter questions

1. How do we as individuals see or perceive ***places***?
2. How do our perceptions differ from those of our friends, our neighbours or people on the other side of the world?
3. How do distance and time play a role in our perception of ***places***?
4. Do we make assumptions about ***places*** and what they are like?
5. How do ***places change*** us?
6. Is ICT ***changing*** the way we look at ***places***?

INQUIRY SEQUENCE

16.1	Overview		319
16.2	How do we 'see' places?		320
16.3	**SkillBuilder:** Interpreting topological maps	online only	322
16.4	How do we move around our spaces?	online only	323
16.5	What does our land mean to us?		323
16.6	How do places change?		326
16.7	How do we access places?		328
16.8	To walk or not to walk		333
16.9	**SkillBuilder:** Constructing and describing isoline maps	online only	337
16.10	Are we all on an equal footing?		337
16.11	How do we connect with the world?	online only	340
16.12	**Review**	online only	340

16.2 How do we 'see' places?

16.2.1 Perceptions of places

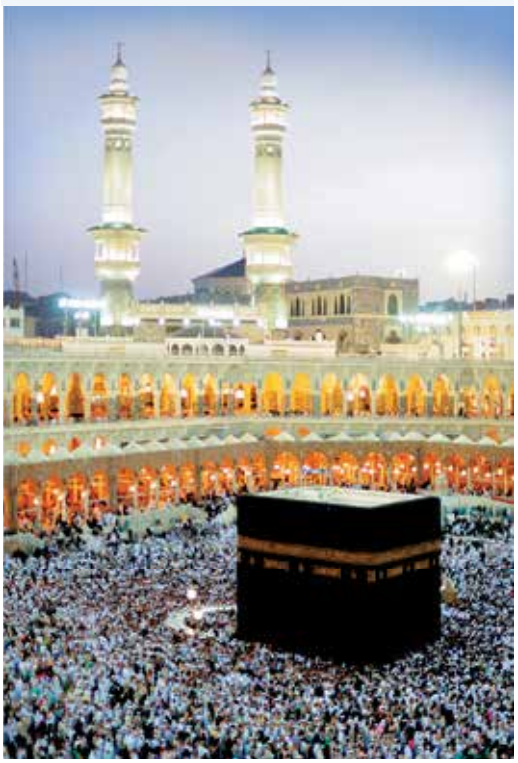
People's **perceptions** of places are rarely the same. A person's view of a particular place or region is coloured by their own culture, experiences and values. The characteristics and significance of a place will be viewed differently by each individual, and our mental maps of the world can change daily as we have new experiences and gain new knowledge.

The biggest influences on the way we perceive places are age, gender, class, language, **ethnicity**, race, religion and values. How important a place is to us may be determined by whether we feel that place belongs to us or not, whether it is part of our tradition or history, or whether the place is totally unfamiliar.

A place can seem exciting, scary, interesting or boring depending on our experience, expectations or mood on a particular day. Our perceptions of places may also change over time according to climatic changes, conflict or economic shifts.

It is important to understand the factors that influence our perceptions of places and regions, as well as the impact that other groups and cultures have on our perceptions. If we can understand those influences, we may be able to avoid the dangers of **stereotypes** and appreciate the diversity that exists around us.

FIGURE 1 The Kaaba in Mecca — sacred, interesting or crowded?



16.2.2 How do we map places?

We all form an impression of our physical surroundings — even of places we have never actually been to. These are what geographers call our mental maps.

Mental maps tell us how we order the space around us. There is no such thing as an accurate mental map, but people's mental maps of their immediate environment tend to be more realistic than those of places they have never visited. Think about some of the ways you use mental maps in your daily life. You may direct someone from point A to point B, telling them about landmarks they will see along the way. You may think about the quickest way to get to the city from a friend's house, imagining your route in your mind.

Our mental maps can help document our influences. Those who walk a lot may be more connected with their neighbourhood and surrounding environment, whereas those who drive will have a very different perspective in their mental map. In the 'Streets Ahead' study by VicHealth, children who walked to school drew pictures that included street names and friends' houses, and they were able to describe people and places in detail (see figure 2a). Children who were driven to school tended to separate items from their environment, displaying them in distinct windows (see figure 2b).

Mental maps of places we are unfamiliar with are heavily influenced by the media and stereotypical discussions. Travel helps to counteract the effects of the media and generally increases a person's knowledge of an area, providing them with a better understanding of what a place is really like.

FIGURE 2 (a) Drawing by a child who walks to school (b) Drawing by a child who is driven to school

(a)

(b)

16.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. List the factors that may influence our perception of ***place***.

Explain

2. From your list in question 1, which factor do you think is most influential? Why?
3. Why do you think the two children's maps shown in figure 2 are so different? What does it say about their ***interconnection*** with their ***environment***?

Discover

4. With your class, make a list of the ***places*** or landmarks in your community that you use on a regular basis. Each student should rate the importance of each on a ***scale*** of 1 to 3, with 3 being most important. Collate the data to find out which ***places*** are most and least important to your class. Are the results as you expected? Do they match your own perceptions of how important ***places*** are, or do you have a different view from your classmates? Explain why there might be similarities or differences.
5. Create a mental map of your journey to school on a blank sheet of A3 or A4 paper. Include as many annotations as you can, such as street names, landmarks, shop names and so on. Once you have finished, compare and contrast the ***scale***, size and accuracy of your mental map with a street directory or an ICT mapping tool. Write a paragraph that details some of the differences between your perception and reality.

Think

6. How would the ***place*** in figure 1 be viewed by different groups? What kind of experiences or influences may affect their view? Try to provide at least three perceptions for the image.
7. The writer Henry Miller once said, 'One's destination is never a ***place***, but a new way of seeing things'. What does this quote mean to you, in light of your knowledge of various ***places***, your own travels, and what you have learned about perception?

learnon RESOURCES — ONLINE ONLY

Try out this interactivity: People's perception of places (int-3332)

16.3 SkillBuilder: Interpreting topological maps

online only

WHAT IS A TOPOLOGICAL MAP?

Topological maps are very simple maps, with only the most vital information included. These maps generally use pictures to identify places, are not drawn to scale and give no sense of distance. However, everything is correct in its interconnection to other points.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 A tourist map of Paris and its monuments

learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Interpreting topological maps (eles-1736)

Try out this interactivity: Interpreting topological maps (int-3354)

16.4 How do we move around our spaces?

Access this subtopic at **www.jacplus.com.au**

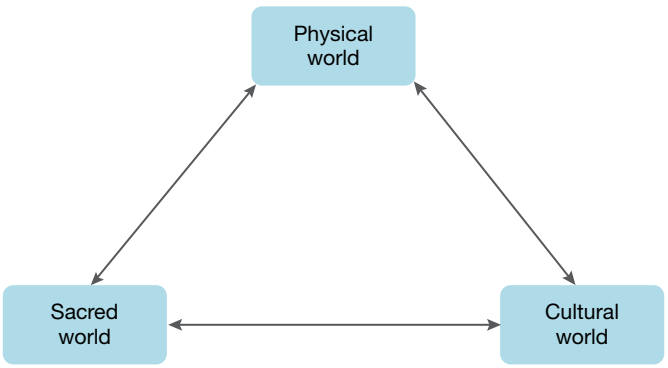
online only

16.5 What does our land mean to us?

16.5.1 Why is land so important?

Land means many things to different people. A farmer sees land as a means of production and a source of income. A conservationist sees land as a priceless natural resource that must be protected. A property developer sees land as an area that can be divided, built upon and sold for a profit. To Indigenous Australian peoples, land is something much, much more — it is a part of their being.

FIGURE 1 A simplified view of the Indigenous Australian peoples relationship with the land



Indigenous Australian peoples have been in Australia since the beginning of the Dreaming (more than 50 000 years by European estimates), adapting to survive and thrive in a changing environment. For Indigenous Australian peoples, the land is at the core of their wellbeing — their relationship with the land is one of interconnectedness across the physical, spiritual and cultural worlds (see figure 1).

16.5.2 How do Indigenous Australian peoples perceive the land?

For Indigenous Australian peoples, land is much more than the soil, rocks, hills and trees. The land is where they come from, and to where they will return. The land, or country, represents a whole environment that sustains Indigenous Australian peoples and their culture and way of life. Indigenous Australian peoples are diverse, made up of over 500 different groups, each with its own separate language (or dialect), laws, beliefs and customs. Language groups are made up of a number of communities, with each community belonging to a territory or traditional land. These places include features of the natural environment such as waterholes and hills, as well as distinct geographical boundaries such as rivers or mountain ranges. Natural features are often represented in Indigenous art (see figure 2).

It is the responsibility of each community to look after their country as it looked after them. The environment holds rich meaning for Indigenous Australian peoples, whose Dreaming Stories (for Aboriginal peoples) and Legends (for Torres Strait Islander peoples) are present throughout the landscape, along with many sacred places for special ceremonies — men's and women's sacred sites (see figure 3) — and resting places for ancestors that must be protected and conserved.

Each community has a **totem** that was a sign of its people's spiritual link to the land. A totem could be an animal, plant or geographical feature such as a weather pattern or rock formation. It is from this totem or land feature that an individual draws their spirituality, and they would feel a special responsibility to protect it. Special ceremonies are performed at these sacred places to show respect for, replenish and celebrate each totem.

16.5.3 Does the land belong to us or do we belong to the land?

Indigenous Australian peoples view themselves as custodians rather than owners of land, for the land will exist long after they have left this world. To them, land cannot be bought or sold. The concept of property or land ownership that arrived with the Europeans contrasted greatly with the indigenous view of place.

FIGURE 2 A traditional Aboriginal dot painting depicting land at Kiwirrkura, 400 kilometres west of Alice Springs

Water, rainbow, snake, lightning, string, cliff or honey store

Waterholes connected by running water

Camp site, stone, waterhole, rock hole, breast, fire, hole or fruit

Source: © Donkeyman Lee Tjupurrula Kukatja (c.1921)–1994

Tingari Dreaming at Walawala (1989)
Synthetic polymer paint on canvas, 119.7 × 179.3 cm
Purchased from Admission Funds, 1989
National Gallery of Victoria, Melbourne
© Donkeyman Lee Tjupurrula/Licensed by VISCOPY 2013

When the European colonies were established, many Indigenous Australian peoples were dispossessed of their land and cultural practices were forcibly disrupted. In many cases, indigenous communities were pushed onto **marginal lands** that were often not their own, not only creating conflict but severing their connection with the land from which they drew their sense of identity. However, even today among groups largely displaced from their traditional estates, that strong link to country is maintained through stories and a sense of place and spiritual connection.

16.5.4 How do you view this land?

To illustrate this difference in viewpoint, figure 3 shows James Price Point on Western Australia's Kimberley coast. The following are three very different views of the same area of land.

- Unremarkable beach — *Colin Barnett, Premier, Western Australia*
- Major heritage site — *WA Department of Aboriginal Sites* ('Major' is the Department's highest category.)
- Secret Aboriginal men's business site — *Goolarabooloo Aboriginal people*

When different people have vastly different views about a place, it can make the management of that land challenging.

FIGURE 3 James Price Point, Western Australia

16.5.5 How did Indigenous Australian peoples move across the land?

Much like the international system of passports and visas to enter other countries, a similar process exists for Indigenous nations. Entry to another nation's or community's lands is by ceremony and negotiation, a practice still commonplace today, recognising the important relationship that Indigenous Australian peoples have with their country. The tradition of a 'Welcome to Country' for visitors issues a shared commitment to protect and preserve the land being visited. After being welcomed, those who walk on another's lands are expected to respect the traditional owners' rules and protocols.

16.5.6 What places do Indigenous Australian peoples connect with today?

In the twenty-first century, 78.6 per cent of Aboriginal and Torres Strait Islander peoples are interconnected with Australia's urban environments; only 21.4 per cent live in remote or very remote areas. Many of those living in urban environments know the stories passed through generations, but not all have visited their traditional lands. AFL footballer and Australian of the Year 2014, Adam Goodes took time out from his career to return to his homeland, to find out more about himself and his people, and to help identify characteristics that made him different.

16.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. How do Indigenous Australian peoples perceive the land?

Explain

2. What does land mean to you? Think about where you live or where you come from to help describe the ***interconnection*** you have with the land.
3. Brainstorm with other members of your class and construct a list of other examples of different cultural viewpoints to the same object, custom or ***place***. Consider such things as music, religious customs and foods.

Discover

4. Refer to figure 3 and conduct internet research to find out more about James Price Point. Answer the following questions.
   (a) What is involved in the conflict over James Price Point?
   (b) Create a mind map that shows the various groups involved in the dispute. Beneath each group name, list their interests in the site.

(c) Consider the viewpoints about James Price Point quoted in this section. How have these individuals or groups perceived the land in this ***place***?
(d) The project at James Price Point has recently been cancelled. From your internet research, why do you think this happened? Share your findings with your classmates. Do they agree?

5. Who are the traditional owners of the land on which you live? Have you witnessed a 'Welcome to Country' ceremony? Who performed the ceremony, and what was involved? (It may have included a speech, traditional dance or smoking ceremony.)

Think

6. Given the strong ***interconnection*** to land, you may think that Indigenous Australian peoples are opposed to land development. Although custodial responsibilities and care of the land are of utmost importance, many land owners strongly support economic development. As a class or in small groups, debate the arguments in favour of and against development of traditional lands.

16.6 How do places change?

16.6.1 A chequered history

Places can change very slowly over time and space, or undergo rapid transformations. Melbourne's laneways are an excellent example of how a place once perceived as unsanitary and unsafe is now a thriving and popular part of a metropolis.

During the gold rushes of the 1850s, Melbourne's laneways were well used by people from all walks of life. Then, at the turn of the twentieth century, they began to take a turn for the worse. Criss-crossing the city, their main function was as a place for rubbish disposal. They were dark and dingy, and riddled with disease, crime, gambling houses and brothels. After two World Wars, they became home to many immigrants who had nowhere else to live. The city had lost its shine.

Then, in the late twentieth century, something changed. Perhaps influenced by the potential for regeneration that they had seen in European cities on their travels, people began to see the potential of Melbourne's neglected laneways. Small businesses such as art and craft galleries, fashion boutiques and music shops opened. Business owners leased cheap properties in the laneways, away from the main streets with their high rents. Public spaces were regenerated, adding to the city's landscape. Music and entertainment became a reason to go into the city at night.

People are living in the city again, and the CBD is now perceived as a desirable address — its resident population is now approximately 30 000 compared with only 700 in the 1980s. The laneways have helped lead that revival.

The laneways today

Better lighting, more cleaning and an increased number of people have all contributed to a change in the perception of Melbourne's laneways. **Street art** tours abound, and many laneway bars, cafés and restaurants are desirable places to see and be seen in. There are laneway festivals, parties and even a 'Love your Laneway' project run by the City of Melbourne. The laneways are one of Melbourne's biggest tourist drawcards, and are particularly famous for the vibrant and colourful street art that adorns their walls. Rather than simple **graffiti** or tagging, these are inspiring artworks from some of Australia's (and occasionally the world's) best street artists.

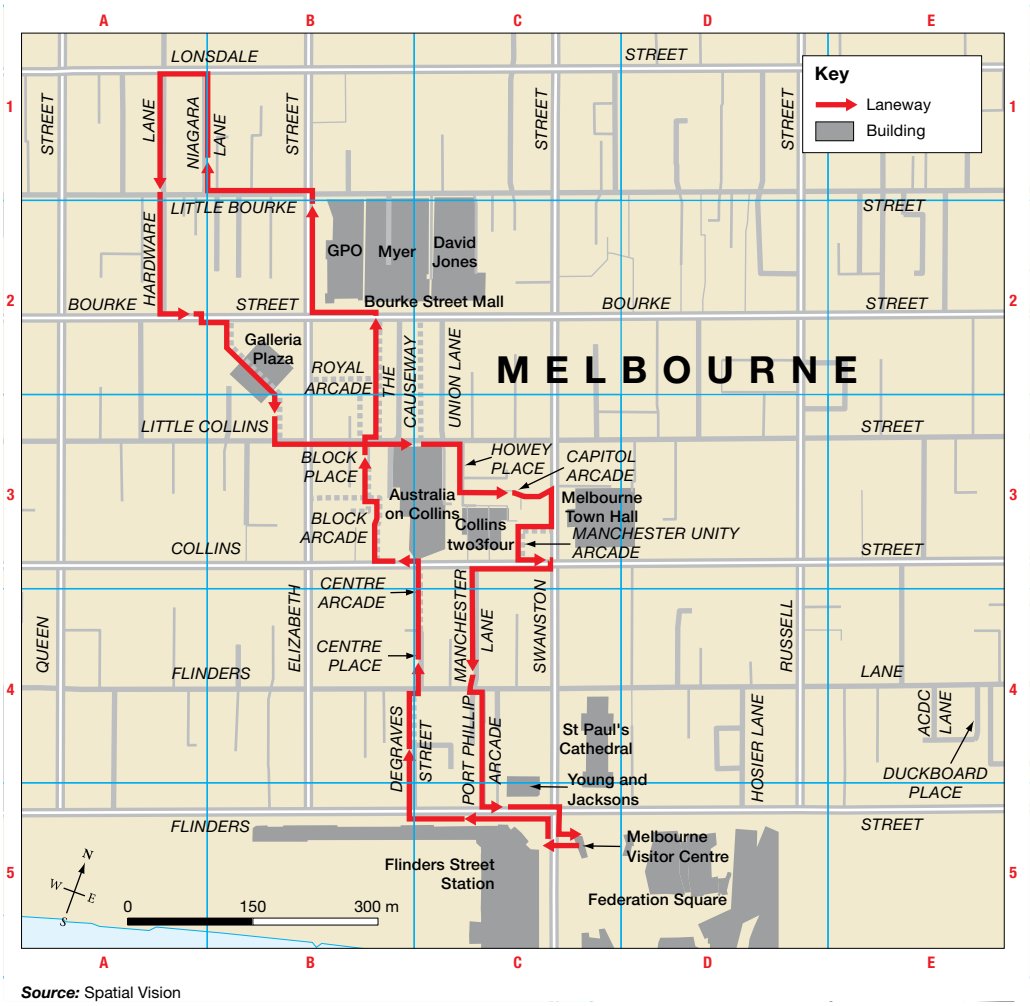
16.6.2. The laneway revival around Australia

The city of Brisbane has also undergone a transformation in the last few years. The Brisbane City Council's Vibrant Laneways initiative, combined with the introduction of the state government's small bar licence, has prompted many innovative venues to open their doors. In 2012, Adelaide also announced reduced liquor licensing fees for smaller venues. This initiative is aimed at revitalising the Adelaide CBD, creating a local version of laneway bars and culture akin to Melbourne's CBD. In New South Wales, the City of Sydney's Laneway Art Program has sought to encourage a city that buzzes with new art, new business and new life.

FIGURE 1 A map of Melbourne's laneways (a) Centre place, one of Melbourne's revitalised laneways (b) Duckboard place (c) ACDC lane (d) Graffiti in Hosier Lane

(a)

(b)



Source: Spatial Vision

(c)

(d)

16.6 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Explain

1. Explain how the perception and uses of Melbourne's laneways have ***changed*** over time.
2. How do laneways allow people to ***interconnect*** with the city?

Discover

3. What other areas in Melbourne, or your city, are now developing a laneway culture? How are they attempting to achieve this? In Melbourne, you may wish to investigate Richmond, the QV building or the Docklands precinct.

Predict

4. What other uses could you propose for laneway ***spaces*** in addition to those outlined above?

Think

5. Some aspects of laneways that can be improved are:
   - waste management and stormwater run-off
   - amenity and access
   - infrastructure, such as public lighting and road surfaces.

   (a) Can you think of any other ways in which laneways can be improved for public use?
   (b) Are there other ***spaces*** within a CBD ***environment*** that could be improved in order to provide new ***places*** for people to enjoy?
   (c) What would need to happen in order to make the ***places*** you identified in question 5b functional, safe and accessible?
6. If possible, conduct fieldwork in your city's laneways or complete the Laneway Walk shown in the map in figure 1. Are laneways ***sustainable spaces*** for people? Give a detailed personal response.

16.7 How do we access places?

16.7.1 Connecting with public transport

Public transport provides a relatively low-cost way for people to interconnect with places, and can reduce traffic congestion and pollution. For students, it is often the only way to get around. Sometimes, however, it can seem like too much bother, perhaps because one service does not connect to another or because there are not enough services running, especially near your house.

Public transport use is considerably higher in capital cities than in other parts of Australia, partly because cities have relatively large populations and better public transport **infrastructure**.

16.7.2 Our changing needs

With any population growth, governments at all levels must consider how they will meet changing transport needs. ICT developments have allowed us to make better decisions for our use of public transport. For example, have you used the internet or an app to find the fastest way to get from A to B? Service quality, frequency and infrastructure are generally the biggest concerns in the provision of a public transport system. However, the affordability of public transport is equally important, because many low-income people depend upon public transport to access jobs, services, education and recreation.

16.7.3 Different forms of public transport have different uses

Public Transport Victoria aims to deliver quality customer service and provide enhanced access across the range of public transport services throughout Melbourne and Victoria via its website, apps and other forms of social media.

Trains move large numbers of people over long distances at high speed in and out of the Central Business District. Travellers' access is heightened by the use of curving routes across the urban area with a minimum number of stops.

Trams operate only in areas of high population density, using high-speed and infrequent stops to maximise access for middle-distance commuters.

Buses provide access where trains and trams do not go and 'infill' access for people by using a range of road levels. Buses are the most flexible of the services able to change routes as there is no fixed rail system involved. Buses, and to some extent trams, ferry people to train stations, adjusting timetables and reorganising routes to match the train network, as seen with the opening of the Regional Rail Link in Melbourne's outer west.

FIGURE 1 Six trains come and go from central Melbourne.

FIGURE 2 Trams take people from the city to suburbs such as Maribyrnong in the north west.

FIGURE 3 Buses and trains interconnect at Glen Waverley station.

16.7.4 How satisfied are we with public transport?

The Transport Opinion Survey is conducted biannually across 1000 adult Australians. In 2015, 37 per cent of those surveyed said public transport was a top priority. Three in five Australians would prefer to see rail developments rather than more bus services, except in Queensland and South Australia, which already have well developed, fast bus systems. Only 9 per cent of those surveyed thought Australia's transport systems would be better within a year; just 7 per cent felt that local public transport would be improved within a year. In five years' time, 22 per cent of those surveyed thought the transport system they were using would be better.

FIGURE 4 Shared pathways are common.

A recent study in the Netherlands revealed that people perceive that their travel time on public transport takes 2.3 times as long as driving a car to make the same journey. People also perceive a continuous journey (involving, say, only one train) as taking less time than a journey that involves transfers and waiting times, even if the second journey is actually shorter. People estimate the waiting time to be about two to three times longer than the actual time. So, a wait of 10 minutes is perceived as 20 to 30 minutes. Factors that influence this perception include:

- uncertainty about when the next bus or train will arrive
- weather conditions
- familiarity with the journey.

Given that travellers tend to consider non-vehicle travel time (walking, waiting, transferring) to be more difficult than in-vehicle travel time, this has consequences when trying to attract people to public transport. If people think their travel time by car is 60 minutes, they perceive their travel time by public transport for that same trip to be almost double: 117 minutes.

16.7.5 Active travel

Cycling and walking to get to work, to visit friends and for the purpose of recreation have become mainstream modes of transport in the twenty-first century. In particular, in Melbourne's inner suburbs 20 per cent of those going to work now choose to use active travel.

Melbourne's bicycle paths and trails continue to grow in number providing increased access to places. Figure 5 maps the 'spiderweb' of pathways around the Melbourne region.

To encourage active travel, railway stations — both new and old — are installing secure bicycle storage areas (figure 6). Authorities are revising road layouts and regulations to provide a secure riding environment. Manufacturers are also designing electric bicycles to make access available to a wider range of people. Bicycles for hire, or free, can be picked up at points within the Central Business District of many capital cities.

The choice to access places by public transport, active travel or vehicle keeps people connected and strengthens interconnection in a community.

FIGURE 5 Melbourne's bike paths

Source: Map courtesy the Bike Paths and Rail trail Guide (Victoria) http://www.bikepaths.com.au

FIGURE 6 Signage at a railway station encouraging the use of bicycle storage areas

16.7 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Why is public transport perceived by governments as being very important?
2. Write a definition for the term 'active travel'.

Explain

3. Do you use public transport? Why or why not?
4. (a) How interconnected is the place in which you live? What types of public transport are available to you? What distances do you need to travel to reach a bus stop or a train station?
   (b) What types of public transport are required for you to access your closest international airport?
   (c) How do you perceive the quality of your public transport? Consider accessibility, timeliness, cleanliness, comfort, ticketing, safety, convenience and information about the service. Explain you answer.
5. Explain how each form of public transport provides access for different groups in our community. Consider students, workers, senior citizens, those with a disability and tourists. Figures 1, 2 and 3 will provide some additional ideas.
6. One of the most significant aspects of public transport is the interconnection between the different forms of transport. Why is interconnection important?
7. See the **Google maps** weblink in the Resources tab for a satellite image of Melbourne's bike paths. Go online and create figure 5. Use the scale tool to measure three distances between places that you are familiar with and three distances between places that you would like to visit. How do you perceive your ability to get to these places by bicycle?

Discover

8. (a) As a class, pick a location on the other side of town. Using your rail, bus or other public transport provider website, find out how long it would take you to travel from your school or home to this point on:
   - a Monday morning at 9 am
   - a Sunday evening at 6 pm.

(b) What did you notice about the travel times? Were they different? Why do you think this is? Create a map of your journey, using an appropriate key, to show rail, bus and other modes of transport used.

9. Using the interactive **TRAVIC (Transit Visualization Client)** weblink in the Resources tab look at the movement on the public transport system of Melbourne and in regional Victoria in real time. How does this impact on your perception of the role of public transport? If possible, visit this site at different times of the day and night to see how the transport system adjusts to the needs of the people.
10. How safe is it to ride a bicycle in Melbourne? Visit the survey on the internet at BikeSpot to find evidence for your opinion.

Think

11. There are frequent announcements by the Victorian Government on developments with the public transport system. For each public transport type and for each form of active travel, suggest two changes that might occur in the next 10 years. Compare your suggestions with those of others in the class.

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: Compare public and private transport across selected cities (int-3333)

Explore more with these weblinks: Google Earth: Melbourne's bike paths, TRAVIC (Transit Visualization Client)

16.8 To walk or not to walk

16.8.1 Introduction

Urban planners around the world are focusing on human wellbeing as a key to the structure of new suburbs and revitalisation of existing suburbs. People's perceptions of what will make 'life good' and what makes a 'good place' to live in are being taken into account. Being connected to other places and people is a high priority.

16.8.2 What is the '20-minute neighbourhood'?

Melbourne has been ranked the best city to live in since 2011. The city is unique, with access to coastal areas, a mild climate, a range of topography, distinctive suburbs or places, considerable tree cover and well-designed buildings and streets. As part of 'Plan Melbourne 2016', which aims to help retain that status and enhance the state's capital, the concept of the '20-minute neighbourhood' is being applied.

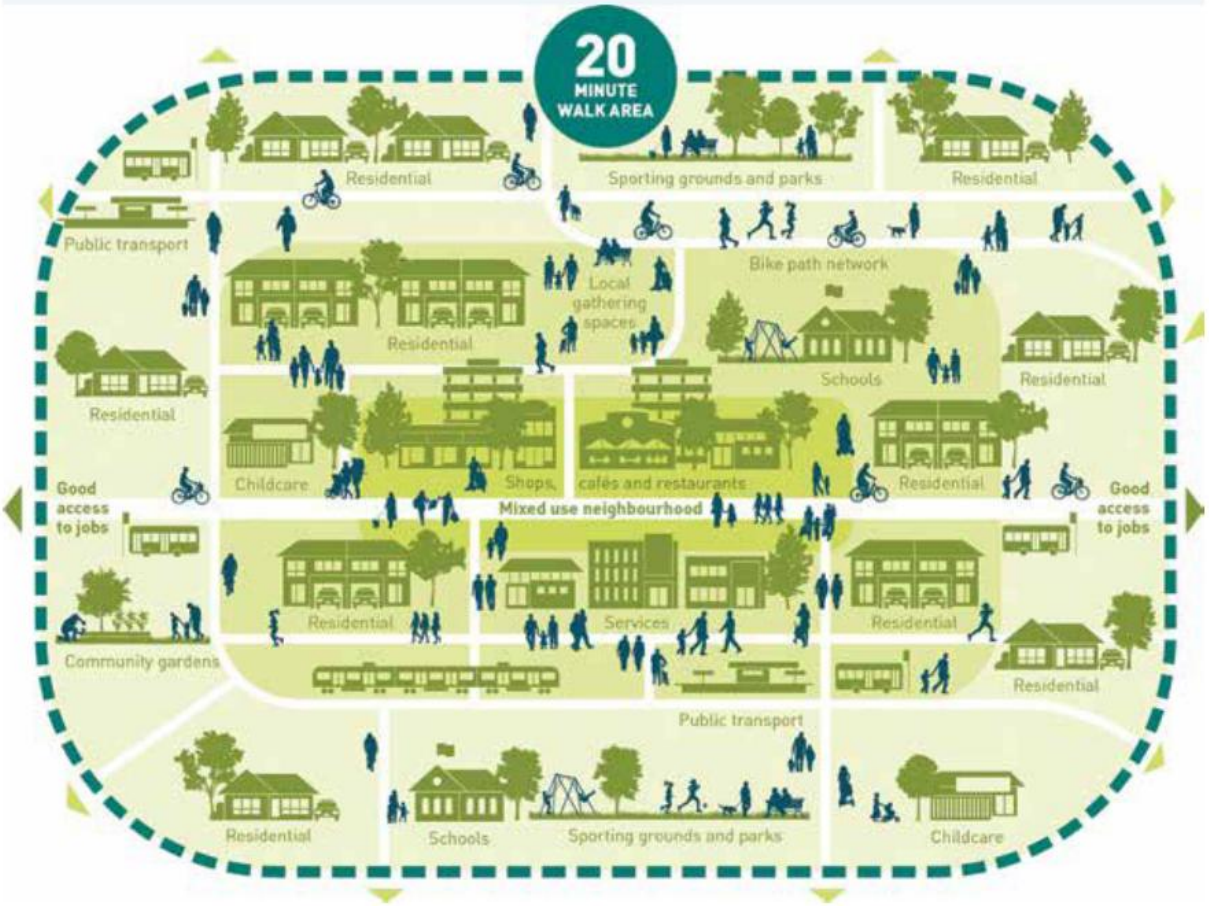
As figure 1 shows, the '20-minute neighbourhood' is about improving the liveability of a place. This means being able to walk around your neighbourhood and within 20 minutes being able to access your daily needs — for example transport, doctors, primary schools. Factors that make a good neighbourhood walkable are:

- a centre — either as a street or public space
- people — enough people for businesses to be successful and for public transport frequency
- mixed income and mixed use — a range of housing types
- parks and public space — for people to gather and to play
- pedestrian design — foot access (cars parked off street)
- schools and workplaces — close enough to walk
- complete streets — suited to bicycles and walking, and allowing easy movement across the place.

16.8.3 Why is walkability important?

Walkability provides a range of benefits to any community. People's health has been shown to improve if they walk on a regular basis. In particular, the risk of heart disease and diabetes is reduced. When people walk regularly, they are often 2.5 to 4.5 kilograms lighter than they would otherwise be. There is a reduced

FIGURE 1 The components of the '20-minute neighbourhood' concept

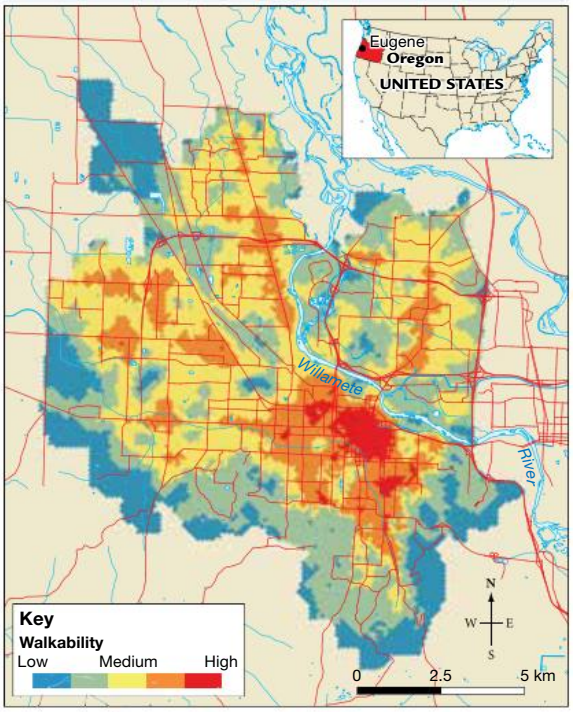


environmental impact with fewer cars on the road, as feet produce zero per cent carbon dioxide emissions! Communities benefit when people have more time available for involvement in community activities. Up to 10 per cent of a person's time spent in a community activity is lost when a car is used for just 10 minutes of commuting. Families also benefit financially as a car is often the second largest household expense and housing prices can increase by 20 per cent when located in places with a high walkability score.

In Eugene, Oregon, in the United States, areas closest to the centre of the city were shown to have a higher walkability rating than those on the rural urban fringe. Key elements considered in the mapping and overlaying (figure 2) were:

- density — the density of the population and the number of employees
- destinations — bus stops, shops, primary schools, corner stores, parks and other goods and services
- distance — intersection density, bicycle facilities, paths

FIGURE 2 Eugene, Oregon walkability ratings with the most walkable areas shown in red



Source: https://www.eugene-or.gov/1229/Full-Composite-Heat-Map

- aesthetics — tree cover, road width, condition of properties along routes
- safety and perceived safety — traffic speed, path condition, signalled crossings
- socioeconomics such as distribution of income, education, age and background.

16.8.4 How accessible are Melbourne's neighbourhoods?

A US company developed a Walkability Index (table 1), which considers a range of features using the Eugene, Oregon experience. According to its scale, the following key assesses the rating of a neighbourhood.

TABLE 1 The classifications within the Walkability Index

Walk Score rating	Access to the neighbourhood	Tasks able to be completed
90–100	Walker's paradise	Daily errands do not require a car
70–89	Very walkable	Most errands done by foot
50–69	Somewhat walkable	Some errands done by foot
25–49	Car dependent	Most errands require a car
0–24	Car dependent	Almost all errands require a car

Using this Walkability Index there are just 12 suburbs of Melbourne that currently fit the range of 90–100 as a walker's paradise. These suburbs include Carlton, Fitzroy, Fitzroy North, Melbourne (central area), St Kilda, South Yarra, East Melbourne, South Melbourne, Collingwood, Windsor, Southbank and Richmond.

16.8.5 How accessible will neighbourhoods become?

Property developers across all major cities in Australia and the developed world have realised the importance of human wellbeing. New estates now focus on providing parklands (often with a water feature); local shopping centres; safe and sound surroundings; foot and bicycle paths; and peaceful, clean, green environments. Advertising for these estates centres around building communities, with young families living an active lifestyle.

Planners and developers in established suburbs are seeking to 'infill' the suburbs, creating and recreating to form 'the 20-minute neighbourhood' around activity hubs and avoid further encroachment on farming land for urban development. The challenge is to have about a 70 per cent increase in housing and population living

FIGURE 3 Box Hill is an important transport hub for trains and buses.

in the local area hubs. Community and transport infrastructure will need to be revised to achieve this target. In Melbourne, activity hub development can be found at Box Hill, Broadmeadows, Dandenong, Epping, Footscray, Fountain Gate/Narre Warren, Frankston, Ringwood and Sunshine.

FIGURE 4 Development of the Point Cook estate. Central Equity, Featherbrook Point Cook.

16.8 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Draw a mind map (see section 16.2) of the distances you have to travel from your home to the bus stop or train station, to school, to the shopping centre, to the park where you meet your friends, to a place for sporting activities, and to any other significant locations in your life. Discuss in class how teenagers perceive the distances travelled.
2. Recall and list the features of 'the 20-minute neighbourhood'.

Explain

3. Using figure 2, describe the distribution of the different levels of walkability in Eugene, Oregon.
4. Suggest factors that may influence the location of the high level of walkability in Eugene.
5. To avoid expansion of Eugene:
   (a) Suggest two areas of the city that the city planners and developers might be looking at to improve the level of access. Provide reasons for your choice.
   (b) Suggest a change that may be able to be implemented in the short term, medium term and long term within the city to improve access.

Discover

6. On a map of Melbourne, find the 12 suburbs with a high walkability rating. Describe the locations of these places.
7. Using the internet for 'How Walk Score Works' find:
   (a) the walkability rating for Australia's major cities. Comment on their scores.
   (b) the walkability rating for your place/home. Can you explain why your place has been given its rating?
   (c) the walkability rating of a rural environment that you know. Explain why rural areas might be more car dependent.

Think

8. Many parents don't allow their children to walk to school any more. Make a list of the safety issues that parents perceive about access to school.

Predict

9. In a small group, draw a plan for a 20-minute neighbourhood that you would like to access and live in. Discuss and consider each group member's perception of which features make for wellbeing in a community.

learnon RESOURCES — ONLINE ONLY

Try out this interactivity: City connections (int-3334)

16.9 SkillBuilder: Constructing and describing isoline maps

onlineonly

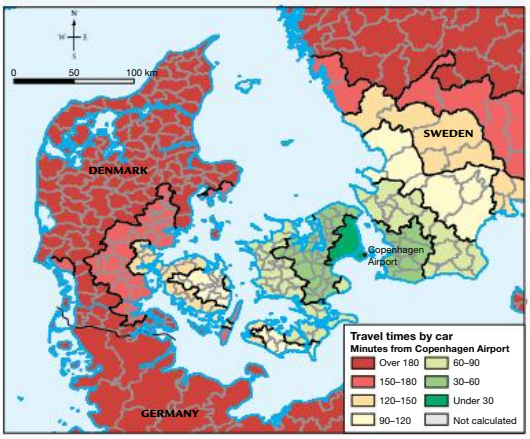
WHAT IS AN ISOLINE MAP?

An isoline map shows lines that join all the places with the same value. Isoline maps show gradual change in one type of data over a continuous area. Isolines show change in the trend of the data being mapped. Isoline maps are easy to understand, especially when coloured between the lines.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 A coloured isoline map showing travel time to Copenhagen airport by car



learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Constructing and describing isoline maps (eles-1737)

Try out this interactivity: Constructing and describing isoline maps (int-3355)

16.10 Are we all on an equal footing?

16.10.1 How accessible are our cities?

Many of us take it for granted that we can walk to the shops, hop on a bus and go to the city centre, or find out when the next train is departing. Accessibility should mean that people with **disabilities** have the same access to the physical environment, transportation, information and communication technologies, and other facilities and services. Everyone should feel connected with society, rather than separated from it.

Our cities can be a depressing obstacle course for millions of people. For those with a disability, negotiating a flight of stairs, opening a door or even reaching a lift button can be impossible. Have you ever considered how difficult our cities can be for some of their citizens and visitors?

16.10.2 Providing equal access

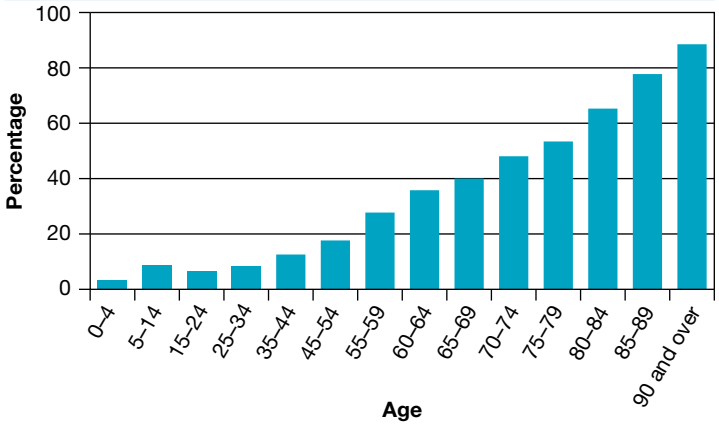
Almost one in five Australians (18.5 per cent) reported a disability in 2012. Four in 10 Australians over the age of 18 report having a disability or long-term health condition. Equal access, particularly to transport, is essential for equality. Limiting transport can mean limiting people's opportunities.

A disability can take many forms, including:

- walking disabilities — cannot use stairs easily, moves slowly, needs wider spaces (due to crutches, for example)
- manipulatory disabilities — has difficulty in operating handles and ticket machines, for example

- vision impairment — has trouble distinguishing between road and pavement, identifying platform edges, knowing whether a lift has arrived at the correct floor, seeing signs or directions
- hearing problems — has difficulty hearing announcements about delays, cancellations or emergencies, or hearing an approaching vehicle
- intellectual disabilities — is challenged by being in an unfamiliar setting, or coping with cancellations or complex timetables
- psychiatric disabilities — experiences stress, anxiety or confusion in crowded situations or encounters with other travellers
- wheelchair disabilities — difficulty moving about when no ramps are available, when there are insufficient or badly designed parking spaces, or when there is not enough room to manoeuvre equipment.

FIGURE 1 Percentage of Australians with a reported disability



There are also additional (and sometimes less obvious) disabilities to consider, such as asthma, epilepsy, obesity and diabetes, and temporary disabilities that result from injuries that are rarely classified as disabilities. When considering transport disadvantage, we must also include elderly people, low-income earners, children and outer-urban dwellers, who experience this to some degree as well. Parents with prams or strollers may also be affected.

16.10.3 A city for everyone

In 2015, the Swedish city of Borås won the European Union's Access City award — a prize for the European city that is most accessible for people with disabilities. The annual honour aims to award efforts to improve accessibility in the urban environment and to foster equal participation of people with disabilities. People with disabilities and their representative organisations were heavily involved in the planning process. Some of the improvements are that:

- a database has been established of all public buildings with adequate access
- route markers have been laid both indoors and outdoors
- public transport is free on easily accessible buses
- digital 'locks without keys' have been provided for easy access, especially for support services.

All these measures benefit the entire community as well as the economy, because when everyone has access to places of work, people feel included and government social support systems are not overloaded.

16.10.4 Accessing cities

In early 2014, the City of Bunbury in Western Australia instigated the MARCIA Project to challenge and encourage all regional cities in Australia to compete for the title of Most Accessible Regional City in Australia. Local government organisations would have to show that their communities are catering for people with disabilities in a range of ways, including:

- access to public spaces (for example, by providing beach wheelchairs)
- providing accessible public spaces such as playgrounds and public toilets
- developing inclusion initiatives such as sports programs and recharge stations for electric mobility vehicles.

A significant aspect of the challenge is for regional centres to develop initiatives that go beyond physical access and mobility. The Bunbury Museum and Heritage Centre, for example, has developed programs for people with dementia.

FIGURE 2 Providing mobility within the central business district of Ballarat

Source: City of Ballarat

Many regional cities already have well advanced facilities for disabled citizens. The Rural Access Program undertook work in Ballarat, Victoria, to develop a mobility map that showed safe, accessible, easy and enjoyable ways to move and connect with the city.

Regional cities in Victoria are also conscious of the need to cater for the disabled. The Rural Access Program undertook work in Ballarat to develop a **mobility** map that showed safe, accessible, easy and enjoyable ways to move and connect with the city.

FIGURE 3 Access for everyone, regardless of mobility, is essential.

16.10 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What are the various disabilities that may affect someone's access to public transport?

Explain

2. Explain what you understand by the term accessibility regarding people with a disability.
3. Refer to figure 1. Approximately what percentage of people with disabilities are the same age as:
   (a) you
   (b) your parents
   (c) your grandparents?
   Use figures and percentages in your answer.

Discover

4. Do you know someone with a disability? Explain what types of difficulties they encounter while using public transport.
5. Using the map of the CBD of Ballarat, describe:
   - the accessibility level of Bridge Mall
   - movement around Centrelink
   - travel along Mair Street.

   How would you rank access in the Docklands area?

Think

6. In small groups, devise a trail in a local ***environment*** for people with disabilities. You might choose your school or a local park, for example. You might also decide what types of disabilities you are planning for, and travel around the site considering the potential needs of the visitor. Where are hazards located? Which areas might the visitor find difficult to navigate? What ***places*** might be of interest to them? Draw an annotated trail map (only for users who are not sight-impaired) to highlight these various features. To empathise more fully with the needs of others, students could take it in turns to navigate their way around the designated site on crutches, in a wheelchair or blindfolded.

16.11 How do we connect with the world?

online only

Access this subtopic at **www.jacplus.com.au**

16.12 Review

online only

16.12.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

16.12.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

16.3 SkillBuilder: Interpreting topological maps

16.3.1 Tell me

What is a topological map?

Topological maps are very simple maps, with only the most vital information included. These maps generally:

- use pictures to identify places
- are not drawn to scale
- give no sense of distance
- give general directions
- exaggerate the size of places
- do not show exact routes.

However, everything is correct in its interconnection to other points.

Why is a topological map useful?

Topological maps are useful as a mental map to help you locate important features. Large areas can be drawn to show the viewer the important points. You could use these in class as summary maps of a topic, or as quick sketch maps to illustrate a point or to clarify something for another student.

They are also useful for:

- giving tourists a snapshot of where features are located
- quickly showing how to get to a place
- showing very large transport routes such as bus and train routes across a city
- planning international flights.

Model

The topological map of central Paris shown in figure 1 is designed for people moving around Paris as tourists. It provides an indication of the major sites that tourists ought to visit, and allows them to see on which side of the river different monuments are found. For example, you would expect to find the Champs Élysées and the Louvre on the same side of the river and quite close to each other. Major routes are given between monuments but these routes may not be the shortest distance, as there is no scale with the map. Thus, it is hard to judge the best way to get from the Eiffel Tower to Notre Dame cathedral. The actual direction from one monument to the other is unlikely to be exact, because the lack of scale causes features to become distorted. This type of map, however, might help a tourist plan their sightseeing, because it gives the user a general idea of where things are located. If going from the Eiffel Tower to the Arc de Triomphe, is it best to stroll along the river and up a major route?

A good interpretation of a topological map:

- identifies and communicates key features
- clearly represents and communicates the data.

16.3.2 Show me

How to use a topological map

You will need:

- a topological map.

Procedure:

STEP 1

Look all around the topological map and identify the key features being shown. In figure 1, almost 30 major tourist attractions of Paris are shown as drawings of each place. Some drawings are larger than others to show the significance and the popularity of these places with tourists.

FIGURE 1 A tourist map of Paris and its monuments

STEP 2

Think about the interconnection between features. On the map in figure 1, the interconnection between the places is that each one is a Paris tourist attraction. Roads are shown, but these may not be the optimum route to travel. This pathway represents just one way to connect between the places.

STEP 3

Since there is no scale, could a tourist walk between all these places? Think about possible distances. Consider the distance from the airport to the city centre. A tourist may well have travelled this route and be able to give the map a sense of scale. Could you see all these monuments in a day? The answer to both questions is no. Interpreting a topological map gives a first impression, but it is not an accurate map. It may be useful for moving around an area, but it lacks detail.

16.3.3 Let me do it

Developing my skills

Using the child's map shown in figure 2a in section 16.2.2, describe the route the child takes from home to school.

Questions

1. What is the purpose of this topological map?
2. Describe the pattern of houses along the route.
3. What symbols have been used to show the sporting area of the school grounds?

4. Why do you think this child drew the road at such a size and included the road markings?
5. Describe the environment along the route from home to school.

Checklist

I have:

- identified and communicated key features on the topological map
- clearly represented and communicated the information in the description.

Skills questions

1. Topological maps are used to show:
   (a) the location of features of a place
   (b) the distance between places
   (c) the contours of an area
   (d) very small areas.
2. A topological map includes information about:
   (a) scale
   (b) distance
   (c) the interconnection of places
   (d) realistic impressions.
3. Why are topological maps not accurate?
4. What important map information is not provided on a topological map?

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Watch this eLesson: Interpreting topological maps (eles-1736)

Try out this interactivity: Interpreting topological maps (int-3354)

16.4 How do we move around our spaces?

16.4.1 Fieldwork in the schoolground

All too often, students go about their school lives without a second thought for their surroundings. The following fieldwork activity encourages you to start thinking about different aspects of your environment: your likes and dislikes and the feelings associated with particular places. Ultimately you will develop your own set of personal geographies connected with the school grounds. The activities can be used alone or as a foundation for surveying techniques.

16.4.2 Introduction

This section provides a framework for you to conduct fieldwork around your school grounds to identify the movement of people and any issues that may arise from this movement. An ideal place to start is somewhere that you walk through, and to, every day: the school canteen.

You will need to conduct your fieldwork in small groups, sharing tasks and using ICT tools where possible to document your findings and to prepare your final presentation. You may choose to share each task among the group or nominate a group member to handle each section of the task. For example, one person might be responsible for all the mapping tasks and another for compiling the data.

16.4.3 When, where and how

First, you will need to create the base map of your intended area of study. Using an available school map or satellite maps, create a map of the study area. Try to include all entry and exit points for your canteen so that you can monitor foot traffic in and out of the area. Create a key that includes as much detail as possible (such as bins, seating areas, pathways, grass, eroded areas). If a map is not available, you may need to measure and draw the area to create an accurate map.

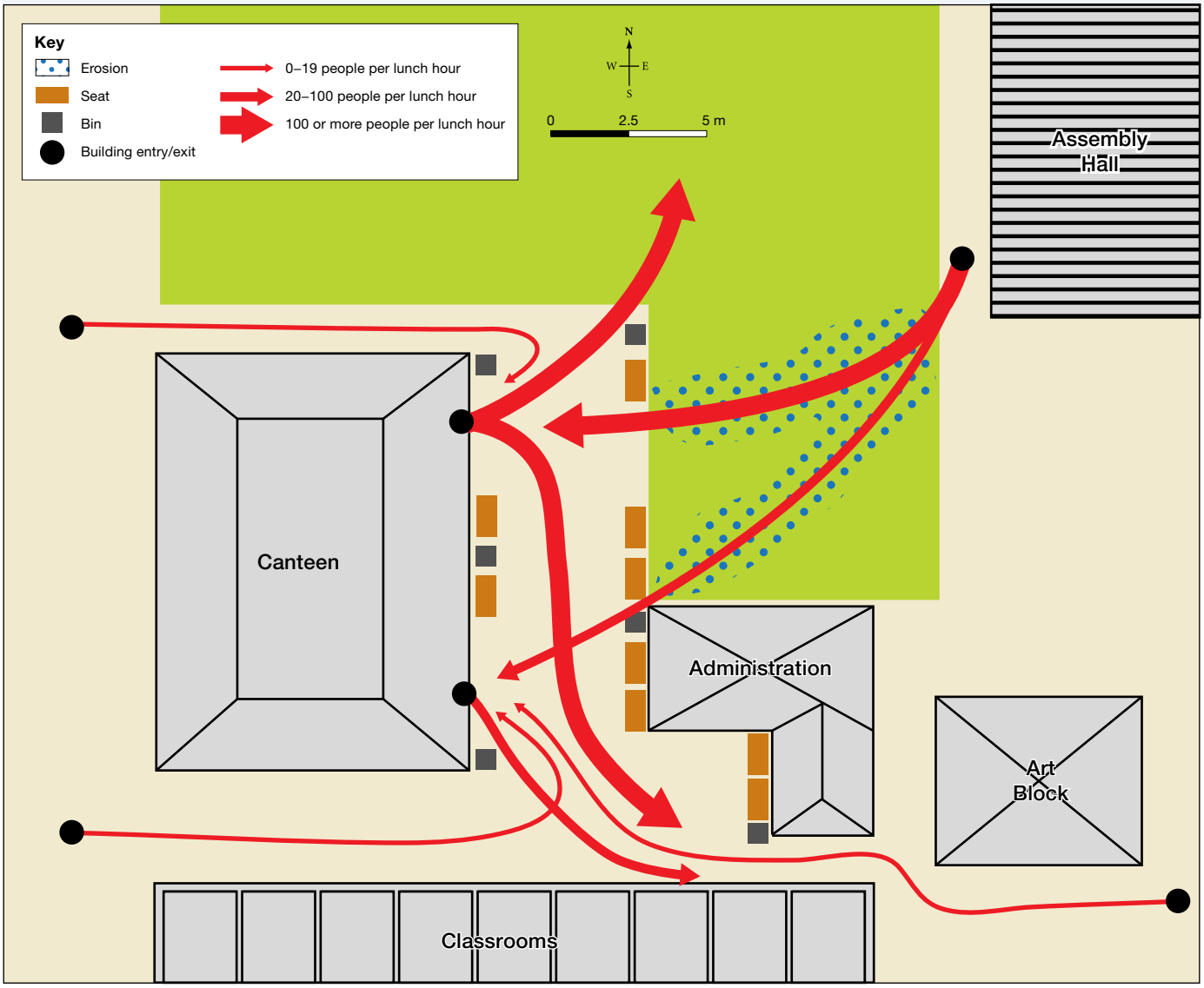
Over the course of one day, monitor the foot traffic to and from the canteen area at the morning break and lunchtime. You may collect your data over the course of a few days; or decide as a class that you will collect your data on one day only; or divide the class into five groups and monitor the area over the course of a week. To count how many people move in and out of the area, station a member of your group at each entrance/exit point (which will also help you to determine your group sizes). You may use a simple tally or 'clickers' to count entrances and exits.

Once you have created the base map and collected the data, you will need to annotate your map with flow lines to represent the movement of people. (Refer to figure 1 and the 'Constructing and describing a flow map' SkillBuilder in subtopic 18.11 for more guidance.) What problems are created by the movement around your school grounds? You can decide as a class which areas to focus your investigation on or your teacher can advise you. See table 1 for a checklist to help you identify what is creating the movement problems.

TABLE 1 Problems and possible solutions related to movement of people

Areas to investigate	Type of problem created	Likely cause of problem	Possible solutions
Eroded grass area on oval	Erosion, run-off	Students taking shortcuts to canteen Poor placement of paths	
Litter left outside canteen at end of breaks	Pollution, eyesore	Lazy students Lack of rubbish bins	
Queues that extend out of canteen, leaving students exposed to the weather	Cold, wet and hungry students	Too many students approaching canteen at same time Inadequate space for queues	

FIGURE 1 Sample map of school grounds



Source: Spatial Vision

To help you understand the trends in movement throughout the week, is there any other data you can gather to complement your investigation? For example, when are whole-school events held (such as assembly), which result in large numbers approaching the canteen at the same time, rather than at staggered times? Could you approach the canteen for some data on their sales throughout the week? (See table 2 for an example of the kind of data you might obtain.)

TABLE 2 Canteen sales throughout a week

Canteen transaction sales	Snacks (drinks, ice creams, fruit etc.)	Cold and hot meals (sandwiches, salads, burgers etc.)
Monday	93	177
Tuesday	89	158
Wednesday	80	166
Thursday	83	152
Friday	102	189

16.4.4 Develop a management plan

Your completed map and supporting evidence will form part of your management plan document. Your next step is to annotate your map with detailed descriptions of practical solutions for some of the problems you have identified. Your teacher might ask you to present this information to the rest of the class using ICT (such as PowerPoint or Prezi) or as a report that may be shared with your principal or grounds manager. Are your group's solutions cost effective? Ensure you complement your presentation with photographic evidence and data to support your contentions and solutions.

16.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Think

You should graph all data collected before attempting to analyse your findings. Some questions to stimulate your research are provided below.

1. Which areas showed the most congestion? Why do you think this is the case?
2. Did the location of congestion ***change*** according to the time of day? What factors influence these ***changes***?
3. How does the movement of people affect the natural and human ***environment*** of your school grounds?
4. How do you propose to improve the current situation? What equipment, cooperation or support (or other factors) would be required in order to make these ***changes*** effective?
5. What ***changes*** could be made with (a) no cost, (b) minimal cost and (c) unlimited funding?

16.9 SkillBuilder: Constructing and describing isoline maps

16.9.1 Tell me

What is an isoline map?

An isoline map shows lines that join all the places with the same value. Isoline maps show gradual change in one type of data over a continuous area. Isolines do not cross or touch each other. Isolines show change in the trend of the data being mapped. The same difference is always shown between each isoline and the next over the entire map.

Why is an isoline map useful?

Isoline maps are easy to understand, especially when coloured between the lines (see figure 2). These maps do not consider boundaries or borders, as the lines connect all places of the same value. Trends and gradual changes are easily identified. Some isoline maps can show change over time. Excellent examples of isoline maps include daily weather maps (showing places with the same atmospheric pressure), topographic maps with contour lines, and global isotherm maps (places of equal mean surface temperature are connected; such maps are used when discussing climate change).

They are also useful for:

- showing data over large areas
- showing trends in data
- allowing you to identify and describe patterns
- comparing maps over different time periods.

The isoline maps in figures 1 and 2 show that it takes less than 30 minutes of travel time by car to reach Copenhagen airport in Denmark from places closest to the airport, even when it is on a different island or in a different country (Sweden). People living west of central Copenhagen travel similar distances to the airport in similar times (60–90 minutes) to those living in southern Sweden. This suggests that connections such as bridges and tunnels between islands and countries are provided, and cross-border movement is easy. From one island it takes 150–180 minutes to get to the airport, suggesting that a ferry service is probably required to reach the road system by car.

A good isoline map:

- has small dots for data presentation
- has dots joined with a fine line
- is drawn with pencil
- is coloured or shaded between the isolines
- uses BOLTSS.

A good description of an isoline map:

- identifies and communicates key features
- clearly represents and communicates the data.

16.9.2 Show me

How to construct and describe an isoline map

You will need:

- a base map
- a set of data to plot
- a pencil
- an eraser
- an atlas (optional).

Model

FIGURE 1 An isoline map showing places of equal travel time to Copenhagen airport by car

Source: Spatial Vision

Procedure:

Constructing an isoline map

STEP 1

Select a set of data to map, and plot the relevant figure at each of the places listed. Figure 1 is an example of this for travel times by car to Copenhagen airport.

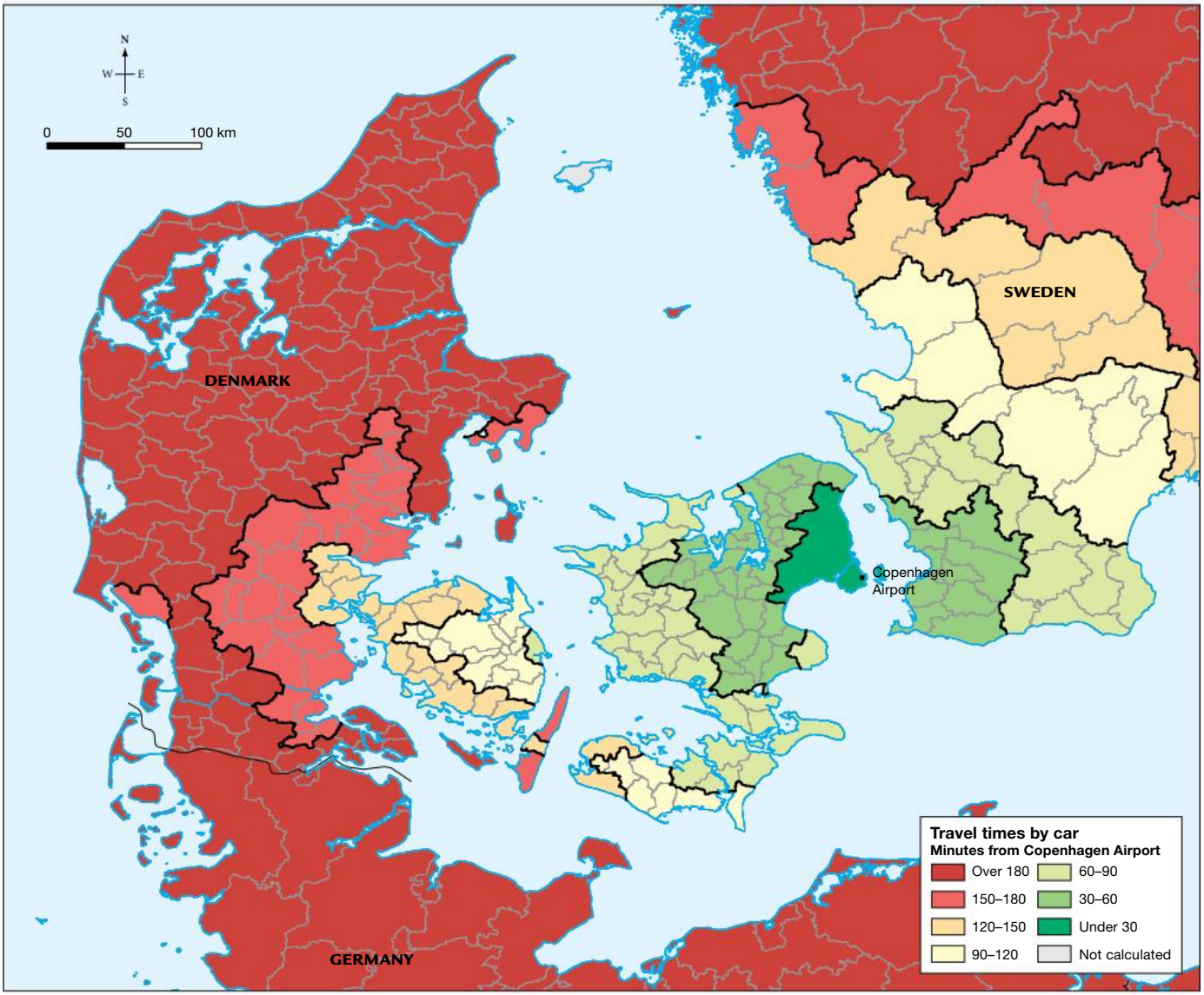
STEP 2

Select a value to use for intervals within the data set. In figure 1, the interval was set at 30 minutes. Draw lines (isolines) joining places of the same value; in this example, that would be 30 minutes, 60 minutes, 90 minutes and so on. You may need to go between some points to show where you think the isoline would be; for example, the 60 minute isoline would pass between a place where the travel time is 50 minutes and another where the travel time is 70 minutes. Remember that isolines will not touch and will not cross at any point.

STEP 3

Create a legend for your map with a colour system that indicates a gradation of colour, where the lowest data is the lightest shade and the highest data is the darkest. Shade between the isolines according to the legend. Figure 2 shows a completed coloured isoline map.

FIGURE 2 A coloured isoline map showing travel time to Copenhagen airport by car



Source: Spatial Vision

STEP 4

Don't forget to apply BOLTSS to your map.

Interpreting an isoline map

STEP 5

First, make sure you know what feature is being mapped by checking the map title or caption. In figure 1, this feature is travel time by car to Copenhagen airport.

STEP 6

Next, check the key/legend so that you understand the value of each isoline and the intervals used between them.

STEP 7

Describe the areas where there are high or low data values that help to form a pattern. You may need to refer to an atlas to check the topography and establish whether any country borders are involved. In figure 1, some of the data is from Sweden as people travel from there to Copenhagen, their nearest airport. People living west of central Copenhagen travel similar distances to the airport in similar times (60–90 minutes) to those living in southern Sweden.

STEP 8

Look for any anomalies that may need explaining. For example, in figure 1 you can see that it takes 150–180 minutes to get to the airport from one island, suggesting that a ferry service is probably required to reach the road system by car.

16.9.3 Let me do it

Developing my skills

Use the data in table 1 and base map provided in figure 3 to construct an isoline map of the travel times by bicycle throughout Copenhagen to the city centre. Use the following steps to help you.

(a) Plot on the map the number of minutes taken to travel from each place to Copenhagen city centre by writing the number of minutes by the dot beside each place name.
(b) Draw a line (an isoline) connecting all the places from which it would take 30 minutes to travel to the centre of Copenhagen.
(c) Draw in additional isolines at 5-minute intervals to show travel times to Copenhagen city centre.

Describe the pattern evident on your isoline map.

TABLE 1 Travel times by bicycle across Copenhagen

Suburb of Copenhagen	Travel time by bicycle to Copenhagen city centre
Albertslund	45
Ballerup	48
Brøndby	40
Frederiksberg	25
Furesø	50
Gentofte	33
Glostrup	40
Gladsaxe	38
Herlev	42
Hvidovre	34
Ishøj	55
Lyngby–Taarbæk	45
Rødovre	35
Tårnby	30

FIGURE 3 A base map of the suburbs around Copenhagen city centre

Source: Spatial Vision

Questions

1. Is Furesø or Hvidovre more accessible to Copenhagen city centre by bicycle? Use figures in your answer.
2. Does Tårnby or Brøndby provide easier bicycle access to the city? Quote the distances involved.
3. From which direction would you have the greatest level of access to the city centre by bicycle? Use figures in your answer.
4. Which part of the map would encourage cyclists to live in the area? Explain your answer using figures.
5. In which area of the city would you prefer to live if you had to cycle to the city centre each day for work? Explain your answer, including figures.

Checklist

In drawing an isoline map I have:

- plotted data using small dots
- joined the dots to create a fine isoline
- drawn using pencil
- coloured or shaded between the isolines
- completed my map with BOLTSS.

In describing an isoline map I have:

- identified and communicated key features
- clearly represented and communicated the data.

Skills questions

1. Isoline maps are used to:
   (a) locate features of a place
   (b) show the varied features of a place
   (c) join places with the same or equal value
   (d) indicate a key feature of a place.
2. An isoline map includes information about:
   (a) trends in the values mapped
   (b) two or more features of an area
   (c) data at only one place
   (d) very few data points.
3. Why are isoline maps useful when maps cover large areas?
4. What makes an isoline map easy to read?

learnON ONLINE ONLY

Watch this eLesson: Constructing and describing isoline maps (eles-1737)

Try out this interactivity: Constructing and designing isoline maps (int-3355)

16.11 How do we connect with the world?

16.11.1 How connected are we?

Our world is shrinking. We are more connected than ever before thanks to waterways that drew distant places together with improved shipping access, increased and cheaper flights and the digital age (see topic 11). These have brought the world closer to us.

16.11.2 How do maritime highways connect places?

Technological developments have seen the reduction in time for a ship to travel the world. In 2015, the upgraded Panama Canal, which links the Pacific Ocean and the Atlantic Ocean, opened its new, larger locks to accommodate the super ships now plying the oceans. A second Suez Canal lane opened in 2015 and the original canal was deepened to provide access from the Mediterranean Sea to the Red Sea and Indian Ocean. The Straits of Malacca provide access for about 33 per cent of all European container ships accessing East Asia in response to the demand for raw materials and commodities, in particular in China.

Australia is no longer a sailing time of 6 months from the United Kingdom—with faster, bigger ships the distance can be accessed in about 33 days. Reduced travel times and reduced costs are a boon for the export of Australian agricultural produce and mining resources, and for the import of products to improve our wellbeing, such as bulky, manufactured goods. Reduced transport costs have benefited global trade.

Cruise ships ply the coastlines of many countries and across local regions, taking tourists on a cheap holiday to a variety of places on each voyage. From 2005 to 2015, the cruise industry has doubled in size thanks to advertising campaigns that target lower socio-economic groups and those keen to travel without the inconvenience of packing every few days. Access to places has never been easier.

FIGURE 1 Loading containers for global trade

FIGURE 2 The density of major global cargo shipping routes

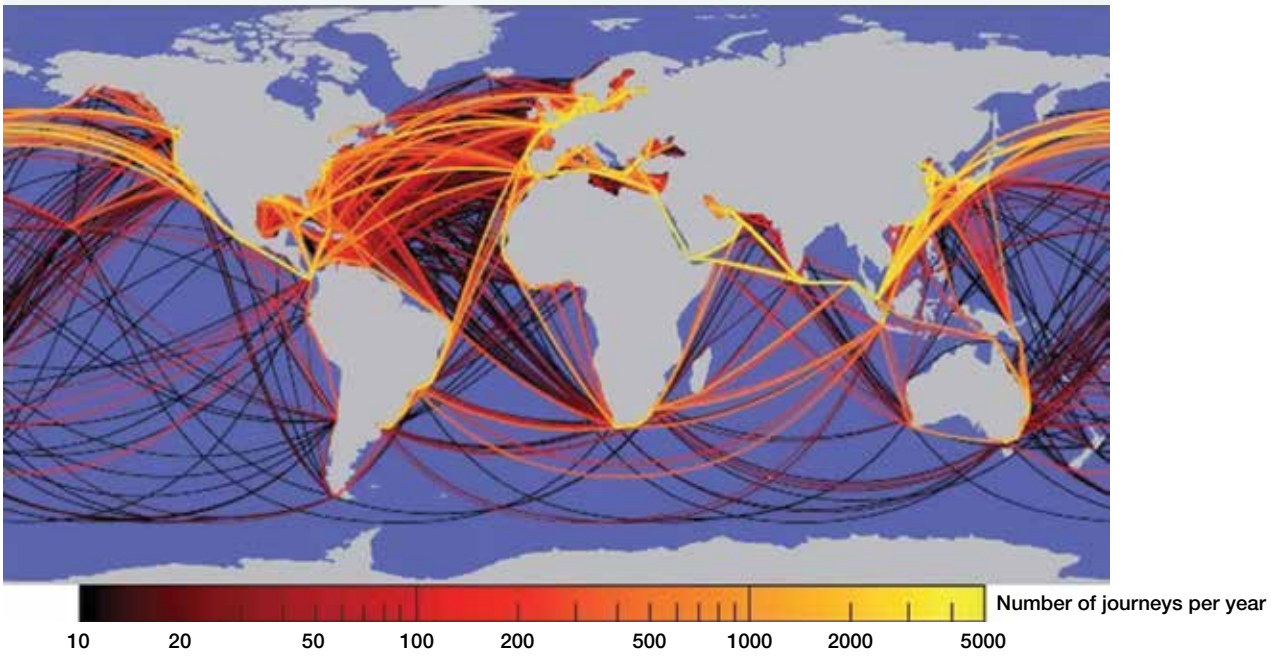


FIGURE 3 Flight patterns vary according to the time of day.

16.11.3 How do we connect through the air?

In 2015, 3.5 billion people flew safely on 37.6 million flights for the purposes of business, tourism or reconnection with relatives. Figure 3 shows how the long-haul aeroplanes, such as the Airbus A380 with its wide body and double-deck carrying capacity of 853 passengers, hub in and out of key airports, leaving smaller jets to distribute passengers across a country using smaller airstrips. These large aeroplanes have reduced the time taken to access places. Airbus is able to access London from Melbourne in about 22 hours with one stop; airlines are vying for a technologically apt aircraft such as the Dreamliner, which will fly long haul, non-stop to London from Australia. Constant monitoring of the success levels of routes sees frequent adjustments to schedules and discounts offered on flights. Australians are able to access the United States non-stop (Los Angeles, Dallas) with most flights around A$1000 each way, and often discounted.

Air cargo flights also provide access for trade delivering perishable items quickly around the world. The Netherlands trades about 50 per cent of all cut flowers moved around the world. Asparagus from Victoria is sent to Japan, Singapore, Hong Kong, South Korea and Taiwan; it arrives in Japan by air 30 hours after being harvested. Australia imports by air freight high-value 'just-in-time' manufacturing components such as computer and machinery parts. Online shopping can see an order placed in Melbourne via a US site, with the product air freighted from Hong Kong and delivered in three days!

FIGURE 4 People arrive at Heathrow Airport, London.

16.11 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. How has the opening of the waterways improved access to places for the cargo ships?
2. What is the value of air travel for passengers?

Explain

3. Describe the areas where cargo shipping routes are dense. Is there any connection with the developed world?
4. Australia is circumnavigated by shipping routes. Can you explain why this might be?

Discover

5. Use the internet to watch major airlines hub into major cities across the day on the 'World Traffic Pattern Over a 24 Hour Period'.
   (a) What do you notice about the places being accessed?
   (b) Does access change between day and night?
   (c) Can you explain why international flights leave Australia late at night or early in the morning?

Predict

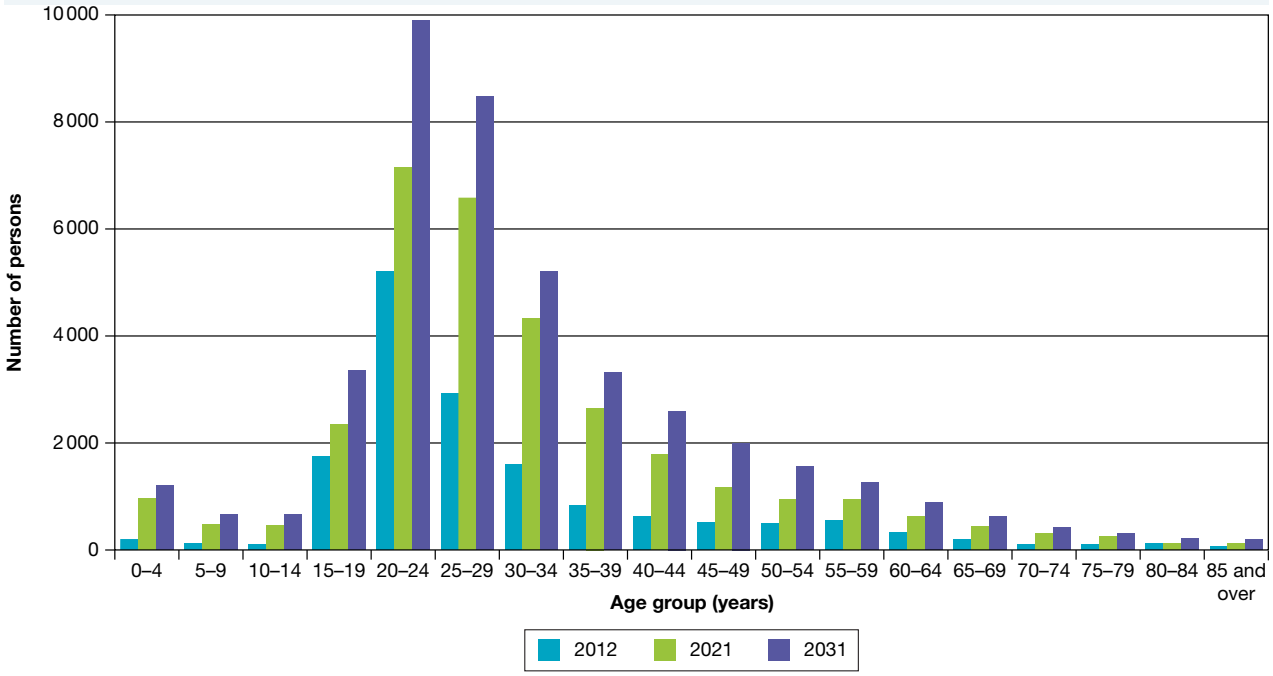
6. Will Australia's perceived remoteness be further reduced by 2030? Suggest how this might be. Using the internet, look at live air traffic in Australia on 'flightradar24' to see the patterns of air travel that currently exist.

16.12 Review

16.12.1 Review

1. What are stereotypes and how can they influence the way we 'see' a ***place***?
2. We can feel differently about various locations in our own school. On a base map of your school, identify five ***places*** you like and five ***places*** you dislike. Compare your map with those of your classmates. Do you notice any similarities or differences? As a class, which is the most liked area and which the most disliked?
3. List the ways in which we see the strong link Indigenous people have with the land in the twenty-first century.
4. What is the difference between graffiti and street art?
5. Refer to figure 1.
   (a) How is the population of Melbourne's CBD going to ***change*** over the next 15 years?
   (b) Which age groups will make up most of Melbourne's resident population in 2031? Why do you think this will be the case?

FIGURE 1 Forecast age structure, Melbourne CBD



Source: Copyright © .id2013

6. Create a survey on the use of public transport in your community. As a class, conduct a survey of your family and friends (finding ten survey respondents each) about their reasons for using or not using public transport. As a group, and with the guidance of your teacher, design a manageable set of eight to ten questions that can be answered before your next lesson. As a starting point, find out who uses public transport, and why and how they do so. Compile your data on the board, and then individually create tables, graphs or pie charts to demonstrate the results of each question. Conclude your report with a discussion on what your data tells you about the reasons for public transport use in your community. How might you encourage more people to use public transport?
7. What are the benefits for a community that can walk to satisfy its daily needs?
8. What types of disabilities would make it most difficult to travel on public transport? Why?

9. What types of disabilities would make it most difficult to move or navigate through city streets? Why?
10. How connected do you feel to the world? Make a list of the modes of connection you have and compare it with other students' lists.

16.12.2 Reflect

11. Mass media affects how we perceive a ***place***, and advertising can play a big role in creating or changing such perceptions. Consider some of the major tourism advertising campaigns in recent years for your state or for Australia. Use the **Australia Tourism** and **Tourism Queensland** weblinks in the Resources tab to answer the following questions.
    (a) What message were the ads or campaigns trying to convey to the audience?
    (b) What perceptions of the ***place*** were the advertisers trying to encourage? Do you think the campaigns were successful?
12. How is your state government meeting the ***changing*** transport needs in your community? What big infrastructure projects are in place: roads, rail or other? Discuss as a class whether your state government is giving enough attention to public transport, and provide examples to support your conclusion on this question.
13. Make your own map of your city's public transport black spots. Your teacher will provide an A3 map of your city (including as many of the outer suburbs as possible). On this map, trace the lines that represent various forms of public transport (such as rail, bus, tram, ferry) using a different coloured pencil for each. Using the ***scale*** of the map, shade in the areas that are more than 500 metres from a public transport stop. Describe what your map tells you about public transport in your city, identifying specific suburbs or regions that are not well served by public transport.
14. Come up with a plan for improving transport in your region. In small groups, decide what kind of services you and your community would like. How would you 'brand' your transport plan? How would you reach your goal? Which stakeholders would need to be involved in order to make your dream a reality?
15. These days people can live in remote ***places*** in Australia due to the high number of ***interconnections*** that are available within Australia and other ***places*** in the world. Give examples of the way we are interconnecting through the use of technology.
16. Investigate your local area to discover to what extent people with disabilities have fair and equitable access to community facilities. (You might like to consider such things as car parking, public transport, access to buildings, ease of movement and safety.)

TOPIC 17
Tourists on the move

17.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

17.1.1 Introduction

The World Tourism Organization estimates that by 2030, five million people will move each day. Where will these people go and what will influence their choices? What impact will these choices have on the places they visit?

People move to and from many different places for many different reasons.

Starter questions

1. Make a list of reasons people might travel.
2. The Australian Bureau of Statistics provides figures for arrivals and departures from Australian airports. In which other ways might people travel?
3. (a) Conduct a class survey. Record the last three times you travelled and stayed away from home for at least one night — where, how, why, how far and for how long did you go?
   (b) Compile your class results and decide on a suitable method of representing this information visually.
   (c) Are there any ***places*** or types of ***place*** that have been visited by more than one member of your class?
   (d) Discuss why this might be a popular ***place*** for people to visit.
4. When did you last have a holiday? What ***places*** did you visit and what did you do in each ***place***? What impact do you think your visit had on these ***places***? Explain.

INQUIRY SEQUENCE

17.1	Overview		341
17.2	What is tourism?		342
17.3	Who goes where?		347
17.4	**SkillBuilder:** Constructing and describing a doughnut chart	online only	350
17.5	Who comes and goes in Australia?		350
17.6	**SkillBuilder:** Creating a survey	online only	353
17.7	**SkillBuilder:** Describing divergence graphs	online only	354
17.8	What are the impacts of tourism?		354
17.9	What can we learn from our travels?		357
17.10	Are zoos and aquariums eco-friendly?	online only	359
17.11	What is cultural tourism?		359
17.12	Is sport a new tourist destination?		362
17.13	**Review**	online only	365

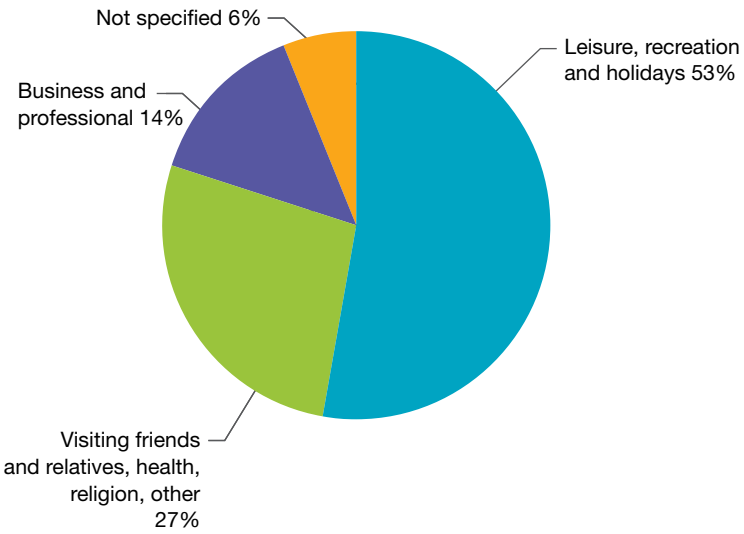
17.2 What is tourism?

17.2.1 Why is tourism important?

The World Tourism Organization defines tourism as the temporary movement of people away from the places where they normally work and live. This movement can be for business, leisure or cultural purposes (see figure 1), and it involves a stay of more than 24 hours but less than one year.

Global tourism increased by 4.7 per cent in 2014: the fifth consecutive year of above average growth. This is despite global economic issues, political change in the Middle East and Africa, and a range of natural disasters. In fact, some of the world's most popular tourist destinations were those affected by global concerns. Figure 2 illustrates why particular destinations are popular. Although tourism

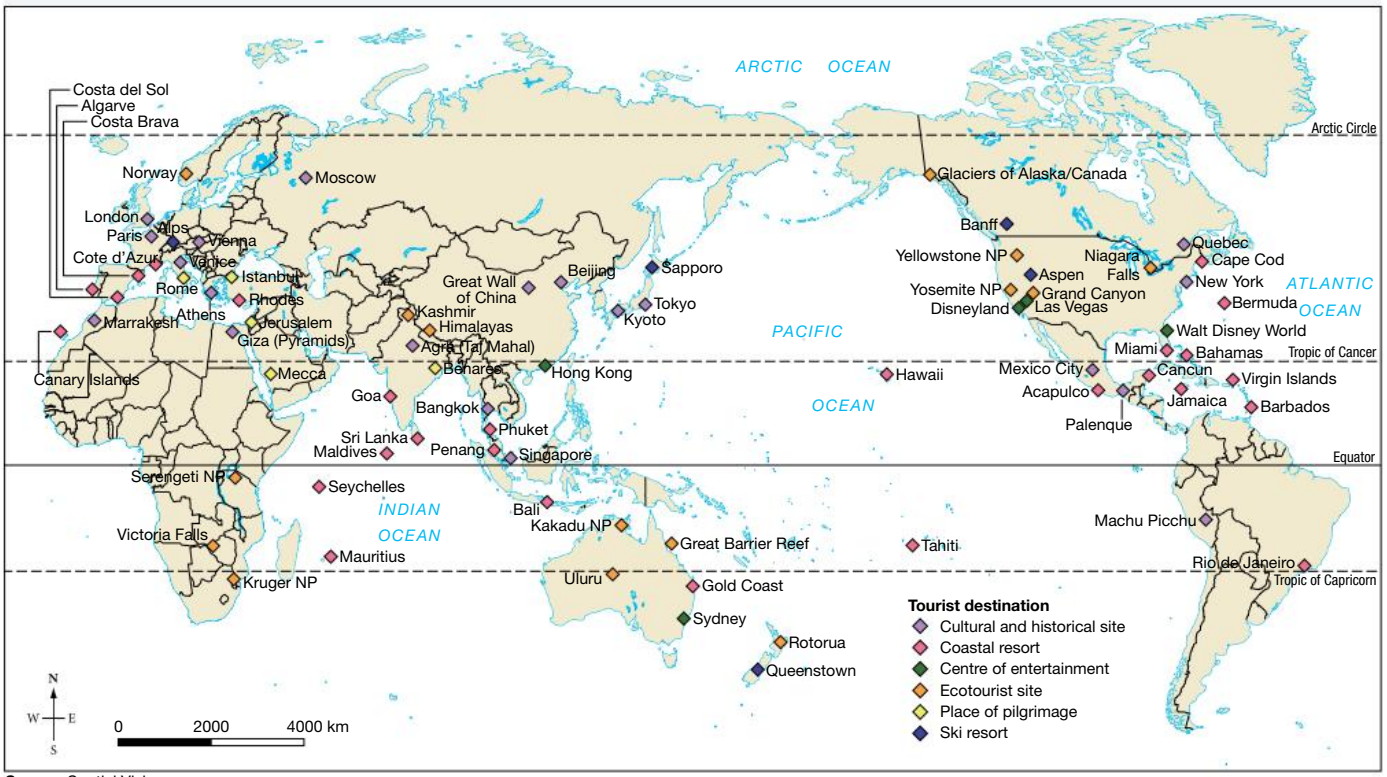
FIGURE 1 Purpose of people's travel, 2014



growth was slower in 2012 (3 per cent), a milestone was reached: there were more than one billion tourist movements in a single year.

Worldwide, 277 million jobs exist because of tourism. Globally, about 9.8 per cent of **gross domestic product (GDP)** is directly linked to the tourism industry, and for many developing countries it is the primary source of income.

FIGURE 2 Types of tourist destinations



Source: Spatial Vision

FIGURE 3 Four kinds of tourist — are all tourists the same?

Organised mass tourist

- Least adventurous
- Purchases a package with a fixed itinerary
- Does not venture from the hotel complex alone; is divorced from the local community
- Makes few decisions about the holiday

The explorer

- Arranges their own trip
- May go off the beaten track but still wants comfortable accommodation
- Is motivated to associate with local communities and may try to speak the local language

Individual mass tourist

- Similar to the organised mass tourist and generally purchases a package
- Maintains some control over their itinerary
- Uses accommodation as a base and may take side tours or hire a car

The drifter

- Identifies with local community and may live and work within it
- Shuns contact with tourists and tourist hotspots
- Takes risks in seeking out new experiences, cultures and places

17.2.2 Why is tourism increasing?

Tourism has increased dramatically over the past 50 years and continues to grow. Advances in transport technology have reduced not only travel times but also cost.

- Today, you can fly from Australia to Europe in about 20 hours, whereas 40 years ago the same journey took six weeks by boat.
- Today, airline and tour companies offer a range of cut-price deals, and the increased number of competitors for the tourist dollar means that travel is more affordable.
- Increased awareness and knowledge of the world has sparked people's desire to see new places and experience different cultures.
- In general, the travelling public has more leisure time and more disposable income, making both domestic and international travel viable.

17.2.3 What are the latest trends in tourism?

Tourism is an important component in world economies. One in 11 jobs worldwide is linked either directly or indirectly to the tourism industry. In the first 10 years of the twenty-first century, this industry grew by almost 40 per cent, from 674 million international arrivals in 2000 to 1.2 billion in 2014. It is predicted that this figure will rise to 1.8 billion in the year 2030 (see figure 4).

Tourists added US$1.246 billion to the global economy in 2014. Figure 5 shows the top 10 tourism earners for 2014.

FIGURE 4 Projected future growth in world tourism

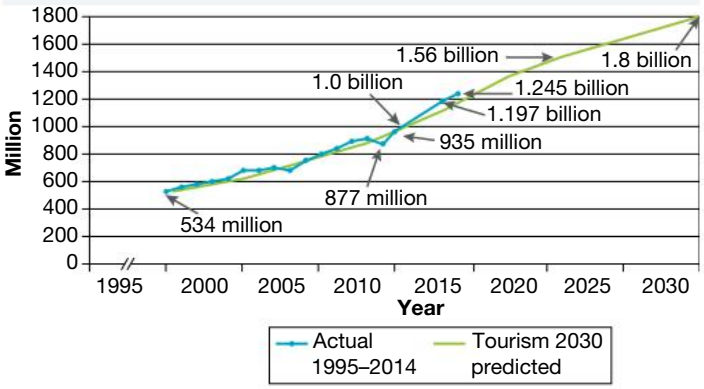
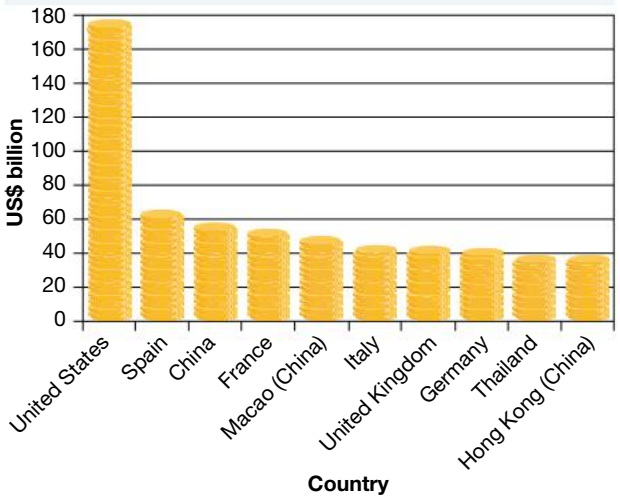


FIGURE 5 Tourism earnings, 2014



17.2.4 Factors shaping the future of tourism

Tourism is no longer just for the elite. Improvements in transport and technology have increased our awareness of the world around us. Improved living standards, increased leisure and greater disposable incomes have all created opportunities for people to travel and to experience new places and cultures. These factors are also shaping the tourist of the future (see figure 6). Particular growth areas are the 18–35 market — young people travelling while studying, taking a break from study, or seeing the world before they settle down. The other major area of growth is the over-60 age bracket.

Predictions also suggest that Africa and the Asia–Pacific region will be particular growth areas, attracting more and more of the tourist dollar.

Countries such as Kenya and Tanzania offer a different type of tourist experience. Kenya, for instance, offers:

- safety
- beaches and a tropical climate
- safari parks and encounters with lions and elephants
- a unique cultural experience with the **Masai** people.

The resulting influx of tourists to Kenya has led to the establishment of **national parks** to protect endangered wildlife and promote this aspect of the tourism experience. Money flowing into the region helps improve water quality and **infrastructure** such as water pipes, roads and airports.

The true challenge for the future, however, is to ensure that:

- money remains in the local economy rather than in the hands of developers, and is used to improve local services, not just tourist services
- the need of indigenous communities to farm the land is balanced with tourist development
- tourist numbers are controlled, to ensure that the environment is not damaged.

FIGURE 6 Factors shaping the future of tourism

17.2.5 Medical tourism

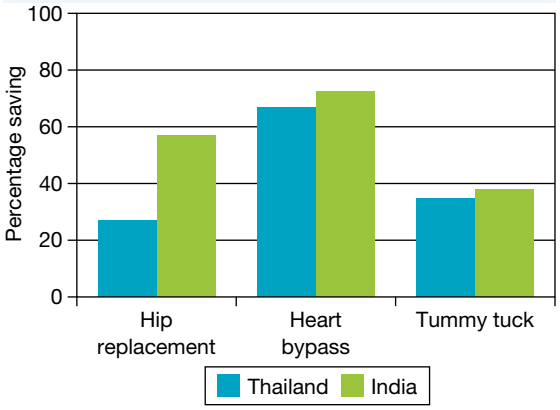
Medical tourism involves people travelling to overseas destinations for medical care and procedures. The low cost of travel, advances in technology and lengthy waiting lists caused by increased demand for elective surgery are turning medical tourism into a multi-billion dollar industry.

While people once travelled overseas only for cosmetic procedures such as facelifts and tummy tucks, the range of services offered has expanded dramatically over recent years to include orthopaedic procedures such as knee and hip replacements, fertility treatments and surrogacy services, and complex heart surgery.

Countries all over the world are attracting patients for a variety of reasons. In some instances, it is the high standard of medical care or the outstanding reputation of a particular facility that attracts people, while for others it is the savings to be made and the opportunity to include a holiday and luxury accommodation as part of the package.

Asia is the market leader in the medical tourism industry, with Thailand and India vying for the number one spot. Thailand is slightly more expensive, but does offer a better tourist experience and has a wider number of services available. India, on the other hand, is cheap and boasts state-of-the-art facilities staffed by Western medical staff, predominantly from the United States. Figure 7 illustrates the savings to be made by having selected medical procedures carried out in Asia rather than Australia; figure 8 shows the savings when a variety

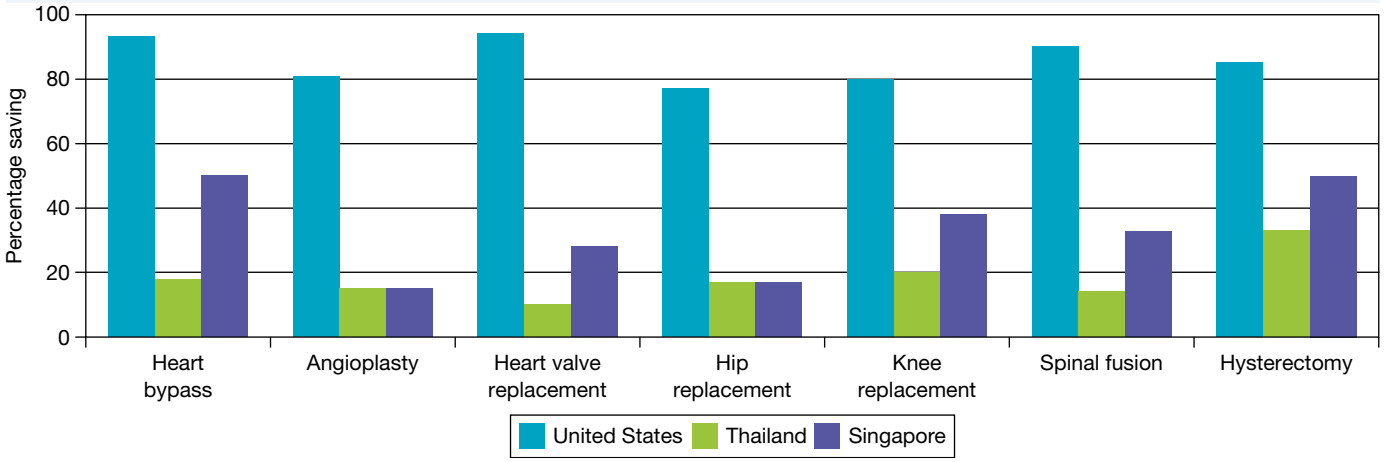
FIGURE 7 Cost savings that can be made by having medical treatment in Asia versus Australia



Adapted from: Cosmetic Surgeon India and Rowena Ryan/News.com.au

of procedures are undertaken in Malaysia as compared to the United States, Thailand or Singapore. With medical tourism expected to add more than $8.5 million to Asian economies per year, it is not surprising that there has been a dramatic increase in the number of facilities to deliver these services.

FIGURE 8 Cost savings that can be made by having medical procedures carried out in Malaysia versus the United States, Thailand or Singapore



Adapted from: Cosmetic Surgeon India and Rowena Ryan/News.com.au

17.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What is a tourist?
2. Why do you think tourism is one of the fastest growing industries?

Explain

3. Using your atlas as a primary source of information, select three ***places*** from different categories shown in figure 2 that you might like to visit.
   (a) Calculate the distance between them.
   (b) Explain how you would travel to each ***place***.
   (c) Explain what you might expect to see and do in each ***place***.
   (d) Work out how long it might take to visit each ***place***.
   (e) Describe each location using geographical concepts such as latitude and longitude, direction and ***scale***.
   (f) Explain why you have chosen each ***place***.

Discover

4. What type of tourist are you? Make a sketch of yourself, similar to the one shown here.
   Annotate your cartoon to describe yourself as a tourist, using information in this section to help you. Include information about your ideal holiday and explain why you appear as you do in your cartoon.

Predict

5. In 2014, 1.1 billion tourist movements were recorded globally. How many movements is this per day?
6. (a) Using information in this section, predict how many tourists there will be in 2020. What percentage increase does this represent?
   (b) Which ***places*** do you think will be the most popular?
   (c) What impact do you think these increases will have on the ***environment***?
   (d) Will this result in small-***scale*** or large-***scale change***?
   (e) Do you think these numbers are ***sustainable***? Explain.
7. Tourism expenditure increased by 93 per cent between the year 2000 and the year 2010, from $475 billion to $918 billion. Using these figures as a guide, predict how much income might be generated through tourism by 2030.
8. Look back over your responses to the last three questions. What does this tell you about the importance of tourism? Explain.

Think

9. (a) Explain what you understand by the term ***sustainable*** *tourism.*
   (b) Describe an example of tourism that would be considered ***sustainable***.
   (c) Describe an example of tourism that would not be considered ***sustainable***. Suggest what ***changes*** might be needed to make it ***sustainable***.

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

› **World tourism**

17.3 Who goes where?

17.3.1 Why is global tourism on the rise?

Tourism is one of the world's largest industries. Even when global economies are experiencing a downturn, people still travel. After natural disasters, countries rely on the return of the tourist dollar to help stimulate their economies. However, the spread of tourism is not uniform across the Earth.

Over time, travel has become faster, easier, cheaper and safer. Economic growth has meant that many people now have more money to spend and can afford to travel. Increases in annual leave have provided people with more time to travel. For example, Australians and New Zealanders can take long-service leave, which is often spent on an extended overseas trip. It has also become more fashionable for young people to spend time seeing the world during their 'gap year' and to travel before settling down and establishing a career and raising a family (see figure 1).

FIGURE 1 Backpackers spend more, travel further and stay longer than other tourists.

Many young travellers see backpacking as the optimum way to travel. Generally this group:

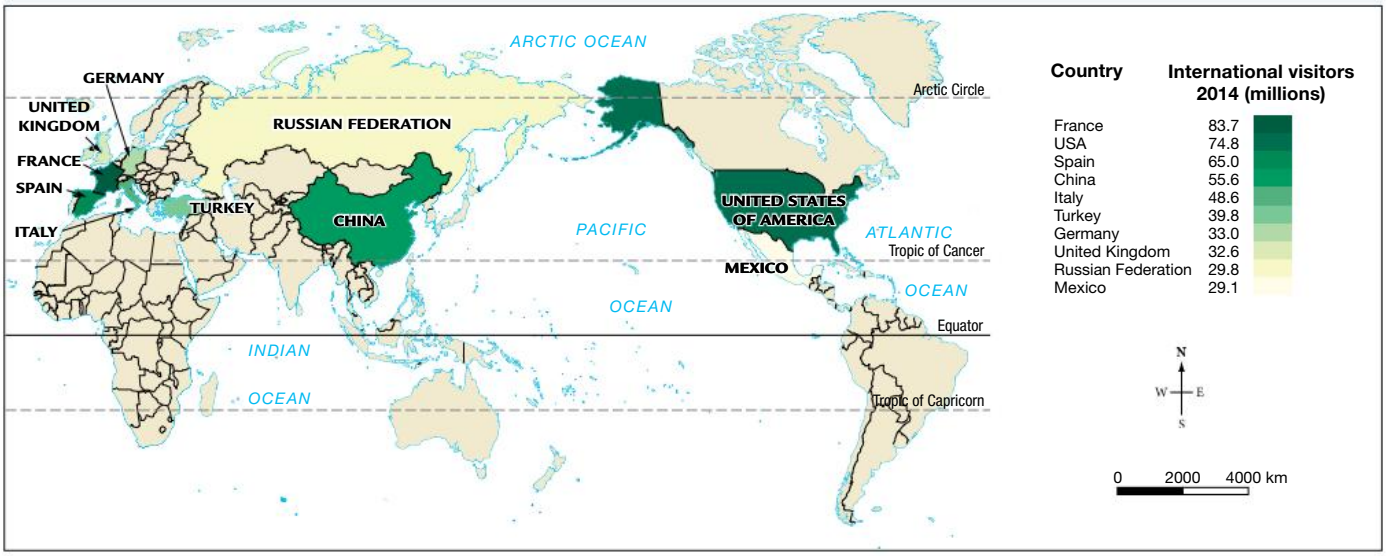
- is on a tight budget
- wants to mix with other young travellers and local communities
- has a flexible itinerary
- seeks adventure
- is prepared to work while on holiday to extend their stay.

At the other end of the scale, there has also been a dramatic growth in **mature-aged** tourist movements. The number of older people in **developed** countries is growing. In many instances, they have older children who are no longer dependent on their parents for support. Some of these travellers have savings, access to superannuation funds, and the opportunity to retire early; thus, they have both the time and the money to travel.

17.3.2 Which countries are top-10 destinations?

As each tourist enters or leaves a country, they are counted by that country's customs and immigration officials. This data is collected by the World Tourism Organization, and the results can be shown spatially (see figure 2).

FIGURE 2 World's top 10 tourist destinations, 2014

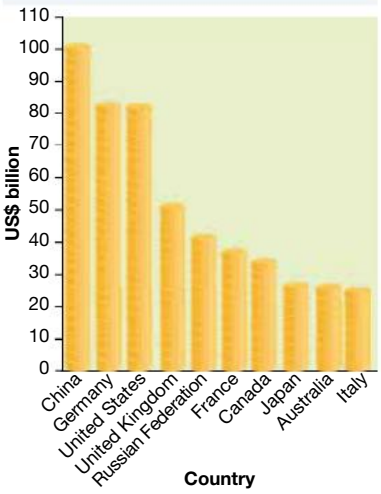


Source: World Tourism Organization (UNWTO)

17.3.3 Who spends the most?

Figure 2 shows the countries that attract the most tourists, but which countries do these tourists come from, and how much do they spend? Figure 3 shows the top-10 countries in terms of the money they spend on international tourism.

FIGURE 3 World's top 10 tourist spenders, 2012



17.3.4 Where do people stay?

When travelling overseas, most tourists give little thought to who owns the hotel or resort in which they are staying. Table 1 shows the locations of various hotel-chain headquarters, indicating that the corporate owners of many hotels are based in a country that is often not the one a tourist is visiting. Home Inns entered the market in 2008 when they took over another hotel chain. They are primarily located in China and offer budget accommodation.

TABLE 1 World's top 10 operators, 2017 (based on rooms)

Company	Headquarters	Total rooms
Marriot/Starwood	USA	1 169 902
Hilton Worldwide	USA	796 440
Intercontinental Hotels Group	UK	767 135
Wyndham Hotel Group	USA	697 607
Jin Jiang/Plateno/Vienna	China	602 350
Accor Hotels/Fairmont Raffles Hotels International	France	583 783
Choice Hotels International	USA	516 122
BTG/Home Inns	China	373 560
Best Western	USA	314 788
Huazhu	China	293 416

Source: http://hospitality-on.com/en/news/2017/06/28/worldwide-hospitality-ranking-which-changes-in-the-leading-12-hotel-groups/

17.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Explain

1. Carefully study figures 2 and 3 and answer the following.
   (a) On which continents are the top 10 destinations located?
   (b) Which continents are generating the most in tourism spending?
   (c) Describe the ***interconnection*** between destinations and tourism spending.
2. What is the difference between a mature-age tourist and a backpacker? With the aid of a Venn diagram, show the differences in the needs of these two groups of tourists.

Discover

3. The three main types of tourist attraction are natural, cultural and event attractions. Use a dictionary to help you write your own definition of each term. For each of the countries shown in figure 2, try to find an example of each type of attraction. Use the map in figure 2 in subtopic 17.2 to help you.

Predict

4. (a) On a blank outline map of the world, locate and label the capital cities of each of the top 10 tourist destinations.
   (b) Plot a trip from your nearest capital city to all 10 of these ***places***, covering the shortest possible distance, and returning to your capital city. Use the ***scale*** on the map to estimate the distance travelled. Calculate the time it might take to complete this journey.
5. (a) Describe the pattern of hotel ownership shown in table 1.
   (b) Construct a bar graph showing both the total number of hotels and total number of rooms for the top 10 hotel companies.
   (c) Find out the average cost of a one-week stay in one of these hotel chains.
   (d) How much income would this room generate if it was occupied for each night of the year?
   (e) What percentage of your answer to question 5d would be needed to maintain this room, the complex and other associated costs, such as wages?
   (f) Estimate how much money is left and where you think it goes. What effect do you think this might have on local economies?

17.4 SkillBuilder: Constructing and describing a doughnut chart

online only

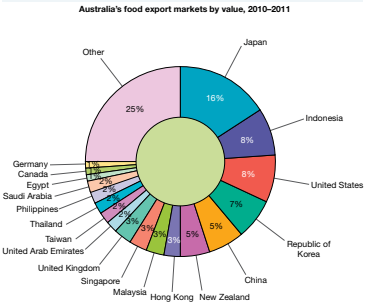
WHAT IS A DOUGHNUT CHART?

A doughnut chart is a circular chart with a hole in the middle. Each part of the doughnut is divided as if it were a pie chart with a cut-out. The circle represents the total, or 100 per cent, of whatever is being looked at. The size of the segments is easily seen. Doughnut charts are a useful visual interpretation of data.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 Australia's food export markets by value, 2010–2011



Source: © DAFF 2012, National Food Plan green paper 2012, Department of Agriculture, Fisheries and Forestry, Canberra. CC BY 3.0.

learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Constructing and describing a doughnut chart (eles-1738)

Try out this interactivity: Constructing and describing a doughnut chart (int-3356)

17.5 Who comes and goes in Australia?

17.5.1 Where in the world are Australians going?

Over 13 million Australians go away on holiday each year. Of these, 10 per cent plan to travel overseas, and 55 per cent plan to holiday within Australia. While the numbers of domestic travellers may be high, international tourism is on the rise.

In 2014 Australians made 7.9 international trips and spent a total of 161 million nights abroad. It is estimated that they contributed $47.3 billion to global economies. While the decline in the Australian dollar has seen an increase in the number of Australians choosing to travel domestically we are taking three times as many international holidays today than we were a decade ago.

Despite the decline in the Australian dollar against other currencies in 2014 our currency still has excellent buying power in a wide range of holiday destinations. Competition between airlines; choice of flights; and package deals that include combinations of tours, accommodation, flights and meals continue to fuel the growth of the international market.

The opportunity to live and work overseas has also seen an increase in the number of people under 30 travelling abroad. The under 30s working visa has ensured that foreign travel is both appealing and affordable for this age group. At any one time there are about one million Australians living and working overseas.

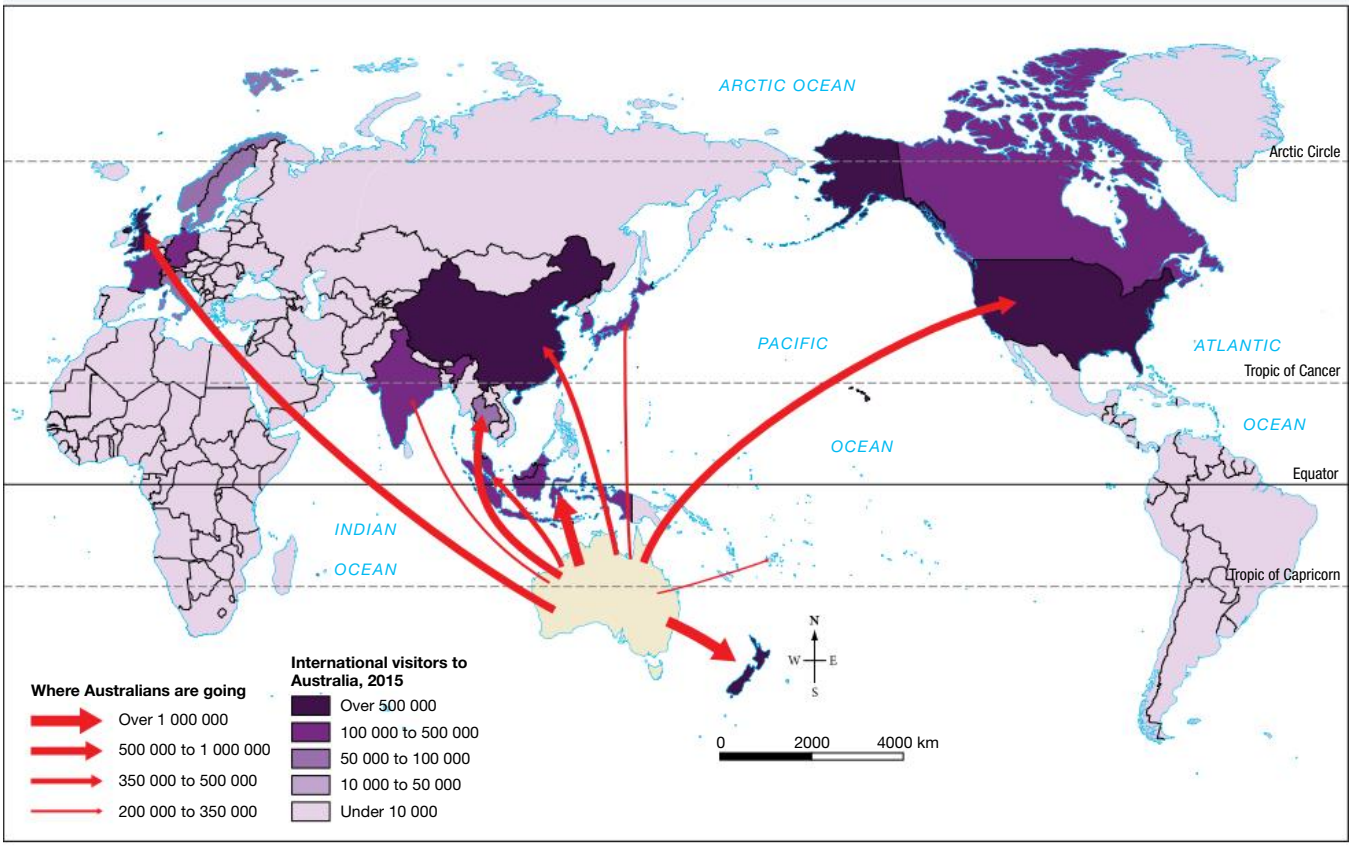
Nepal, Japan and the United Arab Emirates are the fastest expanding destinations for Australians travelling abroad.

17.5.2 Who comes here?

In the first eight months of 2015, 6.8 million tourists came to Australia and spent 242 million nights in the country. Approximately 64 per cent of these international visitors had previously been to Australia. They added about $34 billion to the Australian economy. The most visited states were New South Wales with 52 per cent, Queensland with 37 per cent and Victoria with 31 per cent. The countries of origin of these visitors are shown in figure 1, while the reasons for their visits are shown in figure 2.

Nine-hundred and twenty-five thousand jobs can be attributed either directly or indirectly to the tourism industry. It is predicted that by 2020 an additional 123 000 jobs will be created.

FIGURE 1 Who's coming and going? International visitors to Australia in 2015



Source: ABS, Austrade

17.5.3 What do visitors want to see?

Australia is a land of contrasts, having a wide variety of both human and natural environments. Thirty of the most popular tourist destinations are shown in figure 3.

How are we perceived?

Tourism statistics have revealed that Victoria has increased its share of the international tourist market. Tourism in this state grew by 28 per cent in the 12-month period ending September 2015, a figure that is significantly higher than the national average, which is just 15 per cent. New South Wales, however, remains the most visited state.

FIGURE 2 Reasons for visiting Australia

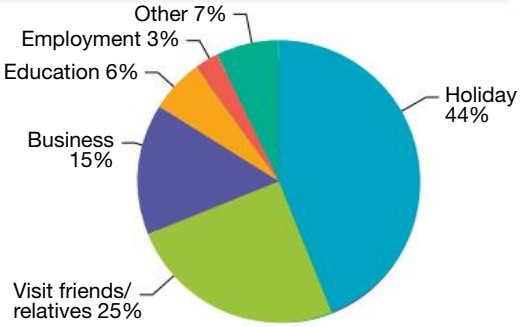
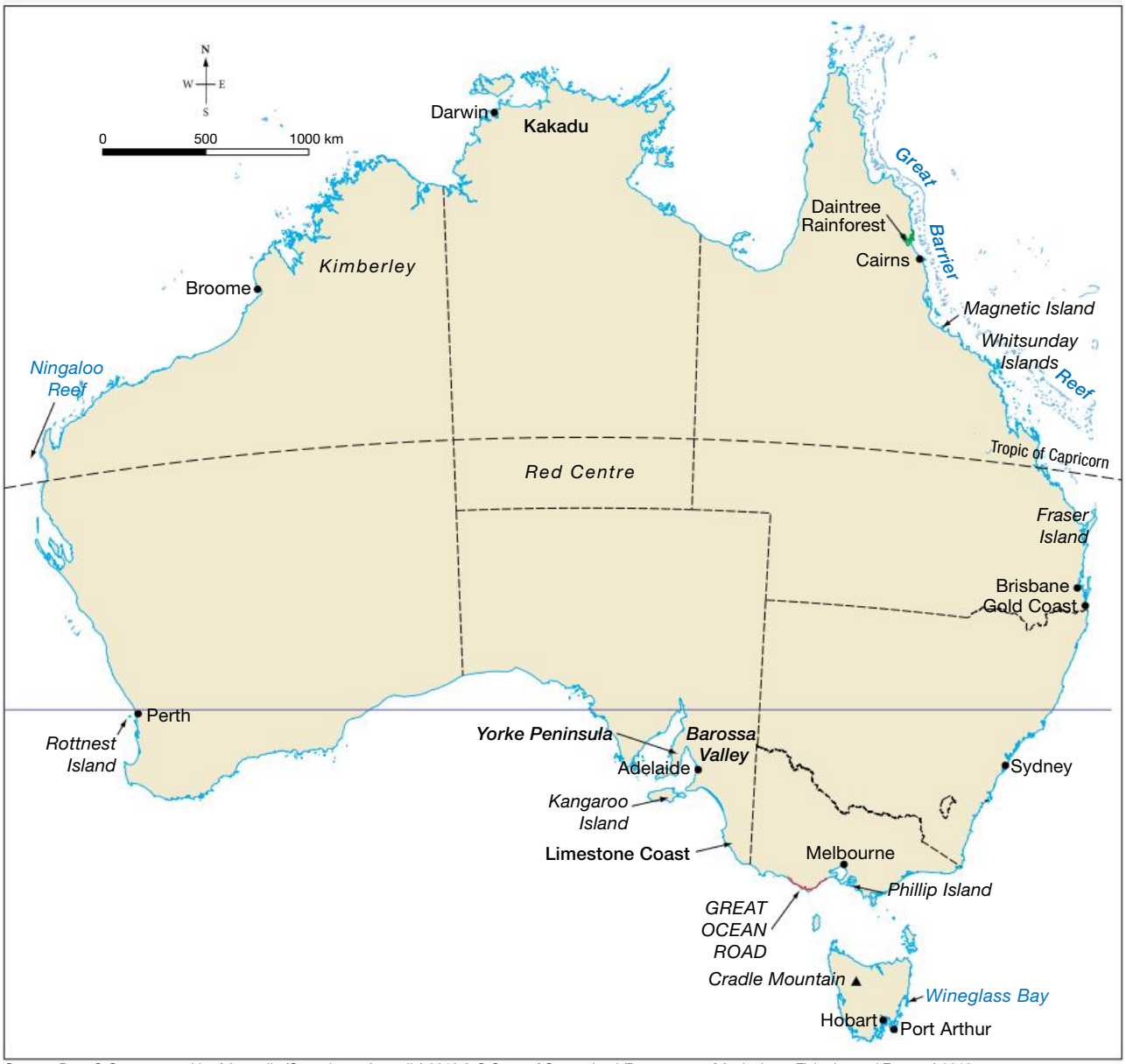


TABLE 1 How we see ourselves

New South Wales	Nightlife
Northern Territory	Outback
Queensland	Beaches
South Australia	Wine
Tasmania	Nature
Victoria	Sport
Western Australia	Wine

FIGURE 3 Thirty of Australia's most popular tourist destinations



Source: Data © Commonwealth of Australia (Geoscience Australia) 2013 & © State of Queensland (Department of Agriculture, Fisheries and Forestry) 2013

17.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Why might more Australians choose to holiday overseas rather than in Australia?

Explain

2. Explain the ***interconnection*** between the ***places*** most visited by Australians and our major source of tourists.

Discover

3. Study figure 3.
   (a) Identify the top tourist destinations in Victoria.
   (b) Suggest other ***places*** that you think should be at the top of every tourist's holiday itinerary.
   (c) Identify which are human and which are natural ***environments***.
   (d) Prepare an annotated visual display that showcases places of interest within Victoria. Include information about the attractions, their location and why they are a viewing must.
   (e) What strategies are in place to ensure the ***sustainable*** management of tourist facilities in Victoria?
4. (a) Survey members of your class to find out which three overseas ***places*** they would most like to visit and why.
   (b) Each member of the class should ask their parents which three overseas ***places*** they would most like to visit and why.
   (c) Compile your class data and identify the most popular ***places*** selected by students and their parents. Make sure you also collate the data showing the reasons for the choices.
   (d) On an outline map of the world, show the results of your survey. Make sure you can distinguish between ***places*** chosen by parents and ***places*** chosen by students.
   (e) Annotate your map with the reasons given for the choices.
   (f) Is there an ***interconnection*** between ***places*** chosen by parents and by students? Suggest reasons for your observations.

17.6 SkillBuilder: Creating a survey

online only

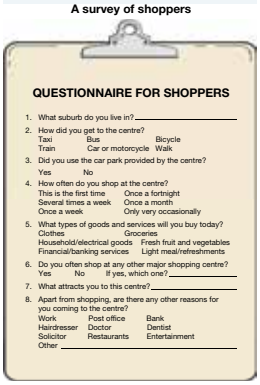
WHAT IS A SURVEY?

Surveys collect primary data. A survey involves asking questions, recording and collecting responses, and collating and interpreting the number of responses. Surveys are useful because they provide statistics for a specific topic that might not be available by any other means. A wide range of data can be gathered in an efficient and simple way.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 A survey of shoppers


A survey of shoppers

QUESTIONNAIRE FOR SHOPPERS

1. What suburb do you live in? _____
2. How did you get to the centre?
   Taxi Bus Bicycle
   Train Car or motorcycle Walk
3. Did you use the car park provided by the centre?
   Yes No
4. How often do you shop at the centre?
   This is the first time Once a fortnight
   Several times a week Once a month
   Once a week Only very occasionally
5. What types of goods and services will you buy today?
   Clothes Groceries
   Household/electrical goods Fresh fruit and vegetables
   Financial/banking services Light meal/refreshments
6. Do you often shop at any other major shopping centre?
   Yes No If yes, which one? _____
7. What attracts you to this centre? _____
8. Apart from shopping, are there any other reasons for you coming to the centre?
   Work Post office Bank
   Hairdresser Doctor Dentist
   Solicitor Restaurants Entertainment
   Other _____

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Watch this eLesson: Creating a survey (eles-1764)

Try out this interactivity: Creating a survey (int-3382)

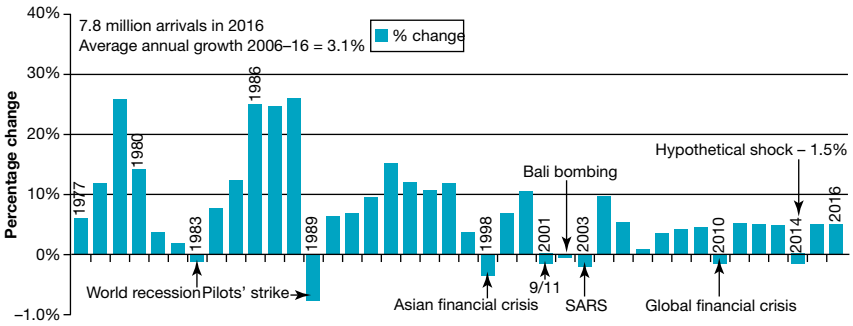
17.7 SkillBuilder: Describing divergence graphs

online only

WHAT IS A DIVERGENCE GRAPH?

A divergence graph is a graph that is drawn above and below a zero line. Those numbers above the line are positive, showing the amount above zero. Negative numbers that are shown indicate that the data has fallen below zero. A divergence graph allows you to identify changes away from the norm in a trend.

FIGURE 1 Australia's past and future tourism trends



Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

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Watch this eLesson: Describing divergence graphs (eles-1739)

Try out this interactivity: Describing divergence graphs (int-3357)

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
› **Tourism in Australia**

17.8 What are the impacts of tourism?

17.8.1 Do the benefits outweigh the costs?

Tourism seems like the perfect industry. It can encourage greater understanding between people and bring prosperity to communities (see figure 2). However, tourism development can also destroy people's culture and the places in which they live (see figure 1). There is sometimes a fine line between exploitation and sustainable tourism.

FIGURE 1 The negative impacts of tourism

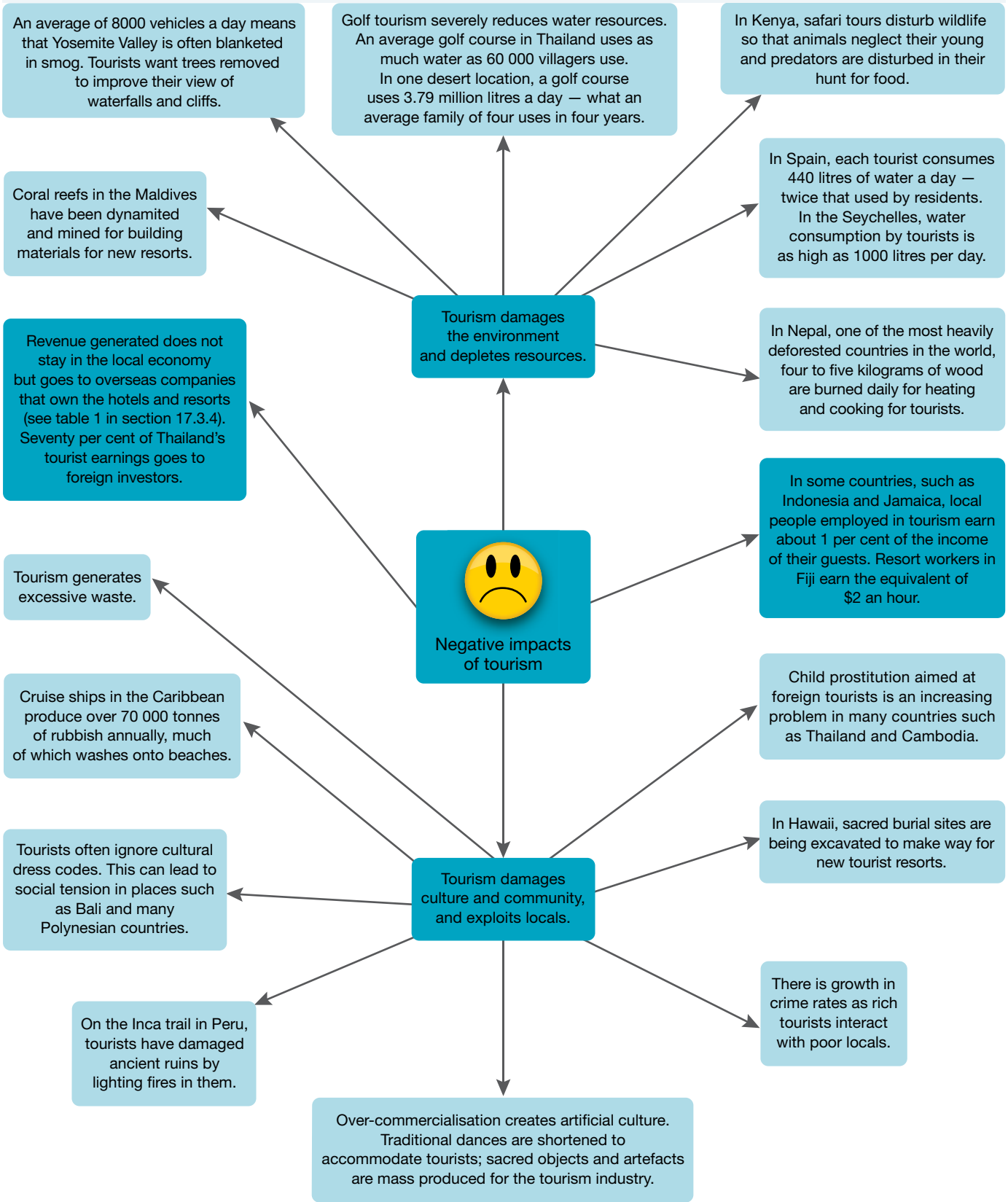
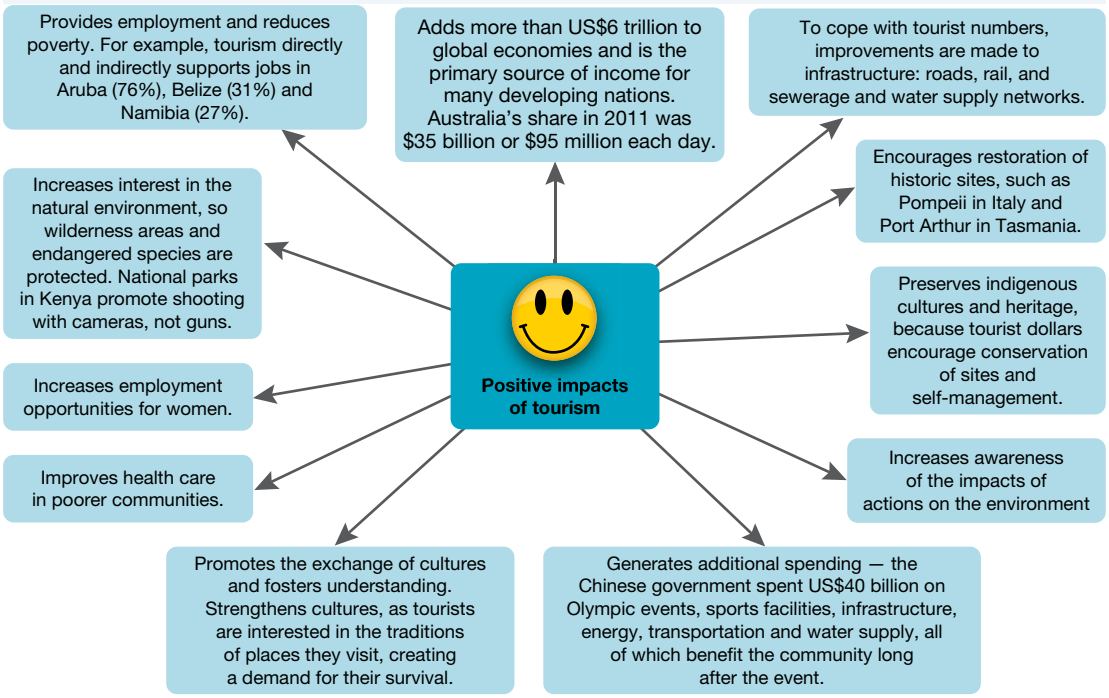


FIGURE 2 The positive impacts of tourism



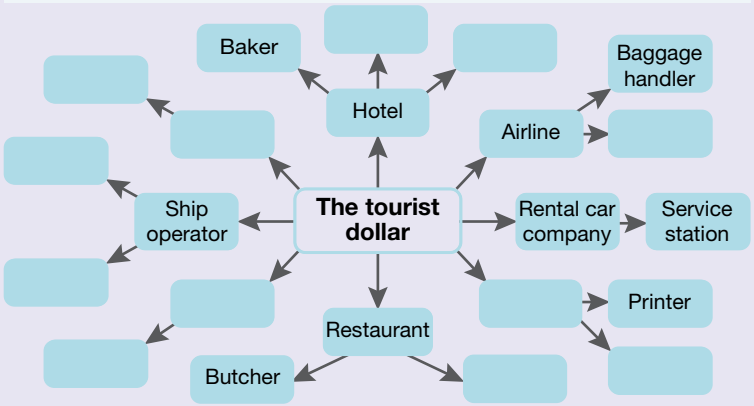
17.8 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Think

1. Using figures 1 and 2, explain how tourism can have both positive and negative effects.
2. (a) Figure 3 shows how the tourist dollar can flow from one job to the next. Those jobs in the centre of the diagram interact directly with the tourist, while those on the outside do not. Copy the diagram into your workbook at an enlarged size. Complete it by adding other jobs. Add to it if you can. Study your completed diagram and write a paragraph explaining the ***interconnection*** between tourism and the economy.
   (b) Repeat this exercise looking at either the social or ***environmental*** impacts.

FIGURE 3 One view of tourism



3. The type of ***interconnection*** shown between industries in figure 3 is sometimes called the multiplier effect. Explain what you think this means.
4. The impact of tourism can be classified as ***environmental***, cultural and economic. Study figure 1, showing the negative impacts of tourism. Working in groups of three, select an impact from each group. Explain the ***scale*** of each impact and devise a strategy for ***sustainable*** tourism.
5. Which of the following would be the best to develop as a tourist resource in your region: art gallery, museum, cinema complex or sports stadium? Justify your answer.

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Try out this interactivity: Tourism trauma (int-3335)

17.9 What can we learn from our travels?

17.9.1 What is ecotourism?

Tourism has the capacity to benefit environments and cultures or destroy them. **Ecotourism** has developed in response to this issue. The aim is to manage tourism in a sustainable way. This might be through educational programs related to the environment or cultural heritage, or through controlling the types and locations of tourist activities or the number of tourists visiting an area.

FIGURE 1 Anatomy of an ideal ecotourism resort

A The natural bush is retained and native plants are used to revegetate or landscape the area.

B Composting toilets treat human waste, and worm farms consume food waste. Water is treated with ultraviolet light rather than chlorine. Recycling is practised; for example, grey water is used in irrigation and toilet systems.

C Visitors are encouraged to improve and maintain the environment by using paths or planting trees.

D Buildings blend in with the natural landscape, and local materials are used. Buildings are often raised to prevent damage to plant roots. During construction, builders prevent contamination of the local environment by having workers change shoes and by washing down equipment to keep out foreign organisms.

E Local organically grown produce is used, and craft markets and stalls might also be established and run by indigenous communities, supporting the local economy, creating jobs and reducing poverty.

F There is no golf course, because of the high water use and need for pesticides it would require.

G Low-impact, non-polluting transport such as bicycles are provided for guests.

H Walking trails include educational information boards.

I An information centre helps visitors understand the environment. Local indigenous people are employed to educate visitors about their culture.

J Electricity is generated through solar panels on the roofs of eco-cabins.

K Boardwalks are built over sensitive areas such as sand dunes to protect them from damage. Boardwalks might also be constructed in the tree canopies.

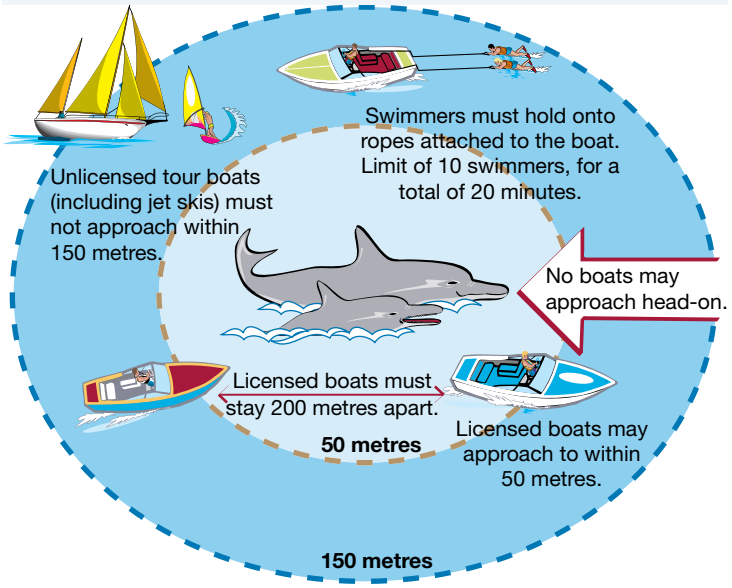
L Trained guides educate tourists about coral reefs and native vegetation, and show visitors how to minimise their impact.

Ecotourism differs from traditional tourism in two main ways.

- It recognises that many tourists wish to learn about the natural environment (such as reefs, rainforests and deserts) and the cultural environment (such as indigenous communities).
- It aims to limit the impact of tourist facilities and visitors on the environment.

Ecotourism is the fastest growing sector in the tourism industry, increasing at about 10 to 15 per cent per year.

FIGURE 2 Regulations for contact with dolphins



17.9 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. How does an ecotourism resort differ from a traditional tourist resort?

Explain

2. Use a mind map to explore further ***changes*** that could be made to the resort shown in figure 1 to make it even more ***environmentally*** friendly. Would you describe your ***changes*** as small-***scale*** or large-***scale***? Justify how these ***changes*** might be more ***environmentally sustainable***.

Discover

3. Visitors to ecotourism resorts are often attracted by brochures that emphasise the resort's ***environmental*** policies. These brochures also set out guidelines to follow in order to minimise visitor impact.
   (a) Design and produce a brochure for the ecotourism resort illustrated in figure 1. Use ICT tools and techniques to maximise the brochure's impact.
   (b) Add another eco-activity to the island and devise strategies to educate tourists and minimise their impact on the ***environment***.

Think

4. One of the most famous examples of wildlife-based ecotourism in Australia is Monkey Mia in Western Australia. Here the wild dolphins come into shore and tourists are able to feed, swim with and touch them.
   (a) What rules and other techniques are used to control the interaction between dolphins and tourists?
   (b) Predict potential problems that might occur between dolphins and tourists.
   (c) Do you think this is an example of ***sustainable*** ecotourism? Give reasons for your answer.

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Try out this interactivity: Sustainable sightseeing (int-3336)

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

- **Kakadu National Park**
- **Wilsons Promontory**
- **Ningaloo Reef and ecotourism**

17.10 Are zoos and aquariums eco-friendly?

online only

To access this subtopic, go to your learnON title at **www.jacplus.com.au**

17.11 What is cultural tourism?

17.11.1 Different cultures

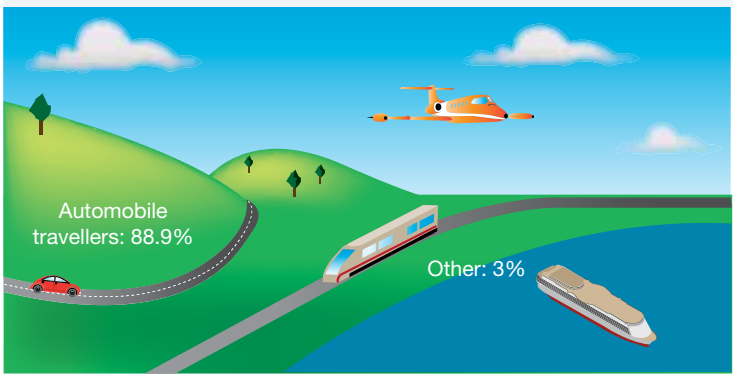
Cultural tourism is concerned with the way of life of people in a geographical region. It is usually connected to elements that have shaped their values or culture, such as a shared history, traditions or religion. It may be linked to unique events, such as the celebration of Chinese New Year or Thanksgiving in the United States. Whatever the reason, the mass movement of people associated with these events has a significant impact on both people and places.

17.11.2 What is the impact of Thanksgiving?

Thanksgiving is held in the United States on the fourth Thursday in November. It dates back to the seventeenth-century celebration of the harvest. Today it is a time for families to get together and give thanks for what they have.

The holiday period runs from Wednesday to Sunday. In 2015, about 46.9 million people travelled an average distance of 884 kilometres to celebrate with family and friends (see figure 1). As millions of people travel across the United States, transport systems are stretched to the limits, creating delays and traffic congestion. Because the holiday season is so close to the start of winter, the weather can further complicate people's travel plans, especially those who live in the northern states. Early winter storms can bring ice and snow, resulting in airport closures and impassable roads.

FIGURE 1 Thanksgiving and modes of transport



Surprisingly, in 2015 the cost of travel decreased around the time of Thanksgiving. Travellers paid less for fuel, car hire, accommodation and airfares.

17.11.3 What is the impact of Chinese New Year?

Chinese New Year is the longest and most important of the traditional Chinese holidays. Dating back centuries, it is steeped in ancient myths and traditions. The festivities begin on the first day of the first month in the traditional Chinese calendar, and last for 15 days. They conclude with the lantern festival on Chinese

New Year's Eve, a day when families gather for their annual reunion dinner. It is considered a major holiday, and it influences not only China's geographical neighbours but also the nations with whom China has economic ties.

Of special significance is the fact that the date on which Chinese New Year occurs varies from year to year. This date coincides with the second **new moon** after the Chinese **winter solstice**, which can occur any time between 21 January and 20 February.

Chinese New Year, or Lunar New Year, is celebrated as a public holiday in many countries with large Chinese populations or with calendars based on the Chinese lunar calendar (see figure 2). The changing nature of this holiday has meant that many governments have to shift working days to accommodate this event.

In China itself, many manufacturing centres close down for the 15-day period, allowing tens of millions of people to travel from the industrial cities where they work to their hometowns and rural communities. This means that retailers and manufacturers in overseas countries such as the United States and Australia have to adjust their production and shipping schedules to ensure they have enough stock on hand to deal with the closure of factories in China. For those shopping online, goods simply will not be available and will be placed on back order.

FIGURE 2 To ensure prosperity and good fortune in the year ahead, parades, dragons and lion dances feature in Chinese New Year celebrations.

17.11.4 The logistics of moving 80 million people each day

Chinese New Year has been described as the biggest annual movement of people in China. Over a five-day period, an average of 80 million journeys are recorded in the last-minute dash to make it home for the traditional family celebrations. If you include the 40 days surrounding 8 February (the date of Chinese New Year in 2016), more than 3.65 billion people travel in China alone.

Most people elect to travel by road as most middle-class citizens cannot afford to fly home, nor do they want to queue for hours or days to purchase bus or rail tickets. Nevertheless, in 2016, 24 million chose to travel by air; in fact, one airline added an additional 210 flights to cope with the increased demand. However, weather conditions and the impact of additional flights competing for the same amount of air space meant that about 80 per cent of flights were delayed. Delays of more than five hours were not uncommon. It is also not uncommon for commuters to add thousands of kilometres to their journey. One airline traveller flew from Beijing to Kunming in southern China via Bangkok because he could not get a direct flight.

A growing trend in both 2015 and 2016 was motorcycle convoys as these vehicles are not only cheaper to run but have the added advantage of being able to avoid the congestion created by 80 million people and their vehicles clogging the motorways.

Rail travel was not without its own problems as a system with a capacity to move 3.4 million people had to cope with 145 million travellers. In 2012 a new online booking system was introduced; however, it crashed when 1.66 million people attempted to log on at the same time. The system is still plagued with issues and unable to keep pace with the increased demand and has done little to address the issue of scalpers. Even with extended selling hours people were faced with long queues that often saw tempers flare. Prices were also often double or triple the usual cost as scalpers cashed in on those desperate to get home. In 2015 the rail network was expanded through the addition of 9000 kilometres of track, making it the world's second largest rail network, second only to the United States.

In 2016 almost 100 000 people were left stranded at railway stations after ice and snow in other parts of the country caused long delays. Fifty-five trains in Shanghai and 24 in Guangzhou were unable to leave their respective stations when China was struck by a record-breaking cold snap. Almost 4000 police and security guards were called in to keep order (see figure 3).

FIGURE 3 Travel chaos as crowds swell outside Guangzhou station after bad weather causes long delays

17.11 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Explain

1. In your own words, explain what is meant by the term *cultural tourism*.
2. Why are Thanksgiving and Chinese New Year regarded as cultural events?

Discover

3. As a class, brainstorm a list of cultural or celebratory events that occur in Australia.
4. Use the internet to find out more about either Chinese New Year or Thanksgiving. Investigate the history, myths and traditions associated with your chosen event. Prepare an annotated visual display comparing your finding with a cultural or celebratory event in Australia. Make sure you include references to the ***scale*** of your chosen event and the ***place*** in which it occurs.

Think

5. Copy the table below into your workbook and fill it in. Use the **Thanksgiving** weblink in the Resources tab to find out more and help you complete your table.
   (a) What is the preferred mode of transport for Thanksgiving and for Chinese New Year? Suggest reasons for differences in travel arrangements. In your response, include reference to the ***scale*** of movement.
   (b) Make a list of problems associated with the mass movement of people.
   (c) Select one of the problems you have identified and explain the impact it might have on people, ***places*** and the ***environment***. Suggest a strategy for the ***sustainable*** management of this problem in order to reduce its impact.
6. Write a paragraph explaining how cultural events can ***change*** people, ***places*** and the ***environment***.

	Thanksgiving	Chinese New Year
Number of trips		
Most common form of transport		
Length of holiday period		
Purpose of trip/activities		

learnON RESOURCES — ONLINE ONLY

Explore more with this weblink: Thanksgiving

17.12 Is sport a new tourist destination?

17.12.1 How are tourism and sport connected?

Sport tourism involves people travelling to view or participate in a sporting event. It is an expanding sector of the tourism industry, currently adding $600 million to global economies each year. It is estimated that, on average, 12 million international trips are made to view sporting events. But what impact does this have on people and places?

Governments spend millions of dollars to attract people to sporting events such as the Olympics, the cricket and soccer world cups, and motor racing events, to name just a few. These events also trigger:

- construction of new stadiums
- expansion and upgrades of transport networks
- improvements to airport facilities
- clean-ups of cities in readiness for the arrival of tourists.

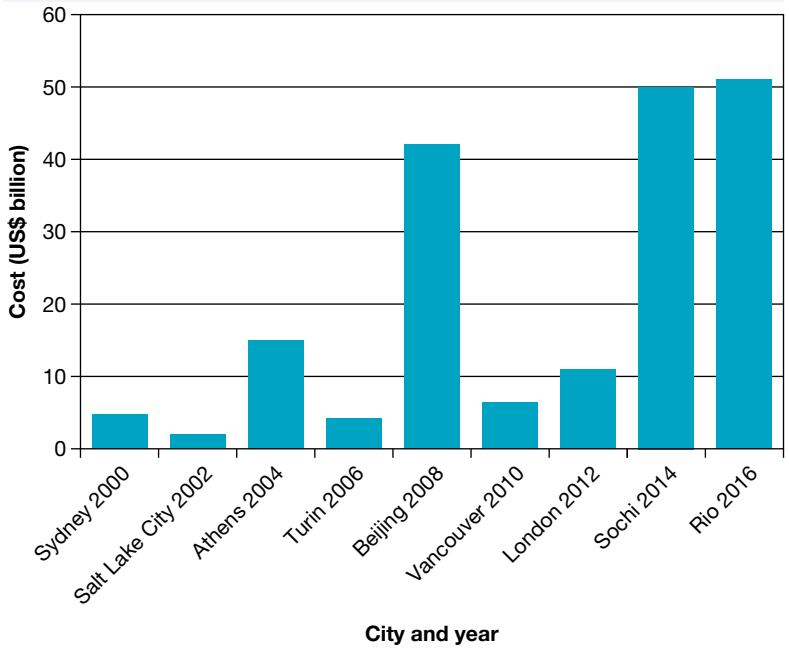
Sports tourists fall into two broad categories: those who like to watch and those who want to participate. The latter view sport as a part of their leisure and recreational activities (see figure 1). A common trait in all sports tourists is their passion and willingness to spend money to indulge this passion.

FIGURE 1 On the trail — recreational tourism

17.12.2 Are the Olympics a tourist bonanza?

Major sporting events such as the Olympics translate into improved infrastructure, and provide the host city with considerable international exposure. Does this bring in more tourists and justify the capital outlay? (See figure 2.)

FIGURE 2 Olympics expenditure (both summer and winter), including infrastructure



The general consensus is that the costs associated with hosting a one-off major event, such as the soccer World Cup or the Olympic Games, do not meet the anticipated outcomes. Statistics show that three million tourists visited the United Kingdom in August 2012 (their Olympic year) — 5 per cent *less* than in the previous year. Tourism spending, however, went up by 9 per cent, in part because of spending on Olympic tickets. In addition, many UK residents chose to holiday overseas rather than remain at home during the Olympic Games. Organisers were also frustrated by the number of empty seats in many of the venues. On the plus side, however, building the Olympic village provided a £6 billion boost to the building and construction industry.

But what happens to the people who originally lived on the site of the proposed new venues and athletes' village? Quite simply, they are moved on. While they may receive some compensation, land values go up in the shadow of renewed development. Residents simply cannot afford to live in the new developments, nor can they afford to renovate their existing dwelling. In the lead-up to the Beijing Olympics, 1.5 million Chinese people were forced out of their homes to make way for Olympics venues.

Once the event is over, many of the stadiums are under-used, and it can take years to recover from the cost of staging the event. The city of Montreal, for instance, took 30 years to pay back the equivalent of US$6 billion (in today's money) in Olympic spending.

FIGURE 3 The opening ceremony of the London Olympic Games

17.12.3 What is the status of other sports events?

It has generally been accepted that regular sporting events can have financial benefits. Many international tourists visiting the United Kingdom include a sporting event on their itinerary. Most popular is soccer, because of the opportunity to see some of the world's most talented athletes playing in some the UK's top teams. In 2014, 800 000 international fans added £684 million to the British economy. Official figures show that these fans spent an average of £850 — far more than the average £570 spent by the rest of the tourist population.

Overall, sports tourists stay longer and are not deterred by the weather. The popularity of football is also evident in Australia, where three separate codes attract huge crowds every week, and fans are prepared to travel interstate to watch their team play.

But it is not just football that attracts the crowds. The English cricket team is followed around the world by its unofficial cheer squad, nicknamed the Barmy Army. Other 'fanatics' based in Australia organise 58 tours to 57 destinations each year, taking in some of the biggest sporting events both at home and abroad.

FIGURE 4 The Barmy Army comprises thousands of fans who come to Australia to cheer on the English cricket team.

17.12 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. (a) Is someone who goes to a local football match a tourist? Explain.
   (b) What if that person travels interstate? Explain.

Explain

2. Brainstorm a list of sports that might spend money to attract tourists. Categorise these as **hard** and **soft sport tourism** events.
3. Compile a table that highlights the positives and negatives of sport tourism. Choose two positives and two negatives. For each, explain the impact it has on people and ***places***.

Think

4. The Phillip Island Grand Prix racing circuit is located 100 kilometres south of Melbourne, Victoria. The island is linked to the mainland by a bridge. The area is popular for its beaches and wildlife, but it is also home to a racing circuit that stages a variety of motor sports throughout the year. Collectively, more than $110 million is generated annually from the circuit's car and bike activities. Three events — the Moto GP, V8 Supercars and Superbikes — bring in over $79 million. Each of these events brings more than 65 000 people to the island.
   (a) What facilities would be needed to cater for such a large influx of people?
   (b) Figure 3 in subtopic 17.8 shows how the tourist dollar can flow from one job to the next. Complete a diagram like this for the Phillip Island Grand Prix circuit.
   (c) With a partner, brainstorm a list of negative consequences that might result from having a Grand Prix circuit on Phillip Island. Make sure you consider the impact on people and the ***environment***, as well as the ***scale*** of such effects.
   (d) Write a paragraph explaining the ***interconnection*** between the location of sporting facilities and their impact on people and ***places***.
   (e) Do you think this is an example of ***sustainable*** tourism? Justify your point of view.

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: Are the Olympics worth gold? (int-3337)

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

- **Sport**
- **The FIFA World Cup**

17.13 Review

online only

17.13.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

17.13.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

17.4 SkillBuilder: Constructing and describing a doughnut chart

17.4.1 Tell me

What is a doughnut chart?

A doughnut chart is a circular chart with a hole in the middle. Each part of the doughnut is divided as if it were a pie chart with a cut-out. The circle represents the total, or 100 per cent, of whatever is being looked at. The size of the segments is easily seen. Presenting the parts in order from largest to smallest makes it easy to interpret.

Why is a doughnut chart useful?

Doughnut charts are a useful visual interpretation of data. Just like a pie chart, they give us an overall impression of data. They are useful for comparing proportions of categories. You will find them easy to read, as they show a lot of data and make it easy for us to interpret and compare this data. You can use these in class to graph any data that adds up to 100 per cent.

They are also useful for:

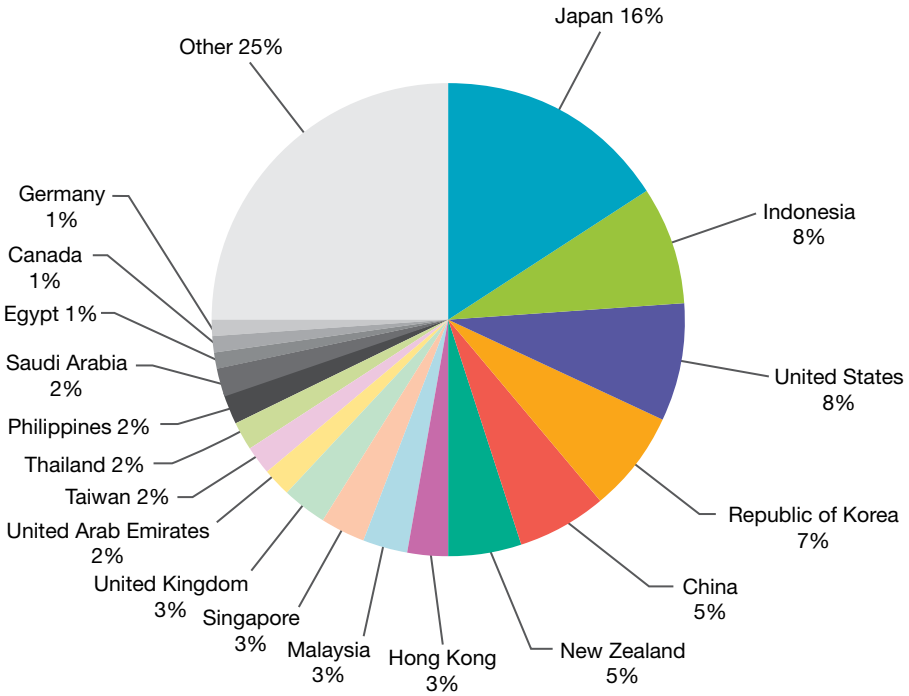
- economists showing segments of a country's tourism industry
- agriculturalists showing the percentage of various crops on the land
- retailers comparing the importance of various goods in their stores during different years.

Model

TABLE 1 Australia's food export markets by value, 2010–2011

Country	Value ($ million)
Japan	4207
Indonesia	2288
United States	2138
Korea, Rep. of	1994
China	1511
New Zealand	1281
Hong Kong, China	886
Malaysia	849
Singapore	739
United Kingdom	692
United Arab Emirates	581
Taiwan	569
Thailand	539
Philippines	502
Saudi Arabia	499
Egypt	402
Canada	332
Germany	263
Other	6815

FIGURE 1 Australia's food export markets by value, 2010–2011



Source: © DAFF 2012, National Food Plan green paper 2012, Department of Agriculture, Fisheries and Forestry, Canberra. CC BY 3.0.

Australia's food exports go to a large number of countries. These countries are predominantly in Asia, with the exception of the United States and New Zealand. Japan is Australia's greatest importer of food by monetary value, with $4207 million of imports in 2010–2011, or about 16 per cent. Indonesia, the Republic of Korea and China are the other significant Asian buyers of Australian food. Asian countries account for 51 per cent of all our food exports, while the United States and New Zealand account for 13 per cent of Australia's food exports. Europe and the Middle East take less of our food.

A good doughnut chart:

- has a hole at its centre
- has segments that are labelled with names, or has a key
- includes percentages and/or raw figures
- is drawn with the largest segment starting at 12 o'clock, proceeding clockwise from largest to smallest, unless there is an 'other' category, which comes last
- gives the source of the data
- has a clear title.

A good description of a doughnut chart:

- identifies and communicates key features, such as highest and lowest data values
- refers to data and names.

17.4.2 Show me

How to construct and describe a doughnut chart

You will need:

- a set of data
- a computer
- a blank Excel spreadsheet.

Procedure:

STEP 1

Open a spreadsheet in Excel. Into the spreadsheet, add the data that you wish to graph. If the data is in the form of whole numbers, you will need to convert them to percentages. If the total of the whole numbers is not given, you will have to add the numbers together to get the total. Excel will do this for you with the Auto Sum function (Σ) in the toolbar. For example, using the data that went into figure 1, select all the data in column B plus row 20 (see figure 2a). Then click on the Auto Sum symbol and the total will appear in cell B20 (figure 2b).

STEP 2

To complete the percentage column, click on the first cell of a new column, cell C1, and type in the formula =B1/B20. (The $ sign is used to make sure that one specific cell is referred to. Make sure the final number, 20 in this example, is the cell number in which the total appears. This will change with each set of data you enter.) Press Enter and a decimal number will appear. Now click the percentage symbol (%) in the Number section of the toolbar, and the figure in cell C1 will appear as a percentage.

FIGURE 2 (a) Selecting the column (b) The total appears when you click the Σ button in the Editing section of the toolbar.

(a)	A	B
1	Japan	4207
2	Indonesia	2288
3	United States	2138
4	Republic of Korea	1994
5	China	1511
6	New Zealand	1281
7	Hong Kong	886
8	Malaysia	849
9	Singapore	739
10	United Kingdom	692
11	United Arab Emirates	581
12	Taiwan	569
13	Thailand	539
14	Philippines	502
15	Saudi Arabia	499
16	Egypt	402
17	Canada	332
18	Germany	263
19	Other	6815
20		

(b)	B
	4207
	2288
	2138
	1994
	1511
	1281
	886
	849
	739
	692
	581
	569
	539
	502
	499
	402
	332
	263
	6815
	27087

STEP 3

Click on cell C1, and you will see a small black square in the bottom right corner (see figure 3a). Using the cursor, drag this down over the remaining rows to be calculated. Do not include the row in which the total is shown (row 20 in this example). The percentages for all remaining cells will appear. Figure 3b shows a completed chart.

STEP 4

You can now generate the doughnut chart. To do this, select all columns and rows in which your data appears, excluding the total figure (columns A, B and C and rows 1 to 19 in this example), and then click the Insert tab on your toolbar. In the Charts section, select Other Charts and choose the simple doughnut chart. The Excel spreadsheet will create a doughnut chart (see figure 4).

If your doughnut chart appears with a second, inner doughnut, click on this and delete it (see figure 4).

FIGURE 3 (a) Use the cursor to drag the bottom right corner of a cell over the remaining rows to be calculated. (b) Percentage data is now complete.

(a)

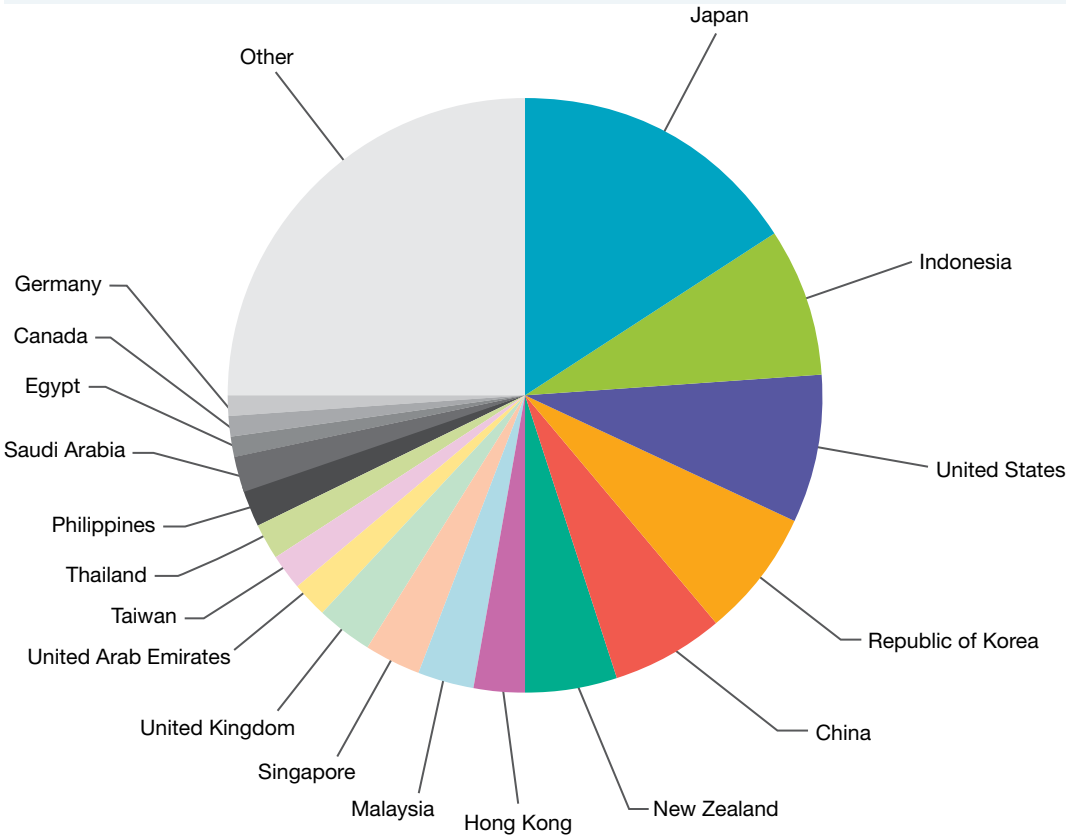
	A	B	C
1	Japan	4207	16%
2	Indonesia	2288	
3	United States	2138	

Small black square

(b)

	A	B	C
1	Japan	4207	16%
2	Indonesia	2288	8%
3	United States	2138	8%
4	Republic of Korea	1994	7%
5	China	1511	6%
6	New Zealand	1281	5%
7	Hong Kong	886	3%
8	Malaysia	849	3%
9	Singapore	739	3%
10	United Kingdom	692	3%
11	United Arab Emirates	581	2%
12	Taiwan	569	2%
13	Thailand	539	2%
14	Philippines	502	2%
15	Saudi Arabia	499	2%
16	Egypt	402	1%
17	Canada	332	1%
18	Germany	263	1%
19	Other	6815	25%
20		27087	

FIGURE 4 A completed doughnut chart. This one has a secondary ring within it, which needs to be deleted in this instance.



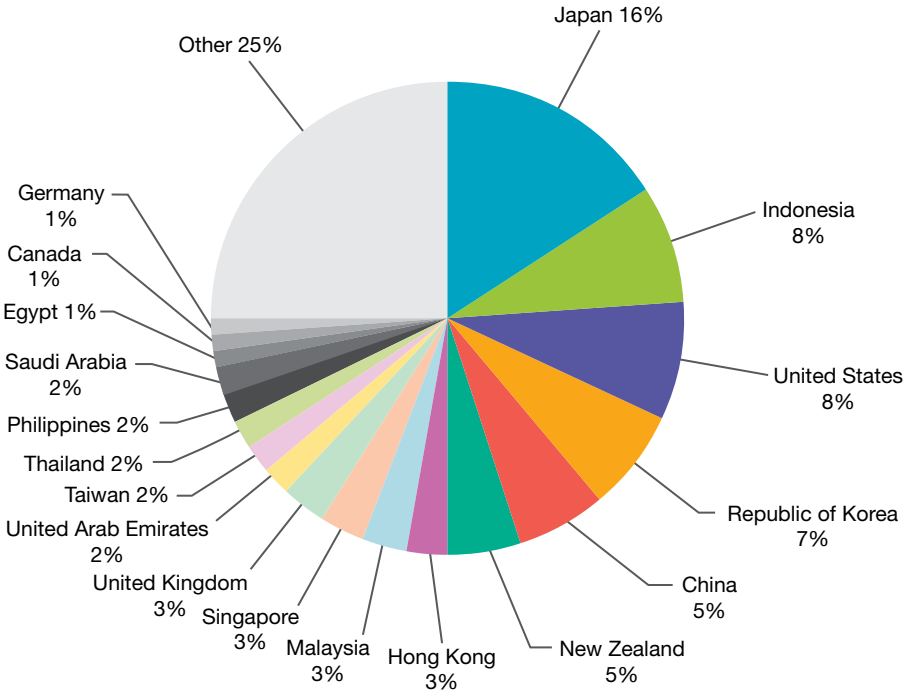
STEP 5

To make the percentage labels appear within your doughnut chart, click on the doughnut and select Chart Layouts in the Design tab on the toolbar, then choose a layout in which the percentage symbol (%) appears. Percentages will appear (see figure 5). Try different chart layouts to see which works best.

You might find that the chart appears small and cramped. If so, click on the outer rectangular border around your doughnut chart and drag it. As you do this, the chart will enlarge and the labels and legend will become easier to read.

You can also decrease the type size of the labels by clicking on one (which will highlight all of them), going to the Home tab and reducing the font size. You can do the same for the legend if necessary.

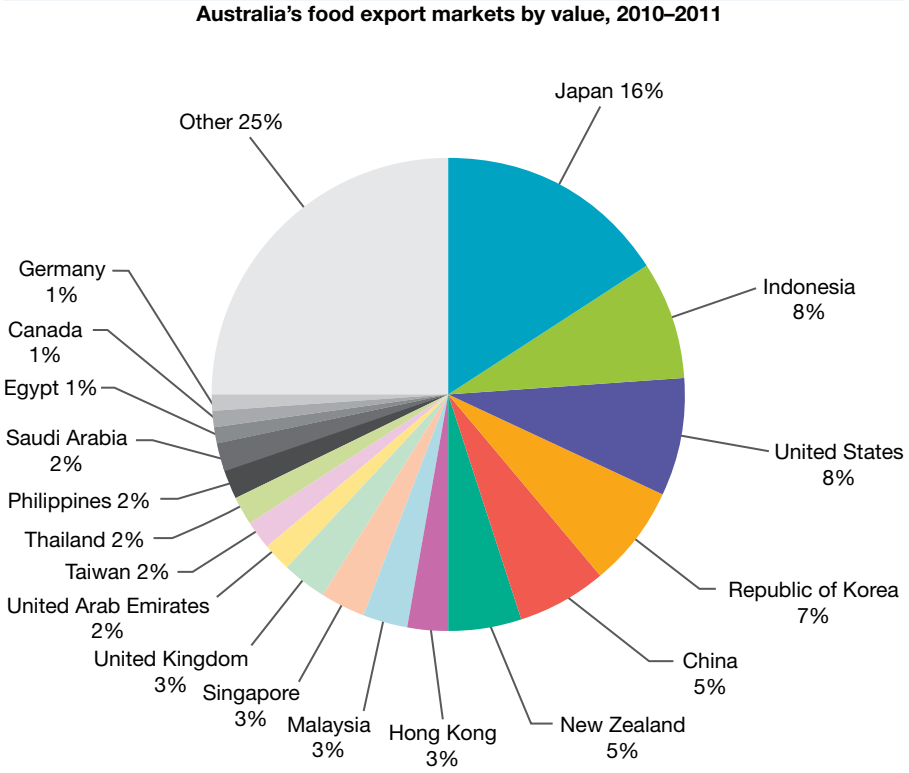
FIGURE 5 A doughnut chart with percentages added



STEP 6

You now need to add the title. Simply click on the heading *Chart Title* (see figure 5), type your title and then press Enter. Your title should include the places and dates for which this data was relevant. You should also provide the source of the data (see figure 6).

FIGURE 6 A doughnut chart with its legend and title in place, along with a source line



Source: © DAFF 2012, National Food Plan green paper 2012, Department of Agriculture, Fisheries and Forestry, Canberra. CC BY 3.0.

17.4.3 Developing my skills

Using the data in table 2, construct a doughnut chart and then write a description of the information it conveys.

TABLE 2 Origins of Australian tourists visiting Sydney, June 2012

Origin	Percentage
New South Wales	51.4
Victoria	20.2
Queensland	12.7
Australian Capital Territory	6.4
Other states	9.3

Questions

1. Where do most visitors to Sydney come from?
2. Suggest which states provide the fewest visitors to Sydney.
3. The ACT is within the boundaries of New South Wales but provides only 6.4 per cent of visitors. Can you explain why?
4. List two factors that might indicate why there is no separate category for visitors from South Australia.
5. What did your doughnut chart make clear, which the table did not?

Checklist

In drawing a doughnut chart I have:

- drawn a hole at the centre of the chart
- drawn segments that are labelled with names or have a key
- included percentages or raw figures
- drawn the largest segment starting at 12 o'clock, proceeding clockwise from largest to smallest, unless there is an 'other' category, which comes last

- provided the source of the data
- given my chart a clear title.

In writing a description of a doughnut chart I have:

- identified and communicated key features, such as the highest and lowest data values
- referred to data and names.

Skills questions

1. Doughnut charts are used to show:
   (a) total populations
   (b) ***change*** over time
   (c) directions of flow
   (d) proportions of a whole.
2. Doughnut charts include information about:
   (a) negative values
   (b) percentages
   (c) ***place*** comparisons
   (d) highest values.
3. Why can many divisions make a doughnut chart difficult to read? What can you do to avoid this?
4. How does using Excel make plotting a doughnut chart a fairly simple procedure?

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Watch this eLesson: Constructing and describing a doughnut chart (eles-1738)

Try out this interactivity: Constructing and describing a doughnut chart (int-3356)

17.6 SkillBuilder: Creating a survey

17.6.1 Tell me

What is a survey?

Surveys collect primary data. A survey involves asking questions, recording and collating and interpreting the number of responses. Because your survey is taken from a relatively small number of people in a population, it is called a sample.

Why are surveys useful?

Surveys are useful because they provide statistics for a specific topic that might not be available by any other means. A wide range of data can be gathered in an efficient and simple way.

They are also useful for:

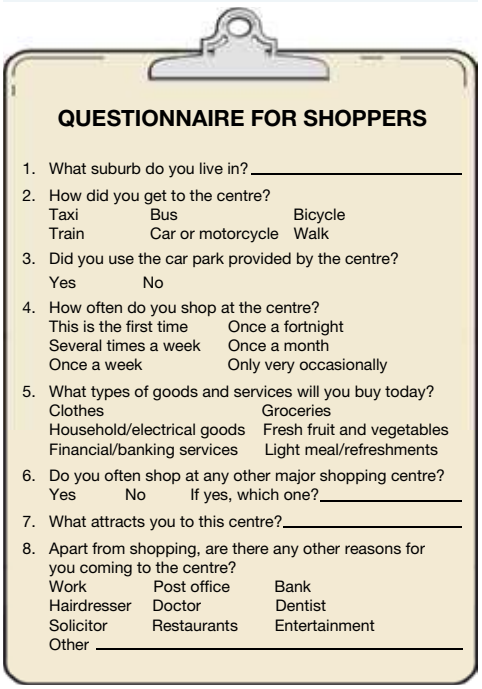
- counting features in a given area — tourist destinations, houses with air conditioners or traffic flows, for example
- summarising people's activities
- providing a snapshot of people's opinions, values and attitudes
- testing people's perspectives and viewpoints — how they rate a feature, for example.

Model

A good survey:

- has no more than 10 questions
- ensures that each question focuses on one thing
- makes almost all questions closed questions, providing choices for participants to select from
- uses simple and direct language
- includes questions respondents will be able to answer without needing too much time to think
- ensures questions can be answered briefly
- puts questions in a logical order
- has questions that avoid bias
- does not include questions that are of a personal nature
- has data/results that can be summarised.

FIGURE 1 A survey of shoppers



QUESTIONNAIRE FOR SHOPPERS

1. What suburb do you live in? _____
2. How did you get to the centre?
   Taxi Bus Bicycle
   Train Car or motorcycle Walk
3. Did you use the car park provided by the centre?
   Yes No
4. How often do you shop at the centre?
   This is the first time Once a fortnight
   Several times a week Once a month
   Once a week Only very occasionally
5. What types of goods and services will you buy today?
   Clothes Groceries
   Household/electrical goods Fresh fruit and vegetables
   Financial/banking services Light meal/refreshments
6. Do you often shop at any other major shopping centre?
   Yes No If yes, which one? _____
7. What attracts you to this centre? _____
8. Apart from shopping, are there any other reasons for you coming to the centre?
   Work Post office Bank
   Hairdresser Doctor Dentist
   Solicitor Restaurants Entertainment
   Other _____

17.6.2 Show me

How to develop a survey

You will need:

- a computer to set out the questions — this makes organising the questions easier
- suitable computer software.

Procedure:

To develop a survey, you must take the time to create a set of questions relevant to the topic being explored.

STEP 1

Determine the topic that you want to gather data about, and consider why you want this data. In figure 1, the above example, the questionnaire is about shopping habits.

STEP 2

Begin by listing a series of questions. Use a computer so that you can easily modify the wording. Remember these should be closed questions, so they should include a series of answers to choose from. Each question should have four to six responses for people to select from. Examples of these in figure 1 are questions 2 to 5.

STEP 3

Try your questions with a classmate, to see whether the questions are clear and whether they elicit quick, concise responses. If necessary, reword your questions.

STEP 4

Discuss the order of questions with a classmate, and review and reorganise the order of the questions if this seems necessary.

STEP 5

Provide one or two open-ended questions to allow the respondent to have their say. These are questions for which the respondent can answer in their own words and give more detail. Question 7 in figure 1 (*What attracts you to this centre?*) is considered open-ended, because a wide range of answers is possible. Word these carefully, because you need to be able to gather the data from all the respondents.

STEP 6

Make sure that you have not asked the respondents anything that is too personal, as you don't want to offend or embarrass people. Reword or delete any questions that you are not sure about.

STEP 7

Check your survey for bias. Bias is when you have unfairly influenced the respondent to your survey. You do not want to lead your respondent in a particular direction and thus skew your research. This is particularly important if the survey is about opinions, values, attitudes and perspectives on issues. For example, question 2 in figure 1 would be considered biased if it asked 'If you didn't come by bus, what transport did you use?'

STEP 8

Review your work before asking people to complete your survey.

STEP 9

When you go out into the field to ask people to respond to your survey, there are a number of guidelines to follow.

- Introduce the survey (what it is, who you are, what you are trying to find out).
- Assure people that you are a student and that their responses will be used only for research purposes and no one will be identified.
- Accept that not everyone will want to talk to you.
- Be sure that you are safe at all times; take no risks and always work with a partner.
- Thank the respondents for their time at the end.

17.6.3 Let me do it

Developing my skills

Design a questionnaire to discover places that students from your year level, or people in the wider community, have visited as tourists in the past five years. Check the five things you need to find out to help you work out which questions to ask in your survey.

Ask people in your class, year level or local area to complete your survey. When you come back to school, tally your results and see if you can draw some conclusions. Write a paragraph on what your survey has shown you.

Questions

1. Based on responses to your survey, what percentage of people have travelled somewhere as tourists within the past five years?
2. What trends emerged from your survey with regard to the frequency with which people travel within Australia compared to those who travel overseas?
3. Is there a relationship between how far people travel and how frequently they go? Is there a relationship between how far people travel and how long they stay?
4. What were the main recreational activities people were involved in when they travelled to other ***places*** as tourists?
5. Describe the key features of your respondents' travel patterns. For example, were there particular continents or countries, or even regions within countries, that were more popular than others?

Checklist

I have:

- asked no more than 10 questions
- ensured that each question focuses on one thing
- made almost all questions closed questions, providing choices for participants to select from
- used simple and direct language
- included questions respondents will be able to answer without needing too much time to think
- ensured questions can be answered briefly
- put questions in a logical order
- ensured that questions avoid bias
- not included questions that are of a personal nature
- ensured that data/results can be summarised.

Skills questions

1. Surveys are used to gather information that is:
   (a) a personal opinion
   (b) a summary of ideas
   (c) a biased account
   (d) a set of untruths.
2. One of the aims of a survey is to find the number of people who:
   (a) dislike a topic
   (b) have similar ideas on a topic
   (c) have varied views on a topic
   (d) like a topic.
3. Did your classmates come up with similar questions to yours? Why or why not?
4. How important is the wording of the questions? Give an example in which you and a friend wanted to find out the same information but worded the question differently. Which version was better? Why?

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Watch this eLesson: Creating a survey (eles-1764)

Try out this interactivity: Creating a survey (int-3382)

17.7 SkillBuilder: Describing divergence graphs

17.7.1 Tell me

What is a divergence graph?

A divergence graph is a graph that is drawn above and below a zero line. Those numbers above the line are positive, showing the amount above zero. Negative numbers that are shown indicate that the data has fallen below zero.

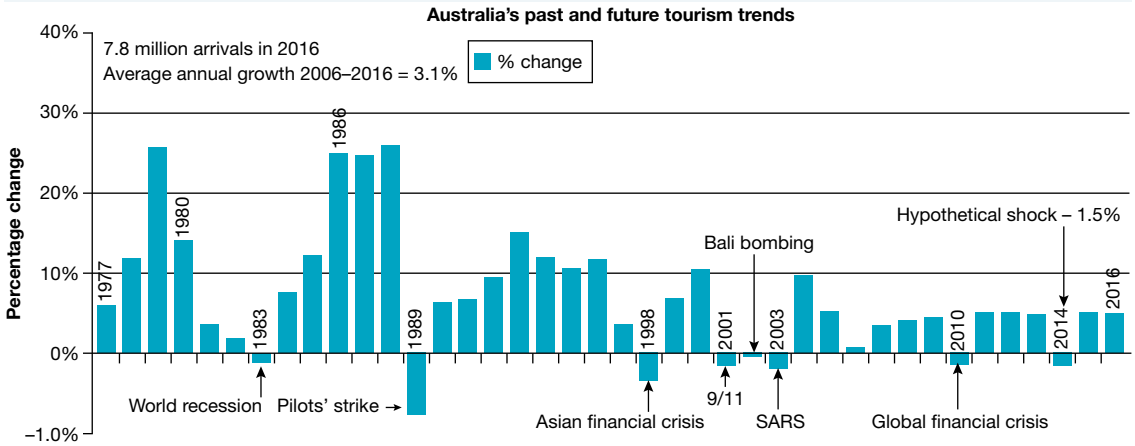
You may have seen graphs with negative numbers in climate graphs, where some months of the year in some places are below 0 °C on average.

Why is a graph with negative numbers useful?

A divergence graph allows you to identify changes away from the normal in a trend. A trend is a common pattern of gradual change. A divergence graph can indicate data that varies considerably over time.

Model

FIGURE 1 Australia's past and future tourism trends



Australia's tourism industry has experienced fluctuating highs and lows for the past 50 years. The 1980s was a period of high percentage change in tourism (20–30 per cent), hit by a world recession and pilots' strike (negative growth) but rebounding strongly afterwards (15 per cent) in the early 1990s. The percentage change in tourism has not been as strong (<10 per cent) since the 1990s. The 1990s saw more growth than the 2000s (5 per cent), when global events had a big impact. More recently, Australian tourism has been affected by the global financial crisis (2010, with negative growth).

A good interpretation of a graph with negative numbers:

- identifies and communicates key features such as patterns, peaks and troughs
- clearly represents and communicates the data, for example about a specific place.

17.7.2 Show me

How to describe a divergence graph

You will need:

- a graph showing trends, including negative trends.

Procedure:

STEP 1

Read the title of the graph carefully to see what data has been graphed, and to check the locations and dates to which the graph refers.

STEP 2

Study the labels on both axes and any key or legend provided to add to your knowledge. In figure 1, you can see that the time frame of the information is from 1977 to 2016, and that the number of visitors to Australia is represented on the vertical axis as percentage change.

STEP 3

Study the shape of the graph; in figure 1, you will note that some features are related to global events, such as recessions, pilots' strike, terrorism and disease outbreaks (SARS). At times the graph flattens out as there is little change, such as in the late 2000s.

STEP 4

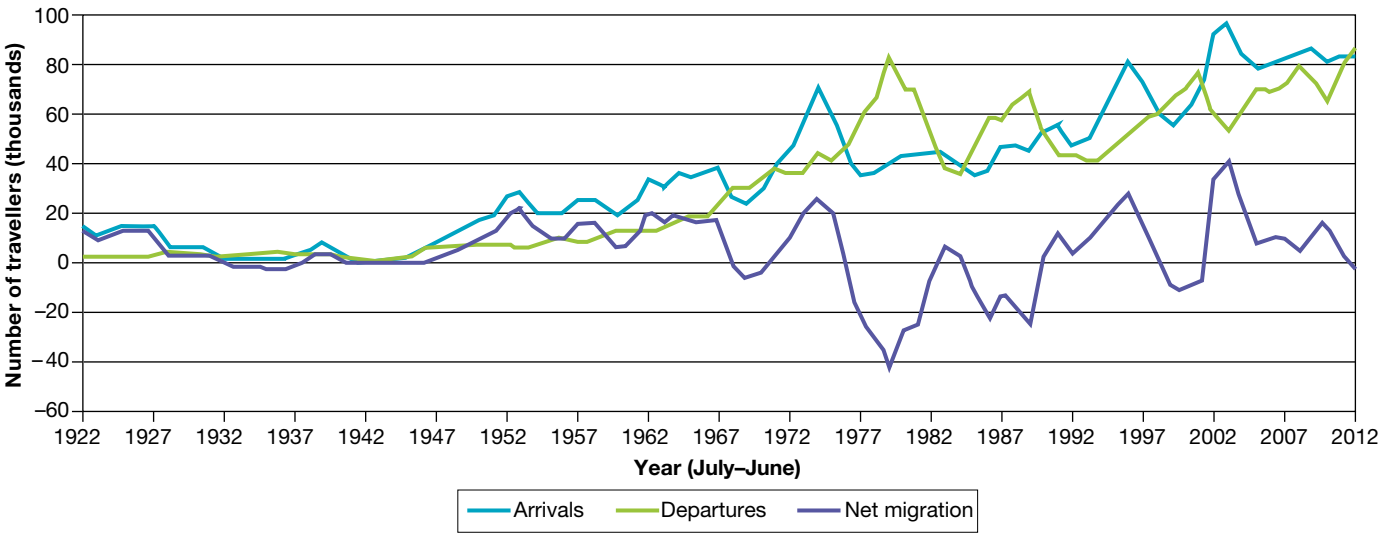
Write a few sentences to outline the shape of the graph; for example, 'figure 1 shows that Australian tourism has experienced fluctuating highs and lows for the past 50 years'. Include any events that affected the change into your description. For example, the text below figure 1 includes the explanation that the 1980s was 'a period of high percentage change in tourism (20–30 per cent), hit by a world recession and pilots' strike (negative growth)'. Also look for periods of time where the change was either slow (2010 in figure 1) or rapid (1989 in figure 1).

17.7.3 Let me do it

Developing my skills

Using the graph shown in figure 2, explain what is happening to the level of migration in New Zealand. Use the net migration line as the basis for your answer.

FIGURE 2 New Zealand migration trends: Annual permanent and long-term arrivals, departures and net migration, New Zealand 1922–2012



Questions

1. What is the trend for the line indicating the number of arrivals?
2. What is the trend for the line indicating the number of departures?
3. In which years did the population of New Zealand lose more people than it gained?
4. Identify a period of time when increases took time and a period when they happened quickly. Identify a period of time when decreases took time and a period when they happened quickly.
5. If net migration is the difference between arrivals and departures, what is happening to people's migratory attitudes with regard to New Zealand?

Checklist

I have:

- identified and communicated key features such as patterns, peaks and troughs
- clearly represented and communicated the data about a specific place.

Skills questions

1. Divergence graphs are used to show that:
   (a) a loss has occurred
   (b) variation from the average is negative
   (c) less of a product has been produced
   (d) production is decreasing.
2. Divergence graphs include information about:
   (a) total production
   (b) production comparisons
   (c) patterns over time
   (d) increases in production.
3. What does the zero line indicate?
4. Why is it important to know some of the historical events behind the data for a ***place***?

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Watch this eLesson: Describing divergence graphs (eles-1739)

Try out this interactivity: Describing divergence graphs (int-3357)

17.10 Are zoos and aquariums eco-friendly?

17.10.1 How have zoos developed?

A zoo is a place where animals are held in captivity and are put on display for people to view. The concept of zoos is not new; wall carvings provide evidence that ancient civilisations had zoos. Some of the earliest records date back to 2500 BCE when wealthy aristocrats and rulers in Egypt and Mesopotamia had their own private collections called menageries. They arranged expeditions to distant lands to bring back both terrestrial and marine creatures. They hired people to care for their collections and ensure that their animals not only thrived but also reproduced.

The first public zoo was built in 1793 in Paris, France. People not only wanted to be able to see exotic foreign animals but also study them for scientific purposes. However, these early zoos have been described as resembling a museum with living animals that were kept in small display areas rather than natural habitats (see figure 1).

FIGURE 1 Melbourne Zoo, 1940

In recent years zoos have undergone a major transformation in many parts of the world. People have become more aware of the plight of animals that are kept in captivity. The trend is towards giving animals more space and redeveloping enclosures to mimic their natural environment (see figure 2). Education programs are also integrated to provide information about the threats and challenges that exist in the wild. Conservation strategies are highlighted, including what individuals may do. Captive breeding programs are also part of a much wider conservation strategy.

FIGURE 2 Melbourne Zoo, 2016

Today the definition of a zoo can be extended to include wildlife reserves, petting zoos, aquariums and aviaries, where care is taken to reproduce natural environments including reproducing cold habitats for animals such as polar bears and heated enclosures with regulated humidity for species from tropical areas.

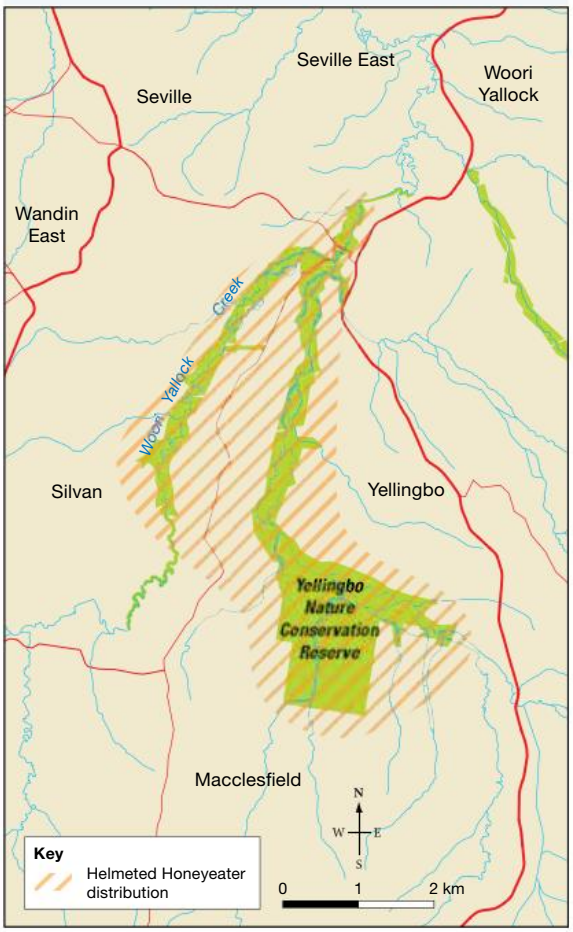
17.10.2 How are zoos eco-friendly?

The redevelopment of zoos and the focus on conservation rather than purely on human entertainment has meant that they are considered to have some environmental benefit. Although the IUCN (International Union for Conservation of Nature) Red List of endangered and threatened species continues to grow, zoos have been instrumental in ensuring that some species have been brought back from the brink of extinction.

Przewalski's horse

The rare and endangered wild horse called Przewalski's horse is a native of the Gobi Desert in Mongolia. In 1969 it was declared extinct in the wild, with the only remaining populations being held in the Munich and Prague zoos. At one stage the number of remaining animals was 15. A captive breeding program was devised to not only increase numbers but also ensure the genetic viability of the offspring produced. The program, which continues today, had astounding success.

FIGURE 3 Helmeted Honeyeater distribution map



Source: http://www.zoo.org.au/healesville/animals/helmeted-honeyeater
The State of Victoria, Department of Environment, Land, Water & Planning 2016

Today, there are about 1500 Przewalski's horses in captivity and 400 in the wild after they were successfully reintroduced into a protected reserve in Mongolia. Despite the harsh conditions of their natural environment and setbacks such as the brutally cold winter of 2009, which saw the wild population fall by half, they have continued to thrive.

Helmeted Honeyeater

Victoria's bird emblem the Helmeted Honeyeater is listed as critically endangered with numbers falling to as low as 50 in the wild. There are currently only three remnant populations in the Yellingbo Conservation Reserve, which consists largely of swamp forest to the east of Melbourne (see figure 3 for the location of the Helmeted Honeyeater). Healseville Wildlife Sanctuary has an extensive captive breeding program that has the intention of increasing the number of birds in the wild to ten interconnected and stable breeding colonies.

Due to the risk of fire, the sanctuary also has a complicated management plan that includes relocating its inhabitants to Melbourne in the event of fire sweeping through the area. The Helmeted Honeyeaters held at Healseville are the only viable populations that could be used to repopulate the Yellingbo Conservation Reserve if it were devastated by fire.

17.10.3 Are all zoos eco-friendly?

While zoos primarily promote themselves as acting in the best interests of the wildlife they keep, sometimes this is not necessarily the case (see figure 4).

FIGURE 4

The case of Marius the giraffe

Last weekend, a healthy juvenile male reticulated giraffe at the Copenhagen Zoo was killed. His name was Marius. The reason given was that his genes were already sufficiently represented in the giraffe population across the zoos of the European Association of Zoos and Aquariums (EAZA) — his brother lives in a zoo in England, for example — making him a so-called 'surplus animal.' Despite the international outcry against it, the giraffe was euthanized, a necropsy was performed by scientists while educators explained the dissection to the gathered crowd, and hunks of meat were fed to the zoo's lions, polar bears, and other carnivores.

Source: Jason G Goldman

Thailand's Tiger Temple

Founded in 1994 and promoted as a wildlife sanctuary for tigers and other wildlife, Thailand's Tiger Temple has been under investigation for years, with conservationists questioning not only the treatment of the tigers but also the sanctuary's involvement in black-market trading.

It is estimated that Tiger Temple generates up to $3 million each year. However, little of this is spent on improving conditions for the tigers. Allegations of abuse include that the tigers are beaten and poorly

fed, lack proper veterinary care, are housed in small cages, and are provided with limited opportunities for exercise or to exhibit natural behaviors — all in the name of tourism.

There are also reports that tigers are being taken illegally from the wild, and are not microchipped or have had microchips removed to cover up the illegal trade in live tigers or their skins, bones and other body parts.

In 2016, after lengthy undercover investigations, authorities finally removed tigers from the temple. Five were removed in January, and plans were underway to remove all the tigers. The main challenge was to find new homes for up to 140 tigers.

FIGURE 5 Reports include drugging tigers to make them more docile for tourist photos.

Marine parks

Marine Parks are similar to zoos except that they are home to marine creatures. They were a boom industry in the mid- to late-twentieth century, many offering not just the opportunity to view marine animals but also to watch them perform.

While most promoted the fact that they only housed animals born in captivity or rescued from the wild, this has not always been the case, with adult orcas, for example, sometimes killed so that their young could be taken into captivity. The *Free Willy* movies, which first screened in the 1990s, focused attention on the plight of whales in captivity. Orcas were often housed in pools that were inadequate in size and had collapsed dorsal fins indicating inadequate standards and perhaps even boredom. In addition, their lifespan is halved compared to their species in the wild.

Marine parks such as Sea World in San Diego, California, have been revamping their shows to improve the conditions of the animals and emphasise the natural environment as a result of falling visitor numbers. Tourists were boycotting the facility in a show of protest against the treatment of killer whales within the facility. Some marine parks are also promoting themselves as theme parks — for example, Sea World on the Gold Coast.

Chimelong Ocean Kingdom, China

Meanwhile, China's ocean theme parks are experiencing a tourist boom despite the fact that their living conditions are less than adequate. It is thought that across China 491 cetaceans are held, including about 279 bottlenose dolphins, 114 beluga whales and seven orcas, all taken directly from the wild at prices ranging from US$125 000 to US$40 000 each.

Chimelong is home to 18 beluga whales, 41 bottlenose dolphins and three polar bears in tanks and enclosures described as inadequate in terms of meeting their social and behavioural needs.

FIGURE 6 Sea World in California is home to orcas

In the wild, beluga whales are social animals that live in pods that vary in size from a few individuals to a couple of hundred and they inhabit Arctic and sub-Arctic waters. They may travel up to 160 kilometres in a day and dive to depths of 300 metres. In captivity, they are confined to shallow tanks that only allow them to aimlessly circle their enclosure and are expected to perform tricks that are not a part of their natural behaviour.

17.10 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What is a zoo?
2. Prepare a mind map that explores the different types of zoos and the positive and negative impacts they have on wildlife.

Discover

3. Visit http://www.zoo.org.au/
   (a) Investigate what is being done to manage waste or fight extinction.
   (b) Investigate one of the species held at one of the zoos.
   (c) Prepare an annotated visual display of your findings.

Think

4. (a) Select one of the species mentioned in this spread. Write a report that compares their natural habitat with being held in captivity.
   (b) Do you think this is an example of ***sustainable*** ecotourism?
5. To what extent do you think zoos are an ethical form of tourism? Justify your point of view. In your response consider:
   - how culture, personal beliefs and world views can influence the decision-making of people in different ***places***
   - how individual perceptions of fairness, equality, respect and tolerance influence their decision-making.

17.13 Review

17.13.1 Review

1. Use the information in table 1 to complete the activities that follow.
   (a) On a blank outline map of the world (go to doc-11392 in the Resources tab), shade the regions listed in the table according to the number of tourists they attracted in 2011, using a different shade of one colour for each of the following categories:
   - 0–30 million
   - 30.1–60 million
   - > 60 million.

   (b) What percentage of the world's tourists came to Australia in 2016? What advantages and disadvantages might Australia have in attracting foreign visitors to its shores?
2. Think of a ***place*** in your state that you have visited and that attracts tourists. Describe how this ***place*** has ***changed*** over the past 60 years to cater for tourists. Have these ***changes*** had a positive or a negative impact? Explain. Describe the ***interconnection*** between people and ***places*** and ***change*** over time.
3. If tourism does not significantly harm or ***change*** natural or cultural ***environments***, does this mean it is ***environmentally sustainable***? Explain.
4. Working in groups, use what you have learned in this topic to complete the following. You and three of your friends have won the ultimate holiday adventure. Your prize allows you to plan your own itinerary with the following conditions attached.
   - You cannot travel more than 60 000 kilometres.
   - You can travel in only one direction around the world and can only make ten stops on your journey.
   - Stop 10 will be the airport from which you departed.
   - If you include a cruise as part of your itinerary, each time you get off the ship in a new country, this is counted as a new destination.
   - Your journey must be plotted on a map and presented as a slide show.
   - You must include the following in your itinerary:
     - a country that attracts a lot of tourists
     - a country that attracts few tourists
     - one of the world's natural wonders
     - an ecotourism resort
     - a cultural event
     - a sporting event
     - a cold environment
     - a hot environment
     - a medical tourism destination.

TABLE 1 Tourist arrivals by region, 2016

Region	Tourist arrivals (millions)
Africa	57.8
North America	130.5
Caribbean	25.2
Central America	10.7
South America	32.8
Asia	292.8
Pacific Islands	7.3
Australia	8.3
Europe	616.2
Middle East	53.6

Source: World Tourism Organization (2017), *UNWTO Tourism Highlights, 2017 Edition*, UNWTO, Madrid, pp. 4, 8–11.

17.13.2 Reflect

Is development necessary?

A proposal has been put forward to rezone about 1155 hectares of land across 20 sites, including some along the Great Ocean Road, in order to expand tourism accommodation and facilities. The plans include the development of 4- and 5-star resort-style accommodation in an environmentally sensitive region renowned for its breathtaking views. Those in favour of the development say that the region is the third most

FIGURE 1 Priority projects in the Great Ocean Road region

Source: Spatial Vision

Lake Condah/Budj Bim National Heritage Landscape
- Restoration of Lake Condah church site as a place of reconciliation and healing
- Development of an international learning centre at Lake Condah
- Development of employment and enterprise activities focused on tourism accommodation, aquaculture, bush tucker and supporting industries

Great Ocean Road integrated resort
- Large bistro/restaurant
- Self-contained accommodation
- Hotel accommodation
- Cabins
- Tourist park facility for vans

Port Campbell precinct and Loch Ard interpretive centre
- Loch Ard interpretive centre
- Improved interpretation, trails and other infrastructure at other locations (Bay of Islands)
- Apostle trail
- Food merchandising with views
- Merchandising

Great Ocean Walk
- New trails investment
- Improvements to existing trail network

Great Ocean Road signature accommodation
- 25 luxury suites
- Day spa
- Restaurant
- Guest lounge and bar

Great Ocean Road upgrade
- Increased safety improvements
- Improvements to areas where landslips occur
- General maintenance, pruning of trees and grooming of vegetation
- Shoulder sealing for cyclists
- Improvements to road reserves

Geelong Convention and Exhibition Centre
- Plenary capacity of 1000 delegates
- Exhibition hall of 3000 square metres
- Break-out rooms
- Multi-purpose format to accommodate small- to medium-size events
- Provision of a 4-star hotel of 150–200 rooms as part of the complex

Avalon Airport upgrade
- 7500 square metres of new international terminal proposed

visited tourist site in the country but the lack of high-end accommodation and facilities means that the region does not benefit significantly in financial terms from its attractions.

5. Use the map to describe the ***scale*** of the proposed ***changes*** to the Great Ocean Road region.
6. Explain what is meant by the term resort-style accommodation.
7. Do you think these ***changes*** will have a positive or negative impact on the ***environment*** in these ***places***?
8. Do you think this proposal is an example of ***sustainable*** tourism? Explain.
9. Write a letter to the editor expressing your views on these proposed ***changes*** and the consequences they might have for people and ***places***.

Are tourism development and conservation compatible?

Development and conservation are complex issues and often have competing needs. Once, endangered species were threatened by poachers, but now it is the tourists and animals themselves that require careful monitoring. In Africa, for example, wildlife reserves often have luxury accommodation attached. They give tourists the opportunity to experience natural environments and go on safari, where they are encouraged to 'shoot' animals using cameras rather than guns. However, the presence of too many tourists places a strain on the natural resources of a region. Roads, vehicles and the people they bring damage grasslands and can interfere with the nomadic way of life and culture of local communities. While elephants are an important component of the grassland ecosystem, too many can turn the grasslands into a desert wasteland.

FIGURE 2 When elephant numbers exceed the carrying capacity of the land, they can cause considerable damage to the environment.

10. Why do you think balancing the needs of tourists and natural ***environments*** requires careful planning?
11. In groups, investigate Madikwe Game Reserve, Kruger National Park or another similar area in Africa that you are aware of.
    (a) What is the ***interconnection*** between ***sustainable*** management, the ***environment*** and tourism development in the ***place*** you have investigated?
    (b) Prepare a map of the area your group has investigated. Annotate your map with suggestions for ***sustainable*** strategies to cater for the needs of people and the ***environment*** in this ***place***.

Is space tourism the final frontier?

Richard Branson, the founder of Virgin Airlines, is planning the lift-off of Virgin Galactic spacecraft in the near future. More than 500 people have paid large sums of money to book a seat on a suborbital space flight. The three-hour flight will take passengers into space, but its descent trajectory means that the spacecraft will re-enter the Earth's atmosphere before completing one full orbital revolution. Dennis Tito demonstrated the viability of this potential new market in 2001 (see figure 3).

12. What places might be included on a space tourist's itinerary?
13. What jobs might space tourism create? Complete a diagram like the one in figure 3 in section 17.8.1 to show the multiplier effect of space tourism.

14. If space tourism becomes popular, what impact do you think it might have on people and ***places***, both in space and on Earth?
15. What controls should be put in place to ensure that this form of tourism is ***sustainable*** and does not have an adverse effect on ***environments*** in different ***places***?
16. If you were to design an ecotourist resort on a tropical island:
    (a) Which ***environmental*** responsibilities would you need to take into consideration?
    (b) How could you minimise the ***environmental*** consequences of your planning decisions?
17. Chinese New Year is one of the most important events in Chinese culture.
    (a) Suggest some examples of the impact of the large-***scale*** movement of people within China.
    (b) In the future, how might the Chinese Government manage this event to cope with such a large-***scale*** movement?

FIGURE 3 Dennis Tito paid US$20 million to board a Russian spacecraft bound for the International Space Station. In April 2001, he became the world's first official space tourist.

TOPIC 18
Buy, swap, sell and give

18.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

18.1.1 Introduction

Trade, in the form of buying, swapping, selling and giving goods and services, is a driving force that interconnects people and places all over the world. Trade has gone on ever since human societies existed. In contrast, international aid is a modern phenomenon, although countries have always had internal programs to help those in need. Trade and aid can bring people together to share the Earth's resources, but there can be problems when those resources are limited and, potentially, negative consequences for the environment. The big question is how to organise trade and aid so that it fosters social justice and is fair and sustainable.

Container terminals, Hong Kong, China

Starter questions

1. What goods and services do you need to support your lifestyle? Think about your everyday life at home, at school, and in sport, recreation and hobbies.
2. Where do you access your goods and services? To what extent do you obtain goods and services online?
3. From what you know, do you think all trade that occurs in the world today is fair? How can fair trade and aid make the world a better ***place*** for all?

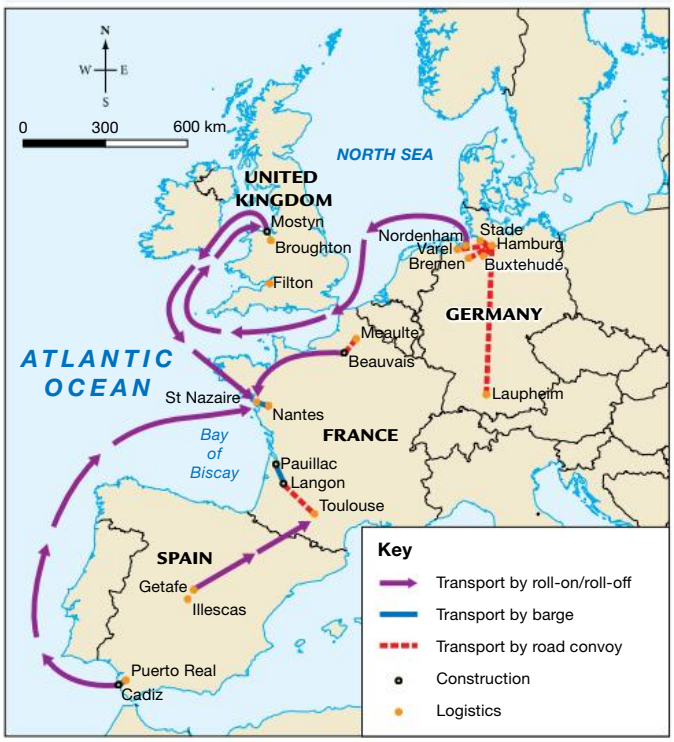
INQUIRY SEQUENCE

18.1	Overview		366
18.2	How does trade connect us?		367
18.3	How does trade connect Australia with the world?		369
18.4	How is food traded around the world?		373
18.5	**SkillBuilder:** Constructing multiple line and cumulative line graphs	online only	376
18.6	How has the international automotive trade changed?		377
18.7	Are global players altering the industrial landscape?		379
18.8	Why is fair trade important?		382
18.9	Why does Australia give foreign aid?		384
18.10	Why is the illegal wildlife trade a cause for concern?	online only	387
18.11	**SkillBuilder:** Constructing and describing a flow map	online only	387
18.12	**Review**	online only	388

18.2 How does trade connect us?

18.2.1 Trade in goods and services

FIGURE 1 The component parts routes of the Airbus A380



Source: Data from Wikmedia Commons.

The Earth's resources are not distributed evenly over space. For instance, some places may have an abundance of iron ore and others may have none. To solve this problem, nations have developed trade, allowing producers and consumers to exchange goods and services.

The system of trade has been around for a long time. Its earliest form was bartering at local markets or fairs. Merchants also used land and sea routes to access markets in foreign lands, where they exchanged goods for payment. More recently, air transport has become a means of trade, and the internet has made it possible to instantly exchange information. Today, we have a highly sophisticated, large-scale, global system of trade.

A modern example of the interconnection of trade is the production of the Airbus A380. To construct this plane, component parts must be purchased from different countries and transported over land and sea to reach their final assembly place in Toulouse, France (see figure 1).

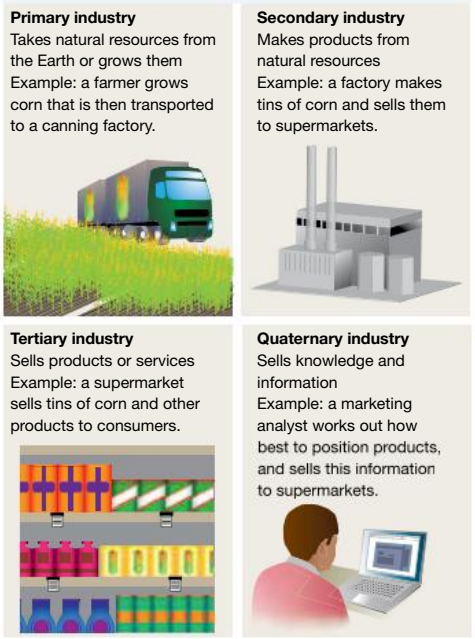
Goods and services, of which there are many, are generated by either processing Earth's resources or people doing things for each other.

A good can be an item as simple as a loaf of bread or it can be as complex as a motor car.

A service is not something you can hold in your hand; examples of services are education in a school or the advice a doctor gives a patient. What types of goods and services do you use to support your lifestyle?

As seen in figure 2, the processing of a resource into more complex goods can be a series of transitions, in which there is **value adding** at each level of industry (that is, its value increases). An important consideration in the production of goods and services is the impact on the environment.

FIGURE 2 Four levels of industry



18.2.2 How are goods and services consumed?

Household final consumption per person

Household final consumption per person is the value or money spent on all goods and services such as food, cars, washing machines, electricity, water and gas, education, medical service expenses and entertainment. The total figure of all goods and services when calculated for a country for a year is then divided by the total population of the country to give a figure in dollars and this is then referred to as the household final consumption per person.

The highest consumers of goods and services on a per-person basis are wealthy, industrialised countries such as the United Arab Emirates, the United States and Hong Kong (see figure 3). However, countries such as China and India consume high levels of goods and services because they have very large populations. As would be expected, countries that are high-level consumers can have significant impacts on the environment, particularly in terms of energy use and waste production.

What about the poorest countries in the world?

At the lower end of the scale of household final consumption per person, people in countries such as Malawi and Burundi spend $507 and $468 respectively per year, or less than $1.40 per day per person. This expenditure is mainly for food (see figure 4).

FIGURE 3 Top 13 countries for household final consumption, per person. Australia is ranked twelfth in this list for the years 2013–2014

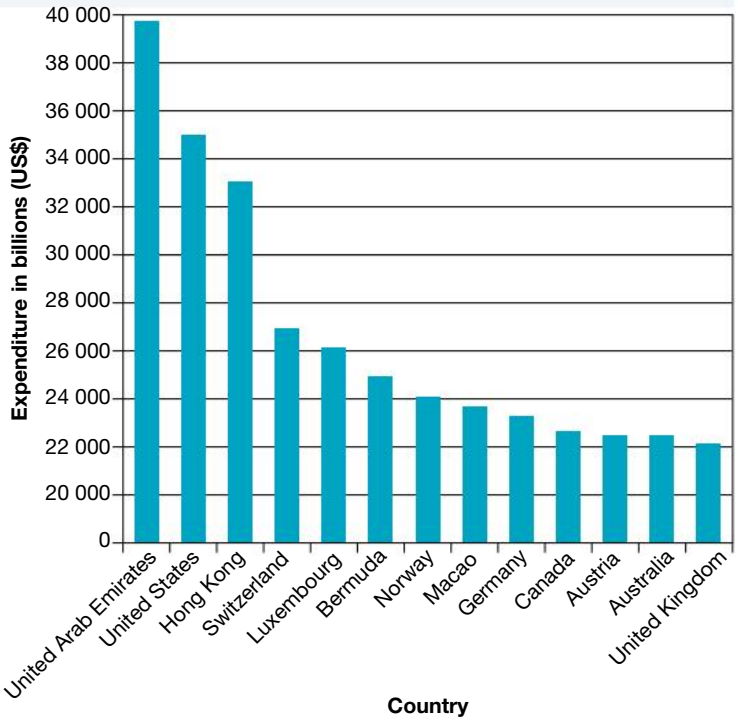
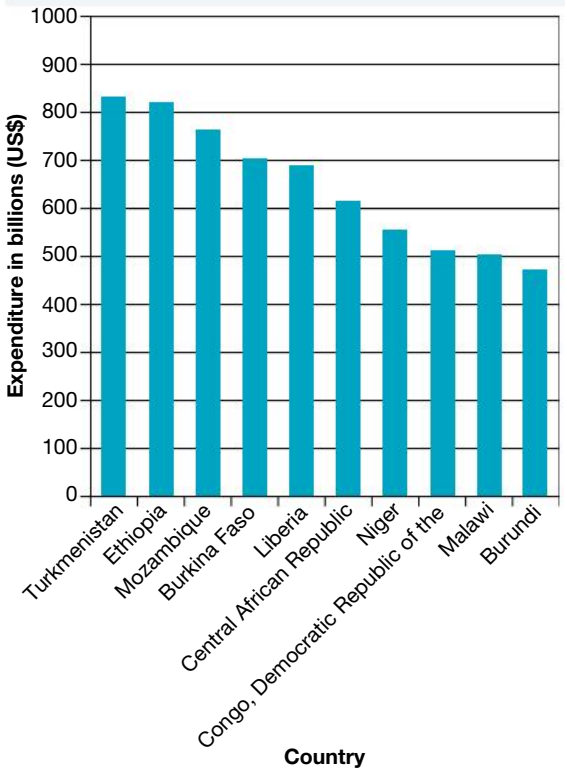


FIGURE 4 Household final consumption expenditure per person for the 10 lowest ranked countries in the world for 2013–2014



18.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What reasons can you suggest as to why goods and services are traded?
2. Name the four levels of industry, and give an example of a good as it moves through the production process.

Explain

3. What reasons can you suggest for component parts of the Airbus A380 having to come from different ***places*** (countries)?
4. Explain what is meant by the term *value adding*, as a product moves through the four levels of industry. Choose a product such as wheat or timber.

Discover

5. Suggest why the United States is one of the largest consumers of goods and services in the world.
6. Use the **CIA** weblink in the Resources tab to select a country to compare with Australia. Look up figures for population and trade and see if you can explain why the figures for the country you have chosen differ from the figures for Australia, based on the wider range of data presented for each country.

Predict

7. It has been claimed that countries such as China and India, with growing middle classes that are now eager for goods and services, will put a strain on world resources. How might a growing demand for energy sources in these countries affect the ***environment***?
8. How might a ***change***, such as growth in Australia's population from 23 million to 40 million, affect Australia's trade?

Think

9. Why is Hong Kong, which is a Self Administered Region (SAR) of China, ranked third in household final consumption per person, while the wider country of China is ranked one-hundred-and-twelfth?
10. What reasons can you give for people being able to survive on $468 per person in countries such as Burundi?

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: How the manufacturing of planes connects places (int-3339)

18.3 How does trade connect Australia with the world?

18.3.1 Australia's trade organisation

Australia is one of the 162 members of the World Trade Organization (WTO), which covers 95 per cent of global trade. The organisation promotes free and fair trade between countries and, since 2001, its Doha Development Agenda has aimed to help the world's poor by slashing **trade barriers** such as tariffs, quotas and farm subsidies.

The Australian Department of Foreign Affairs and Trade (DFAT) coordinates trade agreements on behalf of the Australian Government, and the Australian Trade Commission (Austrade) promotes the export of goods and services. About 73 per cent of Australia's trade is with the member countries of the Asia–Pacific Economic Cooperation (APEC) forum.

FIGURE 1 People involved with trade

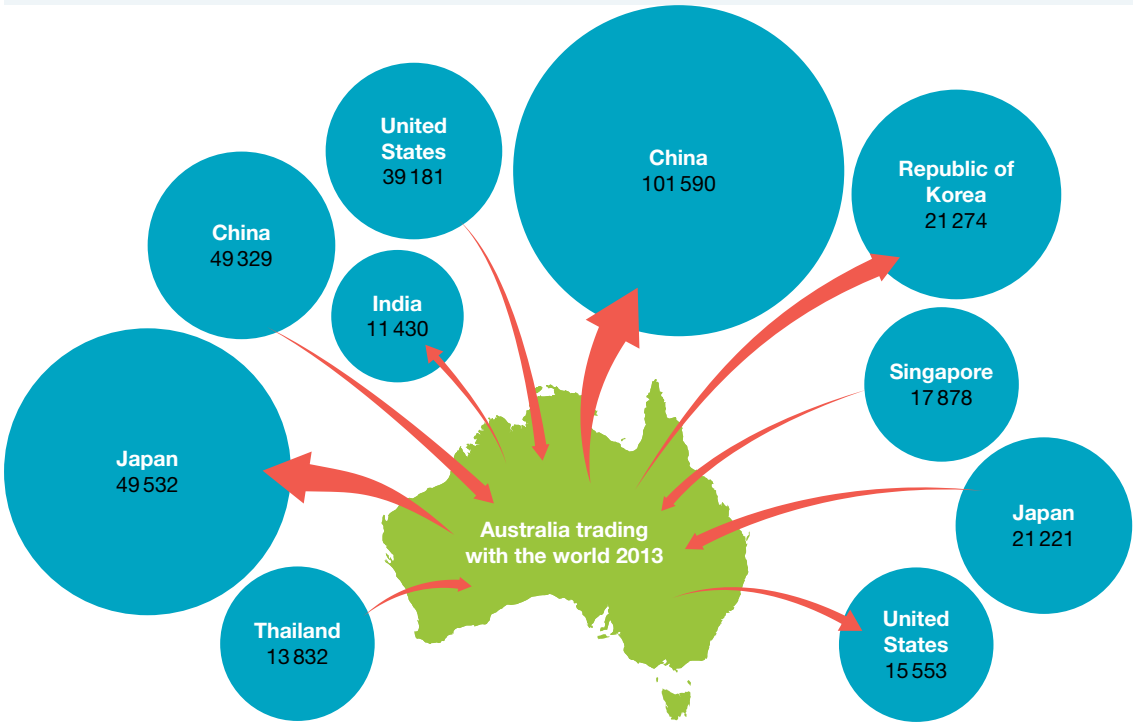
18.3.2 Australia's trading partners

China, Japan, the Republic of Korea and the United States were Australia's top four **trading partners** in 2014. Table 1 and figure 2 show details of Australia's import and export trade for the years 2013 and 2014.

TABLE 1 Australia's top 10 two-way trading partners, 2014 (A$ million)

Rank		Goods	Services	Total	% share
	Total two-way trade	**533 264**	**130 555**	**663 819**	
1	China	142 078	10 390	152 468	23.0
2	Japan	65 431	4 787	70 218	10.6
3	United States	40 635	19 807	60 442	9.1
4	Republic of Korea	32 424	2 202	34 626	5.2
5	Singapore	21 128	9 059	30 187	4.5
6	New Zealand	16 083	7 384	23 467	3.5
7	United Kingdom	9 920	10 868	20 788	3.1
8	Malaysia	17 394	3 188	20 582	3.1
9	Thailand	16 106	2 872	18 978	2.9
10	Germany	13 725	3 000	16 725	2.5

FIGURE 2 Australia's top five import and export partners, 2013 (A$ million)



18.3.3 Australia's types of trade

Exports

Australia's export trade in 2014 was valued at $327 billion, and was dominated by the mineral products of iron ore, coal and natural gas. Recreational and educational travel were Australia's leading services exports. See figure 3 for details of leading exports.

International students

A more recent high-level earner for Australia (now ranked as our number four export after iron ore, coal and natural gas), is the category of 'education-related travel services', which for 2015 was valued at $18.2 billion.

With more than 450 000 international students from 191 countries studying in Australia (see figure 4), education is now very important for our economy. In effect, it is a service export in that students are paying for knowledge that they will take back to their home country.

FIGURE 3 Australia's exports of goods and services for 2014 — share of exports by sector

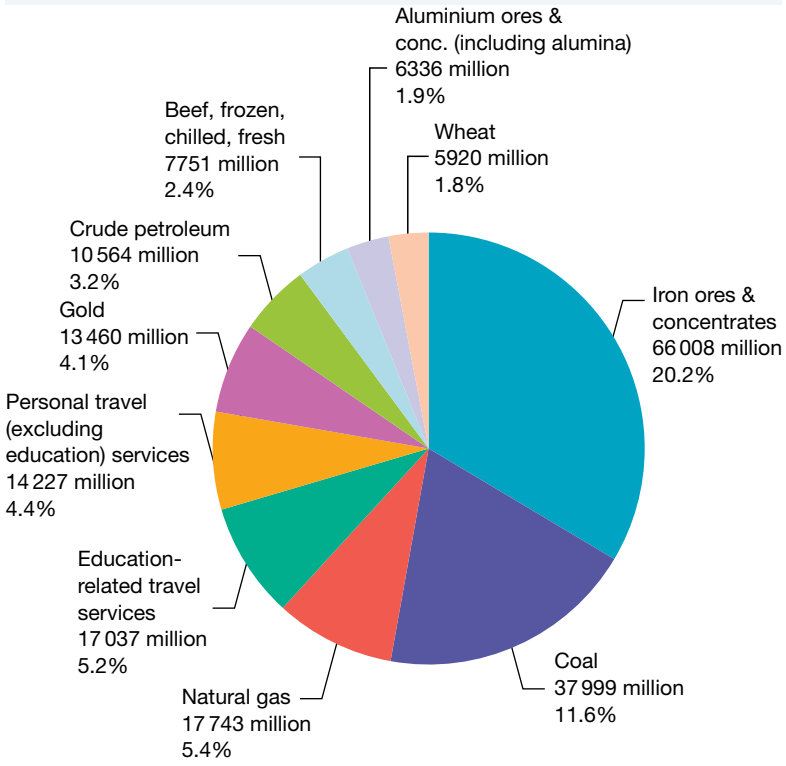


FIGURE 4 International students studying in Australia, 2014

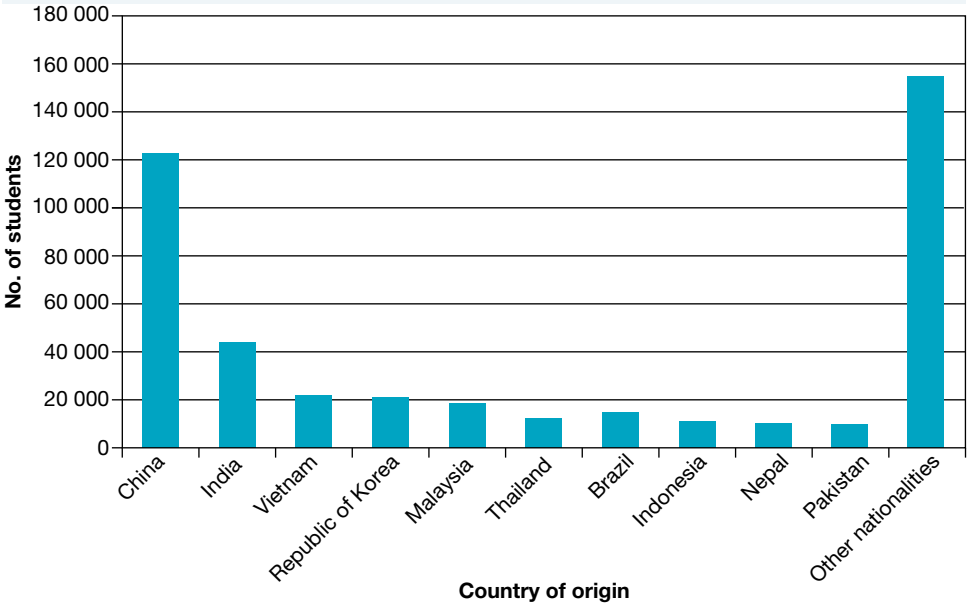


FIGURE 5 Education is now a major export for Australia, with the number of international students studying here increasing in recent years.

Imports

Like many countries, Australia is not self-sufficient in all goods and services. In 2014 Australia imported goods and services to a value of close to $337 billion. Figure 6 shows the main aspects of this trade.

FIGURE 6 Australia's leading imports for goods and services, 2014 (A$ million)

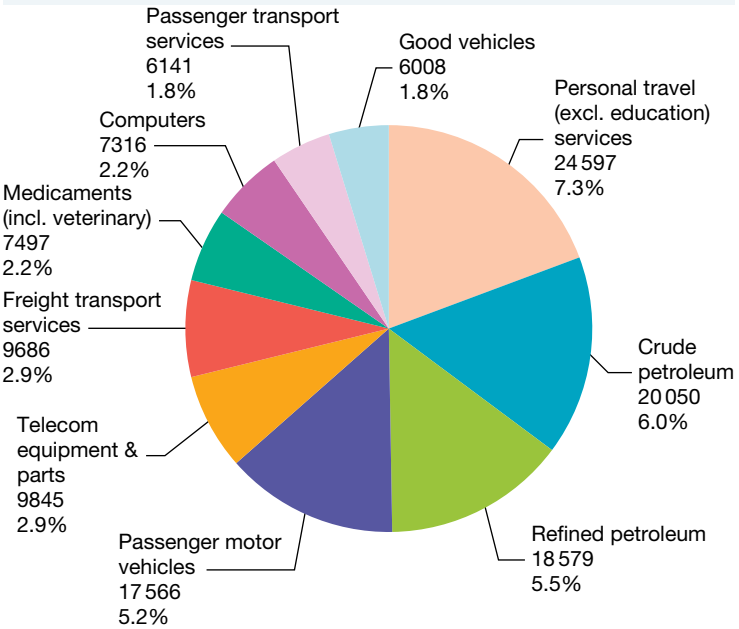


FIGURE 7 Oil and petroleum products make up a significant part of Australia's import trade.

18.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What is the ***interconnection*** between the World Trade Organization and Australia's trade?
2. What are Australia's three most important exports and imports?

Explain

3. Refer to figure 2 and table 1. Compare Australia's imports and exports with those of Asian countries. What changes have occurred in the imports and exports between countries from 2013 to 2014. Use data to support your answer.
4. Despite having a relatively small population, Australia has many goods and services to trade. Explain why this might be so.

Predict

5. How might a ***change*** in the growth of Australia's population affect the country's agricultural exports?
6. Look at the list of goods that Australia imports (see figure 6). What factors could lead to a ***change*** in the types of goods imported by the year 2050?

Think

7. (a) What evidence is there in this section to confirm the fact that Australia is regarded as mostly a **primary industry** exporter?
   (b) Are there any figures of export trade that contradict this statement?
   (c) Why has Australia become such an important exporter of education services?

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: The interconnection between Australia and its trading partners (int-3338)

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
› Aid, migration and trade

18.4 How is food traded around the world?

18.4.1 Trade in food

The world's population is unevenly distributed across space, as is the quantity of food produced. Some places, such as Australia, produce an abundance of food, while others struggle to produce enough to maintain food security.

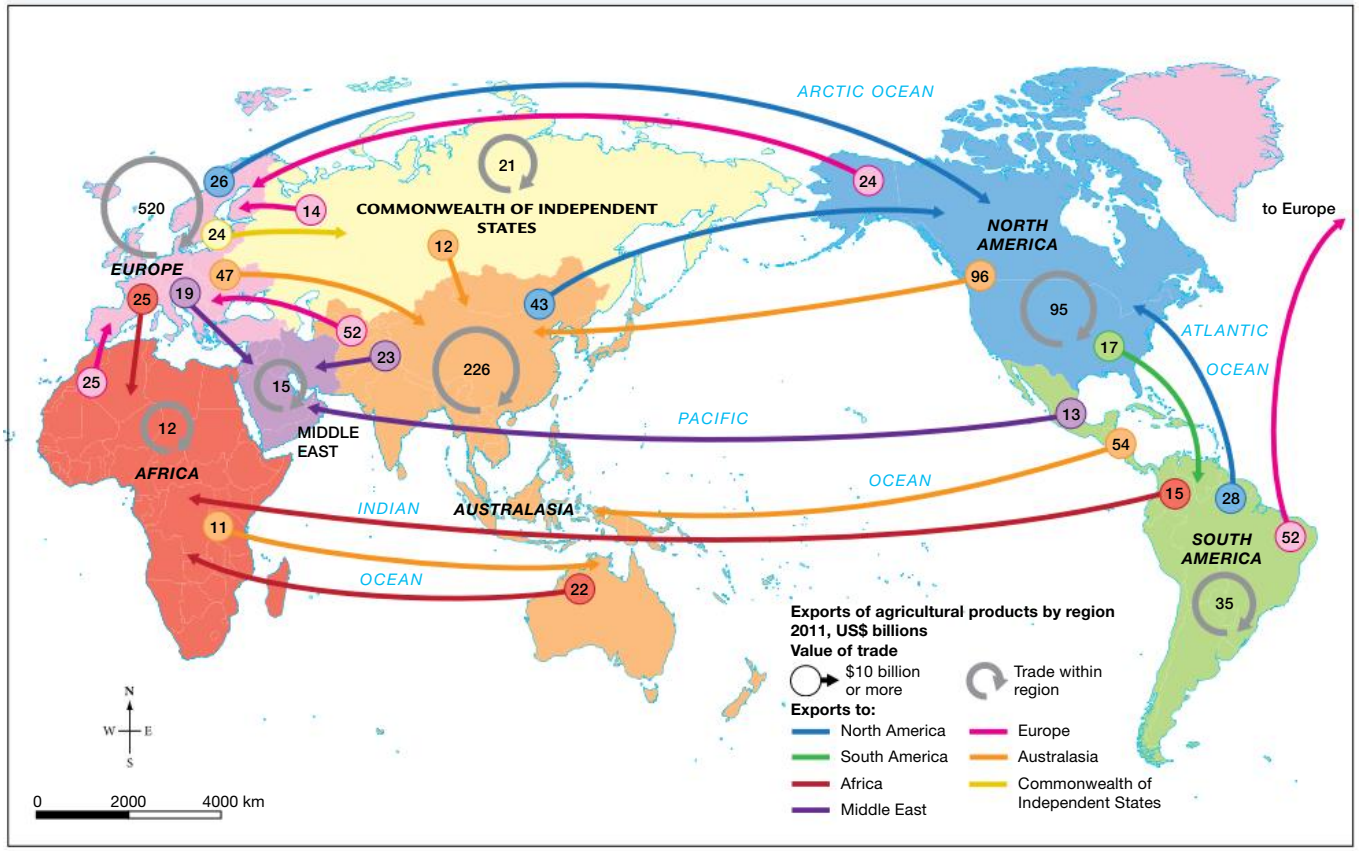
Traditionally, food production consisted of hunting and gathering or cropping and herding. Excess food was consumed locally or sent to nearby markets for **barter** or cash. While up to 41 per cent of the world's population is still directly tied to subsistence agriculture, many of the world's highly developed economies produce large surpluses of food specifically for international trade. For instance, Australia's food production is estimated to be worth $100 billion annually, and of that, $44.3 billion-worth is exported.

The flow of food trade

Much of the flow of food trade is controlled by powerful nations, such as the United States, the European Union and China, and by international food trade agreements. The World Trade Organization (WTO) and G20 (a group of 20 developed and powerful nations) have a significant say in the flow of food products around the world, particularly with respect to tariffs and fair trade rules.

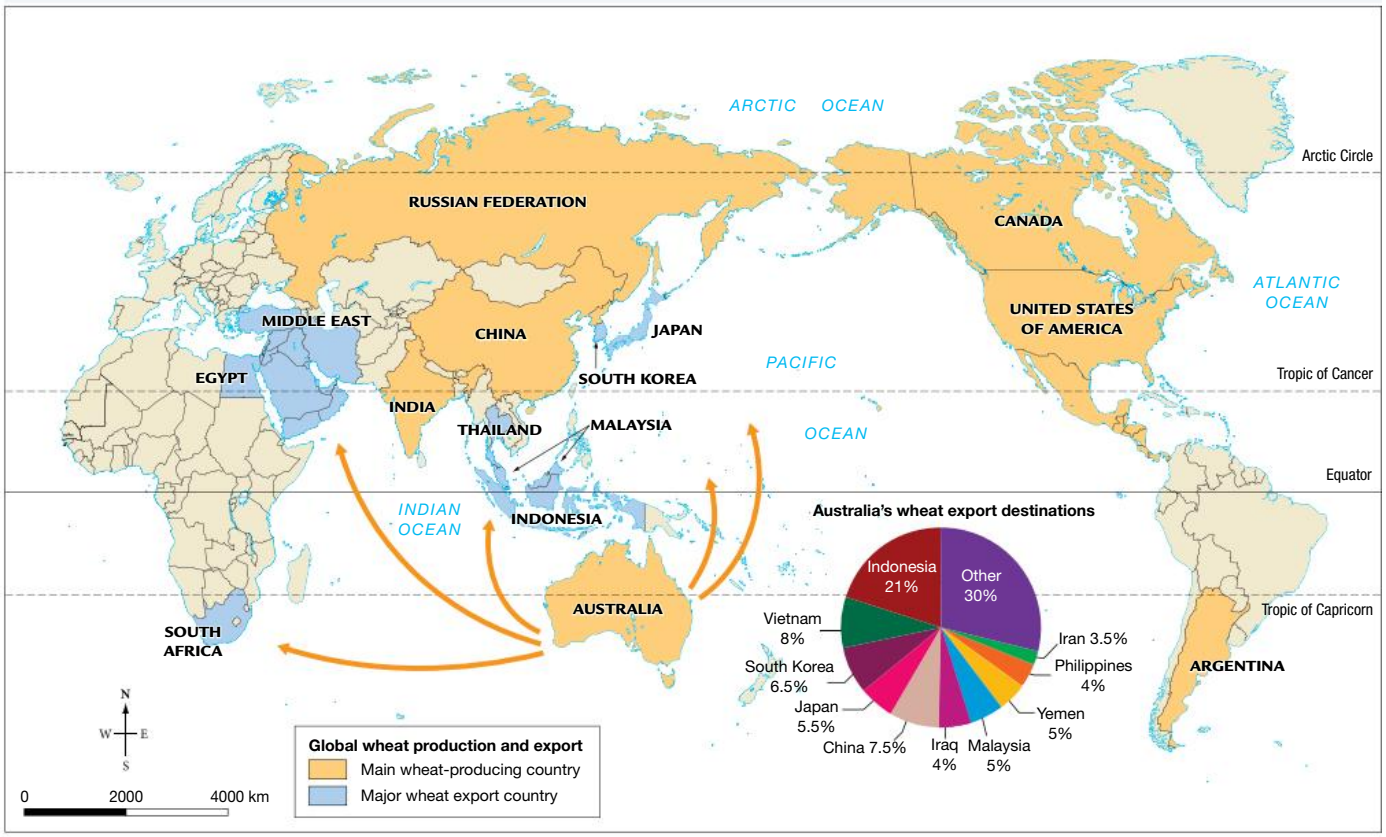
Food trade is a complicated business, as can be seen in figure 1. It is estimated that for **developing countries**, three-quarters of exports are agricultural produce. While developed countries may need to import tropical foods, many actually export as much as they import in agricultural produce. For instance, the United States, Canada and Australia use large farms to produce wheat, and they control 75 per cent of the global export trade in cereals. In 2015, Australia produced 23 million tonnes of wheat, the majority of which was for sale in overseas markets (see figure 2). Australia's top 10 agricultural markets can be seen in figure 3.

FIGURE 1 World trade flows — exports of agricultural products by region, US$ billion



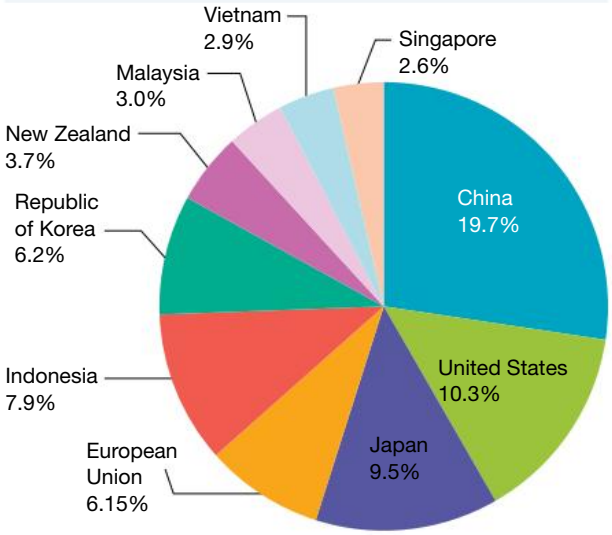
Source: Data from World Trade Organization

FIGURE 2 Top export countries for Australian wheat



Source: Vicstock Grain

FIGURE 3 Australia's agricultural exports to various countries, 2014



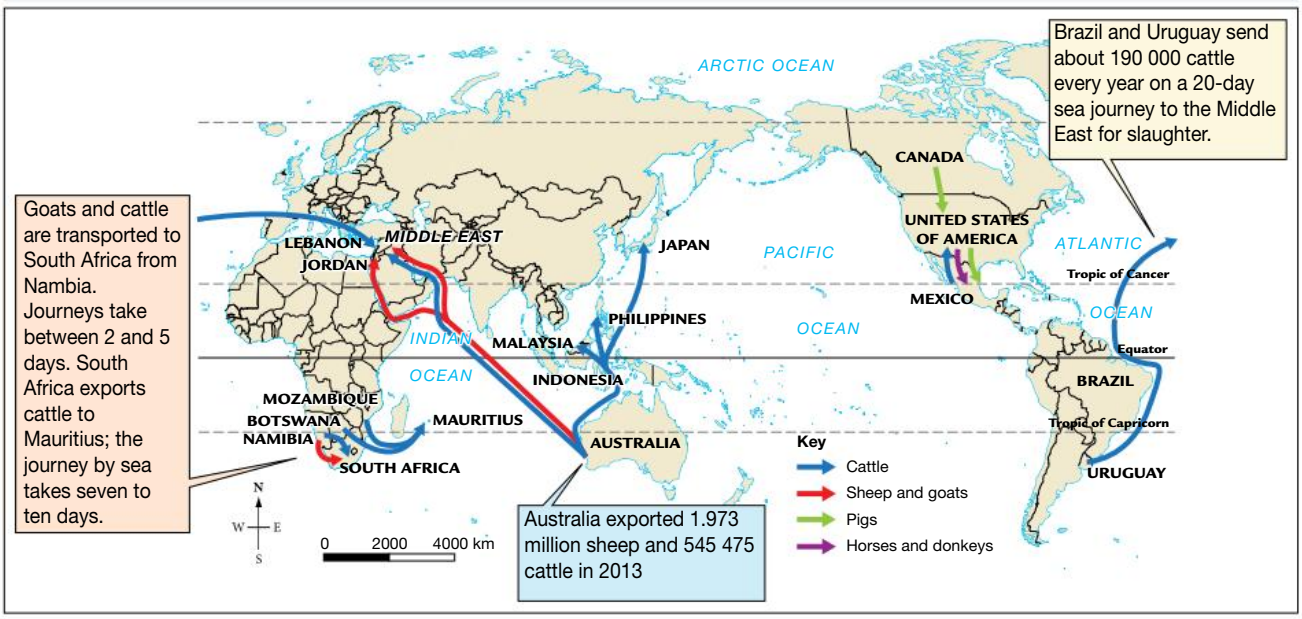
18.4.2 Trade in animals

World trade in animals as food is estimated at close to 50 million animals per year — pigs, cattle, goats and sheep. Using modern shipping methods, many animals are transported over long distances, and questions have been asked about potential cruelty in the operation of this trade (see figure 4).

Australia's exports of live sheep and cattle to Asia and the Middle East in 2014 amounted to 3.7 per cent of Australia's total exports. The value of the live animal export trade to Australia is estimated at $1.6 billion or 3.7 per cent of all agricultural produce per year. The industry employs up to 10 000 rural workers at abattoirs, ports and in the transport industry. While there may be concerns about this industry, it should be remembered that countries request live animal exports so that they can be slaughtered according to **halal** religious customs.

Due to the extensive nature of farming cattle and sheep in Australia, these animals must often travel very large distances to reach ports. They then travel by ship to distant markets. The Australian Government has set high standards in the handling of live animals and is monitoring carefully how they are treated at destination ports.

FIGURE 4 Live animal transport around the world



Source: Spatial Vision

18.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What is the value of Australia's agricultural exports?
2. What is the percentage of world trade in animals that Australia controls?
3. Refer to figure 1.
   (a) What is the value of food trade from Australasia to Europe?
   (b) What is the value of food trade from Europe to Australasia?
   (c) Is there a balance in this food trade based on your calculations in (a) and (b)?
   (d) Place the regions of the world in decreasing order by volume of food trade.

Explain

4. Refer to figure 2.
   (a) Explain why Australia can export such a large quantity of wheat to the world.
   (b) What reasons can you suggest as to why a country such as Russia might not export wheat to Indonesia and Malaysia?

Discover

5. Why do countries in ***places*** such as the Middle East and Asia have a preference for live animal imports?
6. (a) Investigate the issue of live animal exports from Australia.
   (b) How might a ban on live animal exports from Australia affect farmers?

18.5 SkillBuilder: Constructing multiple line and cumulative line graphs

online only

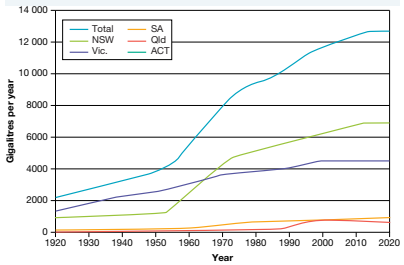
WHAT ARE MULTIPLE LINE GRAPHS AND CUMULATIVE LINE GRAPHS?

Multiple line graphs consist of a number of separate lines drawn on a single graph. Cumulative line graphs are more complex to read, because each set of data is added to the previous line graph.

Go online to access:

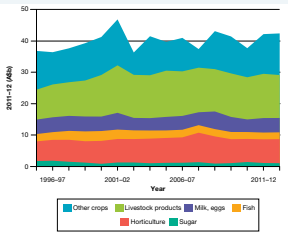
- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 Water use by five states: a multiple line graph



Source: Food and Agriculture Organization of the United Nations, 2012 FAOSTAT, http://faostat3.fao.org/home/index.html

FIGURE 2 Value of farms and fisheries food production: a cumulative line graph



Source: © DAFF 2013, *Australian Food Statistics 2011-12.* Department of Agriculture, Fisheries and Forestry, Canberra. CC BY 3.0.

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Watch this eLesson: Constructing multiple line and cumulative line graphs (eles-1740)

Try out this interactivity: Constructing multiple line and cumulative line graphs (int-3358)

18.6 How has the international automotive trade changed?

18.6.1 The car trade

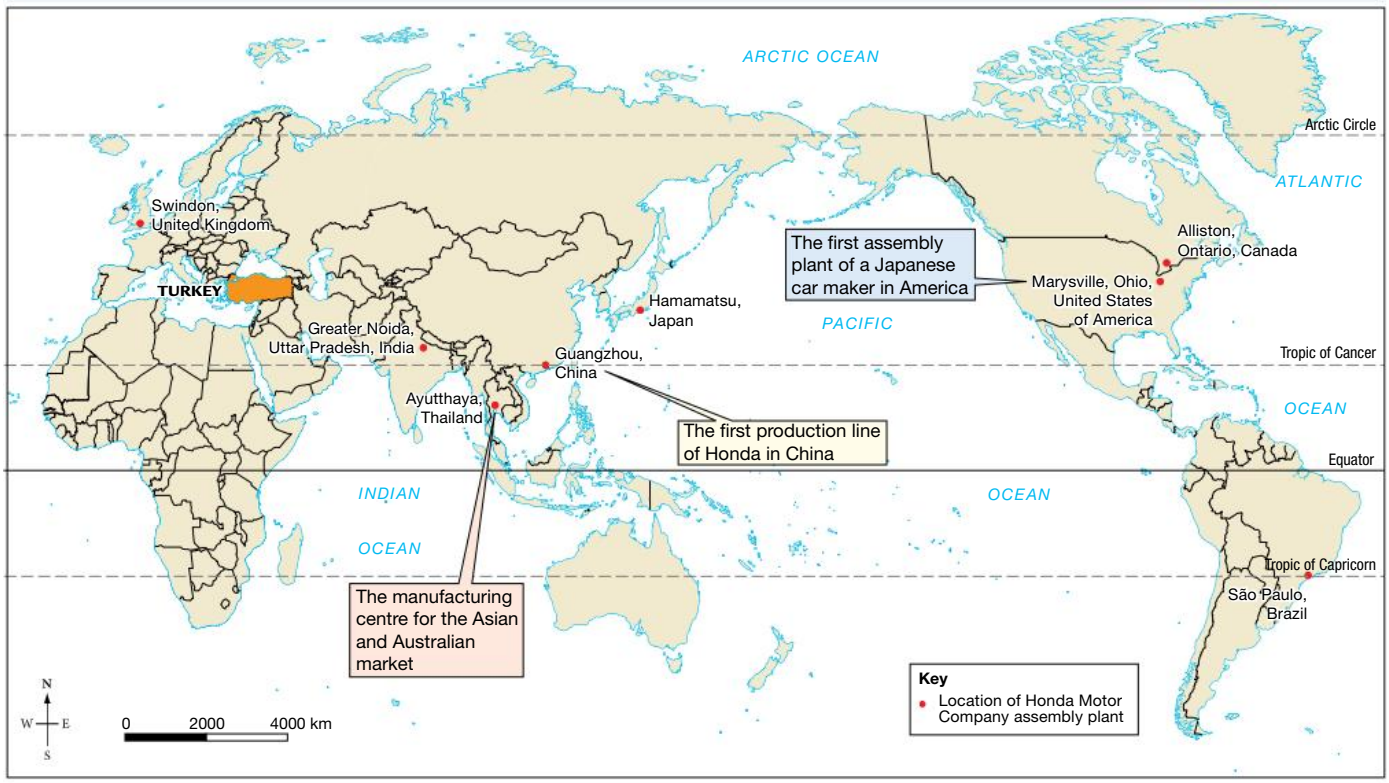
Trade is one of the strongest interconnections between people and places on the planet, as goods are transported all over the world. Worldwide earnings from car exports make up 5.3 per cent of earnings from all international exports. Two countries with the largest share of the car export market are Japan in north-east Asia and Germany in Europe. Together, they have 61 per cent of the world's net profits on international car exports. Other countries with significant car exports include China and South Korea in Asia.

18.6.2 The rise of the Asian car industry

The Honda Motor Company is a Japanese multinational corporation. It is:

- the world's largest motorcycle manufacturer
- the world's largest manufacturer of internal combustion engines (by volume)
- the second-largest Japanese car manufacturer

FIGURE 1 The Honda Motor Company operates plants worldwide for the manufacture of its products.



Source: Spatial Vision

- the fourth largest car manufacturer in the United States
- the seventh largest car manufacturer in the world behind Toyota, General Motors, Volkswagen, Hyundai, Ford and Nissan.

The company has assembly plants around the globe (see figure 1). Honda develops vehicles to cater to different needs and markets, so its vehicles vary by country and may feature vehicles exclusive to a region.

FIGURE 2 A Honda S2000

18.6.3 The decline of the American car industry

Detroit is the largest city in the state of Michigan, in the United States, and was long known as the world's automotive centre. Detroit and the surrounding region constitute a major centre of commerce and global trade, most notably as home to America's 'Big Three' automotive companies: General Motors, Ford and Chrysler.

These three car manufacturers were, for a while, the largest in the world, and two of them are still in the top five. Ford had held the position of second-ranked car maker for 56 years, but was relegated to third in North American sales after being overtaken by Toyota in 2007. That year, Toyota also produced more vehicles than General Motors. In the North American market, the Detroit car makers retain the top three spots, though their market share is dwindling, and Honda passed Chrysler for the fourth spot in the United States in 2008.

The United States car industry is suffering from increased overseas competition and from the 2008–2012 global recession. Car dealerships across the United States are struggling, and many are closing. The Big Three manufacturers have suffered from perceived inferior quality compared to their Japanese counterparts.

FIGURE 3 Car industry redistribution in the United States

Source: Spatial Vision

They have also been slow to bring new vehicles to the market, whereas the Japanese are considered leaders in producing smaller, more fuel-efficient cars.

Falling sales and market share have resulted in the Big Three's plants operating below capacity. General Motors' plants were at 85 per cent capacity in November 2005 — well below the plants of its Asian competitors. This led to production cuts, plant closures and layoffs. Between 2000 and 2010, Detroit's population fell by 25 per cent. It had been the nation's tenth largest city but is now its eighteenth largest, with a population of 713 777. In April 2012, General Motors and Ford continued to lose market share, with yearly sales down 8.2 per cent and 5.3 per cent respectively.

As a consequence, a rise in automated manufacturing using **robotic technology** has created related industries in Detroit. Inexpensive labour in other parts of the world and increased competition have led to a steady change in certain types of manufacturing jobs in the region. For example, the Detroit area has gained new **lithium ion battery** plants. As well, the Detroit car makers and local manufacturers have restructured in response to competition. General Motors has invested heavily in fuel-cell-equipped vehicles, while Chrysler has researched and developed **biodiesel**.

18.6 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Refer to figure 1. Honda cars are manufactured in many ***places*** around the world. Where is Honda's manufacturing centre for the Australian market?

Explain

2. Explain the advantages of the Big Three US car manufacturers being located in the same ***place***.
3. Why has the Japanese automotive industry become a world leader in international exports?
4. What ***changes*** have Detroit's industries made in response to the decline of the car industry?
5. Look at figure 3. Describe the location of foreign and domestic automotive plants.

Discover

6. Research the effects of the decline of the US car industry on Detroit and surrounding towns and businesses.
7. New Zealand used to have a Honda assembly plant. Find out when it opened, when it closed and the reason for its closure.

18.7 Are global players altering the industrial landscape?

18.7.1 Changing trends

Until recently, designer clothing came from Italy, and jeans came from the United States. Today, that Italian suit might be designed in Milan, but it is woven from New Zealand wool and stitched together in China. **Globalisation** has brought global marketing, encouraging consumers everywhere to buy goods without a thought to where they come from.

The clothing industry has faced several tough years. Until late 2008, Australians flocked to shopping centres around the country and spent freely on clothing. However, since the global recession, or global financial crisis, consumer spending behaviour has changed, and clothing retailers have suffered. Retailers have also been affected by the increase in online shopping, which has grown in popularity over the years,

FIGURE 1 This symbol signifies that a product has been manufactured in Australia by an Australian-owned company.

mainly because people find it convenient and easy to bargain shop from the comfort of their home or office. Online shopping has revolutionised the business world by making everything anyone could want available by the simple click of a mouse button.

The Australian clothing manufacturing industry has produced some very recognisable brand names and distinctive products. One challenge facing this industry is international competition, especially from developing countries that can afford to mass-produce clothing more cheaply than Australian companies can. Australian clothing manufacturers tend to focus on high-end, high-quality products rather than attempting to compete with lower cost producers.

Many multinational firms have '**offshored**' their production to China, owing to its low labour costs, stable political system, aggressive export promotion policies and exchange rate. There are no labour unions, and incentives offered by the government include tax breaks, low import duties, low-cost land and low construction costs for new factories.

Horror unfolding as Holden production goes off-shore

After months of speculation and days of denials, General Motors Holden has finally announced the decision its Australian workforce has feared. The company will stop production of its iconic Australian car brand from 2017.

It means the loss of nearly 3000 jobs in Victoria and South Australia and may spell the beginning of the end for the automotive industry in this country.

The company blames a high dollar, the rising costs of production and a small domestic market.

Holden follows Ford and Mitsubishi in exiting Australia and it signals the demise of a cultural icon.

Holden started making cars in Australia in 1917. Mass production started in 1948. The last car will roll off the production line in 2017, making it a century of car making.

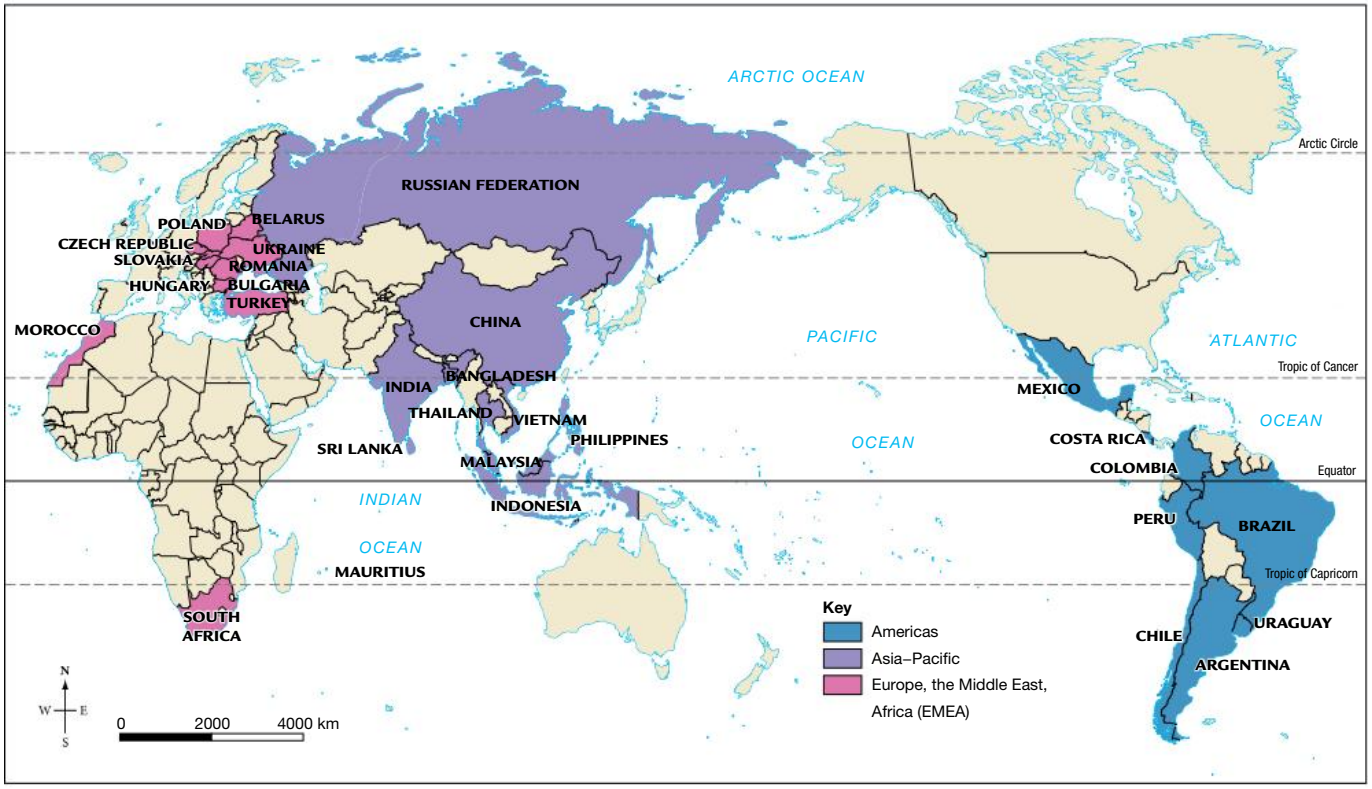
Source: ABC Online 11 December 2013

18.7.2 Foreign companies in China

In 1979, there were 100 foreign-owned enterprises in China. In 1998, there were 280 000, and by 2012 there were 436 800. Since 2007, foreign companies have employed 25 million people in China. Foreign companies that operate in China include Coca-Cola, Pepsi, Nike, Citibank, General Motors, Philips, Ikea, Microsoft and Samsung.

FIGURE 2 Ikea's store in Beijing had more than six million visitors in 2011.

FIGURE 3 Top 30 locations for offshore companies in 2010, by region



Source: Spatial Vision

18.7.3 Are your clothes made in sweatshops?

If you buy the brands Puma, Nike, Adidas, Mizuno, New Balance, Bonds or Just Jeans, then you may be wearing clothing or footwear that was made in a sweatshop.

A sweatshop is any working environment in which the workers experience long hours, low wages and poor working conditions. Typically, they are workshops that manufacture goods such as clothing. Sweatshops are common in developing countries, where labour laws are less strict or are not enforced at all. Workers have to use dangerous machinery in cramped conditions and can even be exposed to toxic substances. Child labour may be used.

FIGURE 4 A Bangladesh sweatshop

Despite the fact that sweatshop workers receive wages, many of them continue to live in poverty. Most are young women aged 17 to 24.

18.7 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Why have many countries moved their production to offshore ***places***?
2. What are sweatshops?

Predict

3. What ***change*** do you think online shopping will make to the Australian retail industry?
4. What do you think would happen to the price of clothing if sweatshops were to close down?

Think

5. Look at figure 3. Give reasons why most offshore manufacturing companies are located in the Asia–Pacific region.
6. What impact does moving production offshore have on the Australian economy and its people?
7. If clothing carries the Ethical Clothing Australia (ECA) label, it means the garment was manufactured in Australia and the manufacturer has ensured that all people involved in its production received the legally stated wage rates and conditions — known in Australia as award wages and conditions. Find out which Australian-made garments you can purchase to support fair working conditions.
8. How might internet shopping affect ***places*** such as shopping centres?
9. Are sweatshops ethical or ***sustainable***? Explain your answer.

18.8 Why is fair trade important?

18.8.1 Social justice and problems of trade

The benefits of international trade are not evenly distributed around the world, and trade often favours large, developed countries rather than small developing countries. It is the role of governments, organisations and agencies to regulate this trade so that economic benefits are more evenly distributed.

Australians benefit economically, culturally and politically from international trade, but **social justice** problems can arise from this trade. For example, when we import blood diamonds from Africa or carpets made by child labour from Nepal, we are supporting unethical industries.

In addition, some countries can make it difficult for other countries to compete fairly, on a 'level playing field'. They do this by:

- imposing tariffs — taxes on imports
- imposing quotas — limits on the quantity of a good that can be imported
- providing subsidies — cash or tax benefits for local farmers or manufacturers.

FIGURE 1 Fair trade organisations promote fair labour practices such as preventing and eliminating child labour.

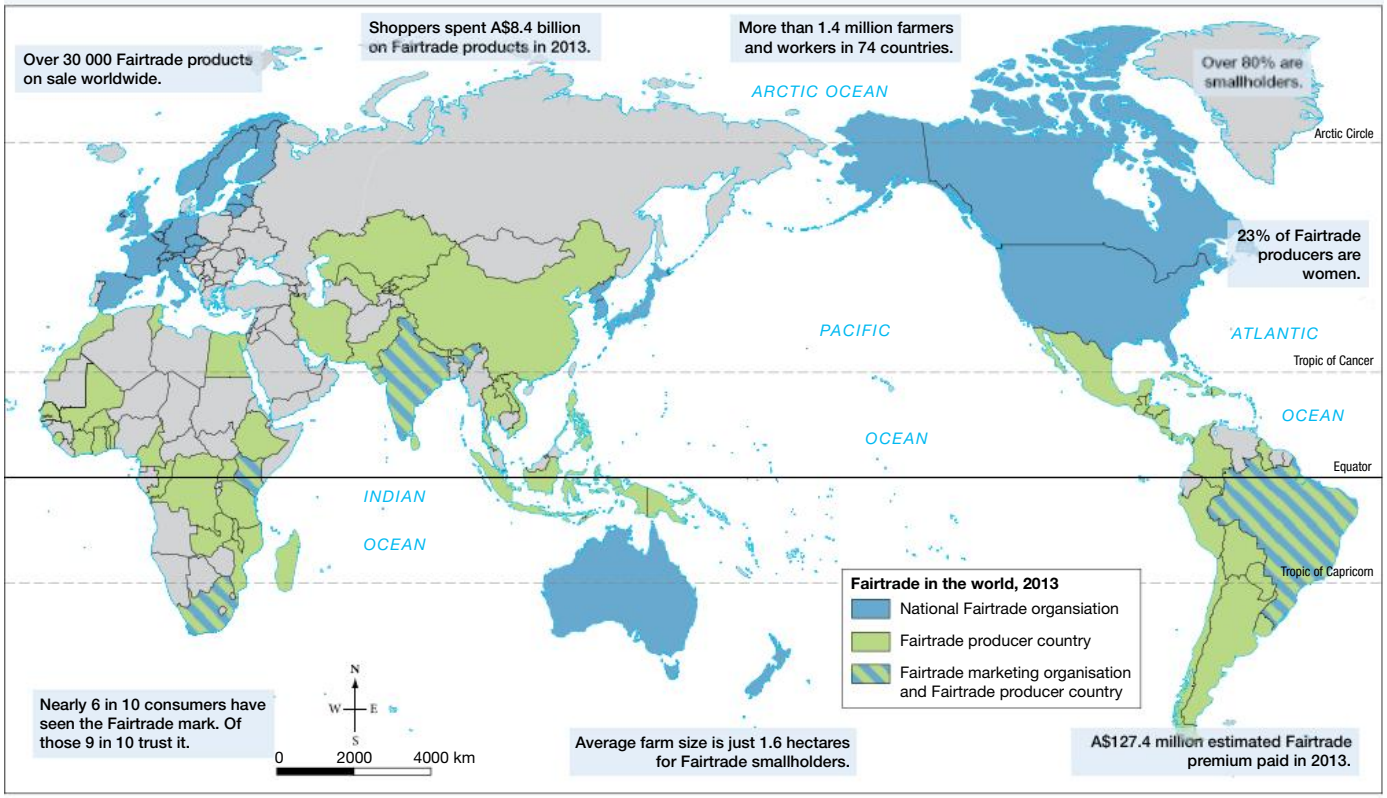
18.8.2 Fair trade

The fair trade movement aims to improve the lives of small producers in developing nations by paying a fair price to artisans (craftspeople) and farmers who export goods such as handicrafts, coffee, cocoa, sugar, tea, bananas, cotton, wine and fruit. The movement operates through various national and international organisations such as the World Fair Trade Organization and Fairtrade International (see figure 2).

FIGURE 2 Goods produced by workers for the World Fair Trade Organization mission

The fair trade labelling system is operated by Fairtrade International, of which Australia is a participating member. This system works to ensure that income from the sale of products goes back directly to farmers, artisans and their communities. Fairtrade International is present in over 120 countries worldwide and has a total of 1226 producer groups (see figure 3). The number of farmers and workers participating in Fairtrade is estimated to be 1.4 million, with 23 per cent of this number being women.

FIGURE 3 Fairtrade in the world, 2013



Source: Fairtrade Foundation

Fairtrade food items currently include sugar, chocolate, coffee, tea, wine and rice. Other products include soaps, candles, clothing, jewellery, bags, rugs, carpets, ceramics, wooden handicrafts, toys and beauty products.

In 2013, Australia and New Zealand had a combined retail sales total of A$290.3 million in Fairtrade Certificate products. The highest volume of trade in tonnes for 2013 were bananas: 373 000; sugar: (cane sugar) 194 000; and coffee/cocao beans: 138 500. On a global scale, 11.4 million producers and their families have benefited from Fairtrade-funded infrastructure and community development projects with a value of $8.4 billion.

18.8.3 Non-government organisations and fair trade

Non-government organisations (NGOs) such as Oxfam and World Vision also support fair trade, and oppose socially unjust trade agreements. They oppose attempts by developed countries to:

- block agricultural imports from developing countries
- subsidise their own farmers while demanding that poor countries keep their agricultural markets open.

18.8 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. What are the main principles of fair trade?

Explain

2. Explain the role of NGOs such as Oxfam in relation to trade.
3. Why can trade be unfavourable to poorer countries?

Discover

4. Find out more about Fairtrade labelling of products sold in ***places*** such as Australia.
5. What types of goods do Oxfam and World Vision sell in Australia?
6. Find out what Oxfam does to promote fair trade by using the internet to search for its programs.

Predict

7. Online ordering of goods has become a feature of the internet age. Make a list of the advantages and disadvantages of online ordering for workers in the Australian retail industry (such as those who work in department stores).

Think

8. In theory, every country, rich or poor, should have the opportunity to benefit from international trade. However, the reality is very different. Discuss.
9. Australia has made stronger regional trade ***interconnections*** with its neighbours by lowering its tariffs on imported textiles, clothing and footwear. How has Australian trade benefited from this?

18.9 Why does Australia give foreign aid?

18.9.1 Introduction

Countries give aid to other countries in order to help with their development and, for example, help people overcome poverty and resolve humanitarian issues. Aid often helps the donor country by promoting stability and prosperity in the region. Australia's Official Development Assistance (ODA) program is known as Australian Aid.

18.9.2 Australian Aid aims

Over one billion people in the world live in poverty and do not have easy access to education and health care. When disasters strike, they lack the resources to get back on their feet. Poverty needs to be addressed by the international community because it can:

- breed instability and **extremism**
- cause people to flee violence and hardship, thus swelling the number of refugees.

Australia takes the stance that helping people who are less fortunate is a vital way of supporting **humanitarian principles** and social justice. Apart from showing we care, it is in the interests of our **national security**. It also increases our status throughout the world and creates political and economic interconnections with our Asia–Pacific neighbours.

18.9.3 The Australian Aid program

The Department of Foreign Affairs and Trade (DFAT) manages the Australian Government's multi-billion-dollar overseas aid program. To ensure that funds reach the needy, Australian Aid works with Australian businesses, non-government organisations such as CARE Australia, and international agencies such as the United Nations (UN) and the World Bank.

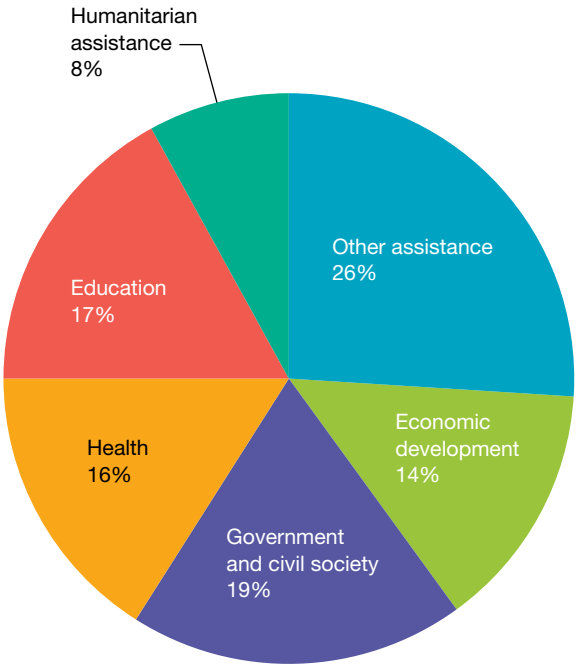
18.9.4 The Australian Aid plan

Overseas aid is the transfer of money, food and services from developed countries such as Australia to developing countries such as Papua New Guinea. There are many programs that are part of the Australian Aid budget, which is classified as Official Development Assistance (ODA) (see figure 1). These include:

- aid to governments for post-war reconstruction, as in Afghanistan and Iraq
- distribution of food through the United Nations World Food Programme
- contributions to United Nations projects on refugees and climate change
- disaster and conflict relief in the form of food, medicine and shelter, such as that given after the 2004 Indian Ocean tsunami
- programs by non-government organisations to reduce child labour in developing countries
- funding for education programs
- support for Australian volunteers working overseas.

A newly developed Australian Aid program for 2015–16 includes $50 million for gender equity and women's economic empowerment.

FIGURE 1 Distribution of the Australian Aid budget

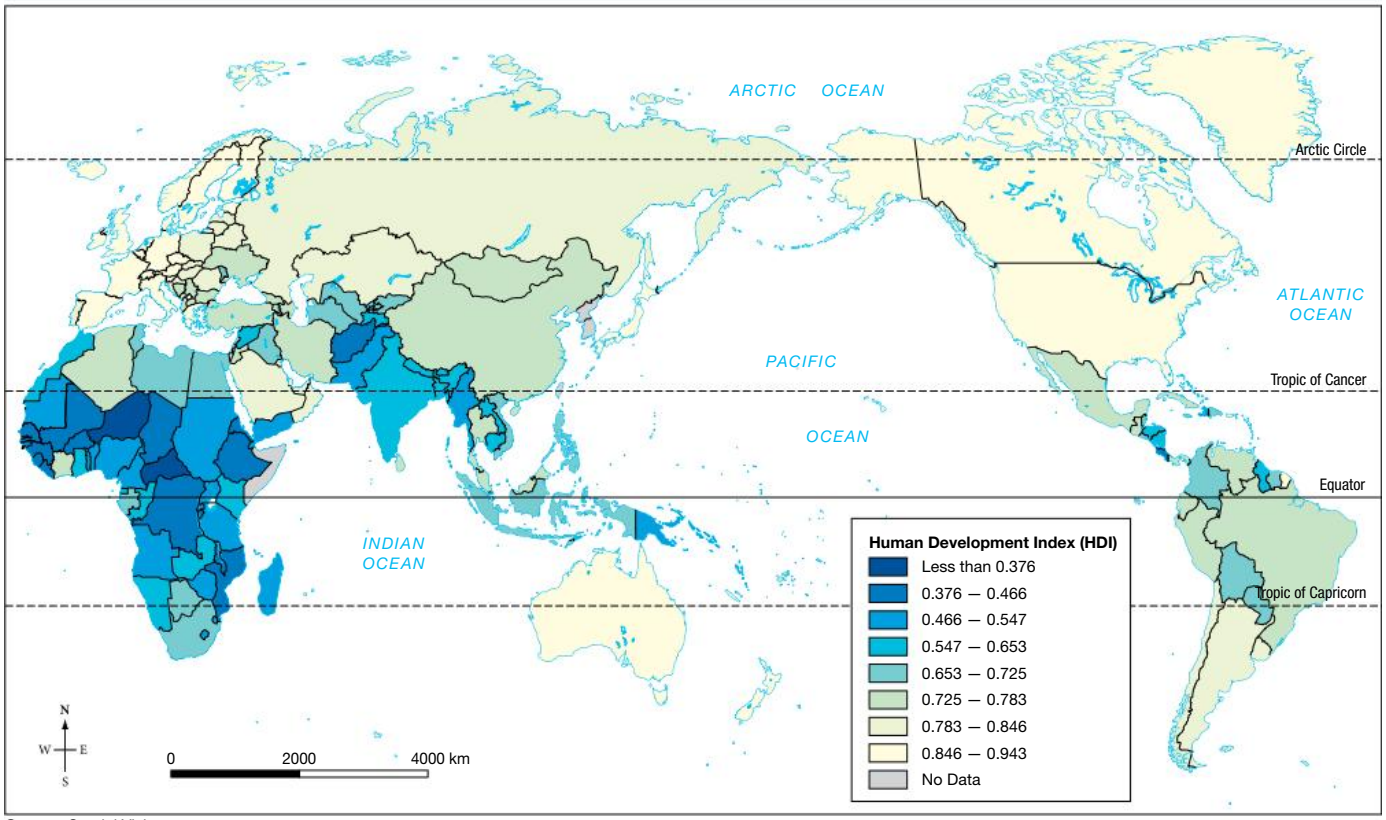


18.9.5 The Australian Aid budget

The Australian Aid program supports the United Nations Sustainable Development Goals (SDGs). In addition, countries with a low Human Development Index (HDI) are the target for development assistance. The Human Development Index ranks a country according to life expectancy at birth, adult literacy, school enrolments and income. The highest possible score for a country is 1.0 (see figure 2).

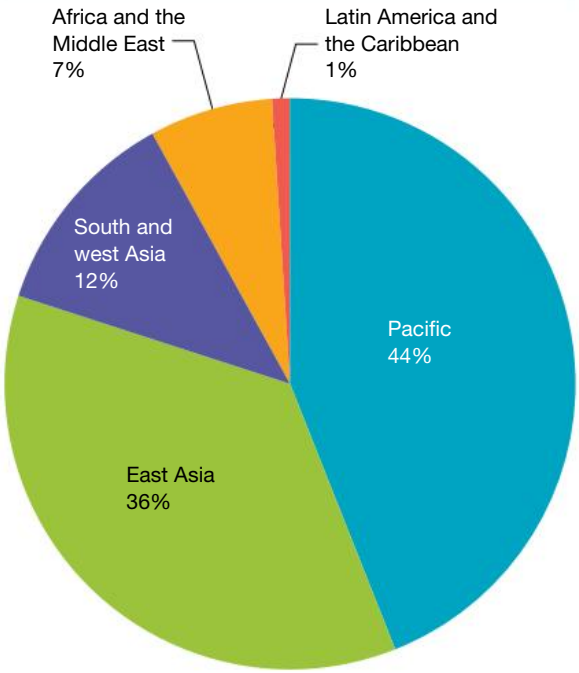
The total Australian Aid budget for 2015–16 was over 4 billion dollars with 92 per cent of the Regional Budget of 2.5 billion allocated to our nearest neighbours in the Asia–Pacific region (see figure 3).

FIGURE 2 The Human Development Index, 2015



Source: Spatial Vision

FIGURE 3 Australian Aid 2015–16



18.9 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note*: Question numbers may vary slightly.

Remember

1. Which government department manages Australia's Official Development Assistance program?
2. Which regions of the world receive most of Australia's aid funding and why do you think this is so?

Explain

3. What reasons can you put forward to explain why Australian Aid programs are worthwhile in terms of Australia's ***interconnections*** with its neighbours?
4. Is there a case that could be argued for cutting aid budgets? Explain your reasons.

Discover

5. Undertake some internet research to find out how the Sustainable Development Goals guide the Australian Aid program.
6. (a) Why is East Asia such an important ***place*** for the distribution of Australian Aid?
   (b) Why does north-east Asia receive little foreign aid from Australia?

Predict

7. If Australian Aid were to stop, what ***changes*** do you think this would have on Australia's reputation in the international community?
8. Which elements of the Australian Aid program do you think will have the greatest impact on the lives of people in the Pacific region? Give reasons for your selection.

Think

9. Can you suggest a better way of distributing the budget dollars of the Australian Aid program in order to improve the lives of people in the Asia–Pacific region?
10. If Australia's economic prosperity were to decline in the next 50 years, which elements of the Australian Aid program do you believe would not be ***sustainable***?

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Try out this interactivity: Compare Australia's aid program with those of other countries (int-3340)

18.10 Why is the illegal wildlife trade a cause for concern?

online only

Access this subtopic at **www.jacplus.com.au**

18.11 SkillBuilder: Constructing and describing a flow map

online only

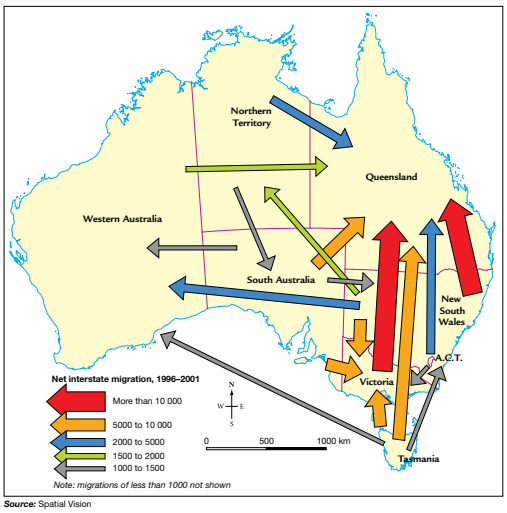
WHAT IS A FLOW MAP?

A flow map is a map that shows the movement of people or objects from one place to another. Arrows are drawn from the point of origin to the destination. Sometimes these lines are scaled to indicate how much of the feature is moving. Thicker lines show a larger amount; thinner lines show a smaller amount.

Go online to access:

- a clear step-by-step explanation to help you master the skill
- a model of what you are aiming for
- a checklist of key aspects of the skill
- a series of questions to help you apply the skill and to check your understanding.

FIGURE 1 Interstate migration flows, 1996 to 2001



Source: Spatial Vision

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Watch this eLesson: Constructing and describing a flow map (eles-1741)

Try out this interactivity: Constructing and describing a flow map (int-3359)

18.12 Review

online only

18.12.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

18.12.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

18.5 SkillBuilder: Constructing multiple line and cumulative line graphs

18.5.1 Tell me

What are multiple line graphs and cumulative line graphs?

Multiple line graphs consist of a number of separate lines drawn on a single graph. Cumulative line graphs are more complex to read, because each set of data is added to the previous line graph. Both formats show change over time and show trends effectively.

Why are multiple line graphs and cumulative line graphs useful?

Multiple line graphs and cumulative line graphs are useful when comparing the change in one set of data with changes in other sets of data, and are easier to read than a table of statistics. Sometimes in multiple line graphs the lines may cross one another, so a coloured key is used. Cumulative line graphs are good at showing the breakdown of a total quantity.

They are also useful for:

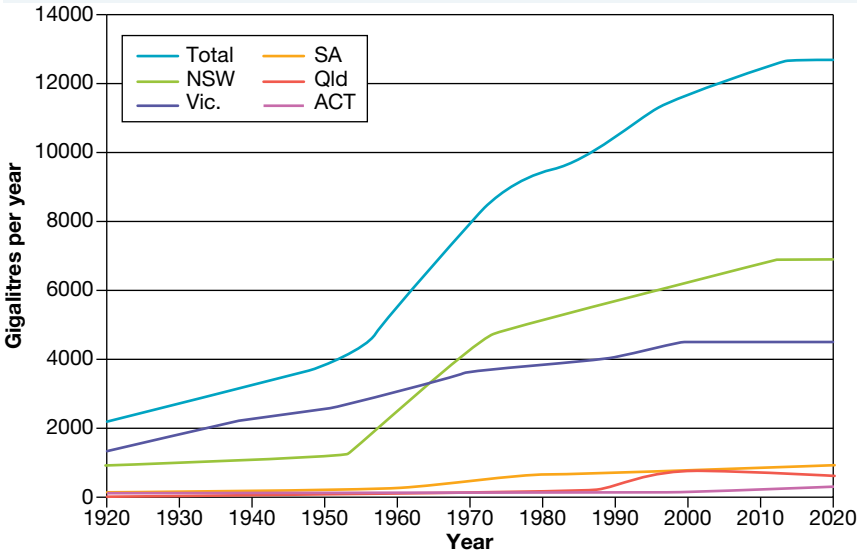
- showing a pattern of change
- comparing changes in components of the total
- showing trends in data.

Model

Good multiple line graphs and cumulative line graphs:

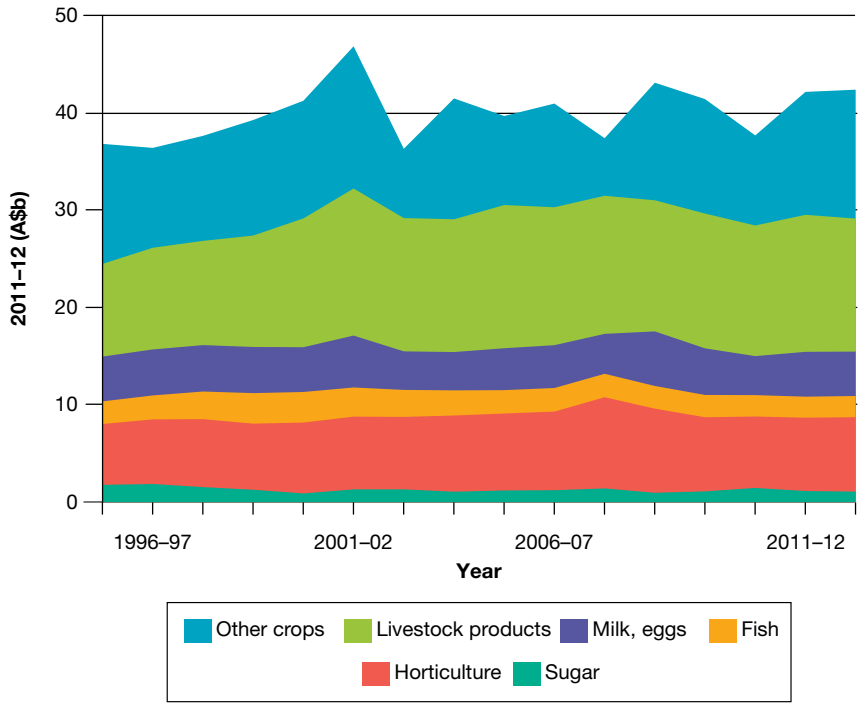
- have labelled axes
- include a clear title or caption that identifies places and dates for the data.

FIGURE 1 Water use by five states in the Murray–Darling Basin, 1920–2020, as a multiple line graph



Source: Food and Agriculture Organization of the United Nations, 2012 FAOSTAT, http://faostat3.fao.org/home/index.html

FIGURE 2 Value of Australian farms and fisheries food production, 1996–2012, as a cumulative line graph



Source: © DAFF 2013, *Australian Food Statistics 2011–12*. Department of Agriculture, Fisheries and Forestry, Canberra. CC BY 3.0.

18.5.2 Show me

How to draw multiple line graphs and cumulative line graphs

You will need:

- data for multiple places or uses shown over time
- access to a computer
- a blank Excel spreadsheet.

Procedure:

To complete multiple line graphs and cumulative line graphs you must have an appropriate set of data to graph. Both types of graphs can be completed from the same data set.

STEP 1

TABLE 1 Agricultural food production, selected grains (1000 tonnes), Australia, 2006–12

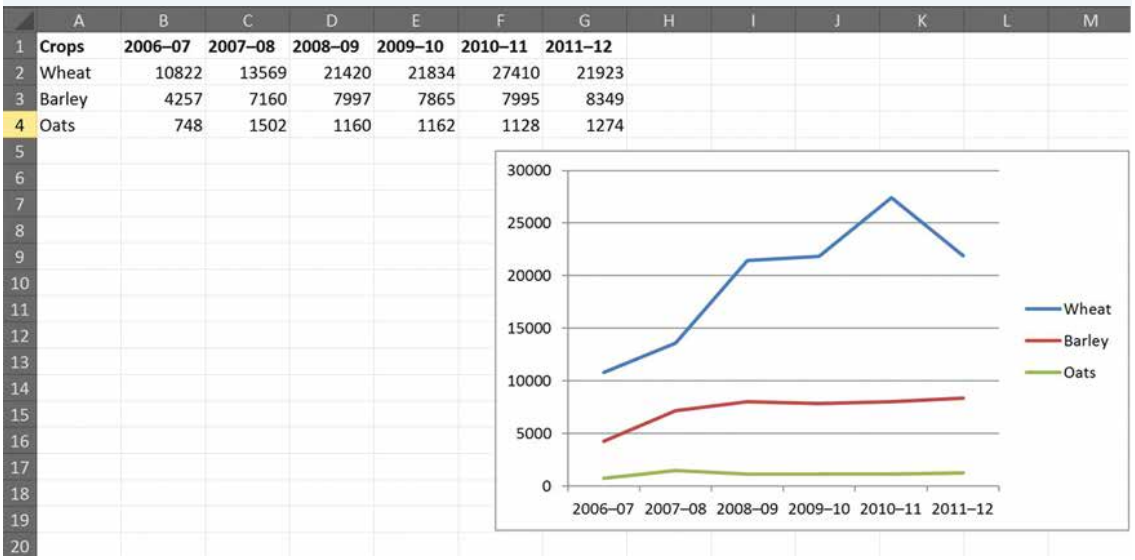
Crops	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12
Wheat	10822	13569	21420	21834	27410	21923
Barley	4257	7160	7997	7865	7995	8349
Oats	748	1502	1160	1162	1128	1274

Source: © DAFF 2013, *Australian food statistics 2011–12*. Department of Agriculture, Fisheries and Forestry, Canberra. CC BY 3.0.

Place all the data into an Excel spreadsheet. At this stage, if you have spaces in your numbers, close them up or replace them with commas, as spaces can create problems in Excel.

Next, click on the Insert tab and select a multiple line chart. You will then have to add the axis labels. Do this by clicking on your graph's outer border, selecting the Layout tab in the Chart Tools section, clicking on Axis Titles in the Labels section, and following the steps from there.

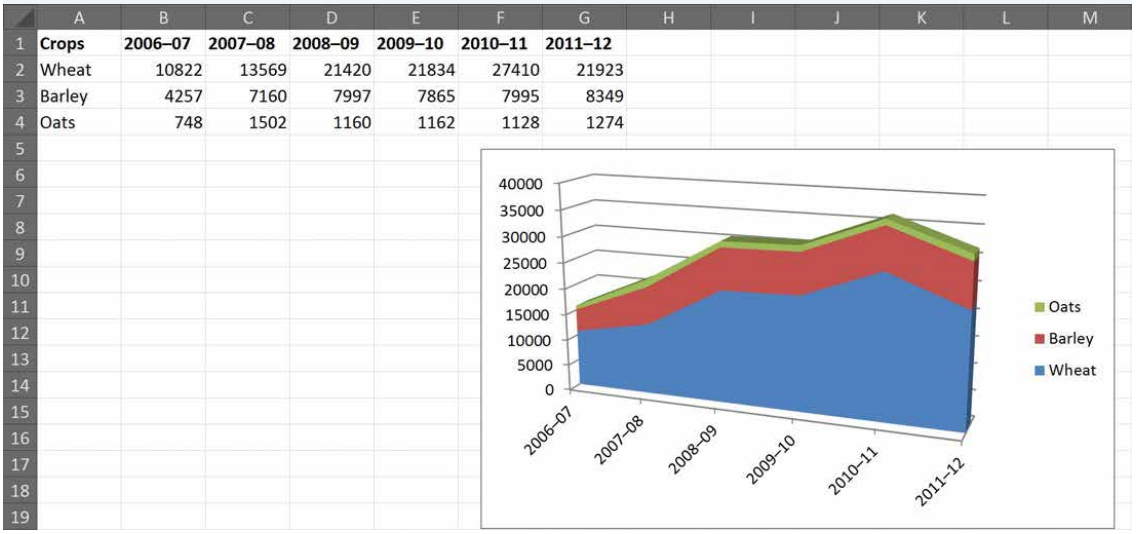
FIGURE 3 An Excel-generated multiple line graph



STEP 2

A cumulative line graph can be generated by selecting the table data and selecting an Area chart from the Charts section under the Insert tab. Don't forget to add axis labels.

FIGURE 4 An Excel-generated cumulative line graph



STEP 3

Check that you have supplied labels on all axes, units of measurement, and a title or caption.

18.5.3 Let me do it

Developing my skills

Use the data in table 2 to construct a multiple line graph and a cumulative line graph for four Asian countries to which Australia exports food.

TABLE 2 Australian total food exports by selected destination, $ million, 2006–12

Country	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12
China	664	917	1178	1426	1540	2174
Indonesia	1566	1702	2652	2129	2288	2272
Japan	4752	4553	5517	4278	4207	4448
Republic of Korea	1850	1655	1873	1925	1994	2338

Source: © DAFF 2013, *Australian food statistics 2011–12*. Department of Agriculture, Fisheries and Forestry, Canberra. CC BY 3.0.

Questions

1. Which country received the greatest value of food exports from Australia?
2. Which country showed the greatest change in its level of importation of food from Australia?
3. From 2006 to 2012, which country was most consistent in its level of importation of food from Australia?
4. Suggest why these Asian countries need to import food from Australia.
5. Which graph showed you a clearer picture of the data: the multiple line graph or the cumulative line graph?

Checklist

I have:

- labelled the axes
- included a clear title or caption that identifies places and dates for the data.

Skills questions

1. Multiple line graphs and cumulative line graphs are used to show:
   (a) total values of data
   (b) single values of data

(c) comparisons between data
(d) mixed data.

2. Multiple line graphs and cumulative line graphs include information about:
   (a) money
   (b) slope
   (c) rainfall
   (d) ***change*** over time.
3. Why might the lines on a multiple line graph cross over?
4. Why might it be important to carefully calculate totals when constructing a multiple line graph?

learnON ONLINE ONLY

Watch this eLesson: Constructing multiple line and cumulative line graphs (eles-1740)

Try out this interactivity: Constructing multiple line and cumulative line graphs (int-3358)

18.10 Why is the illegal wildlife trade a cause for concern?

18.10.1 Threatened wildlife

Not all trade is legal. The international trade in wildlife has been one of the factors responsible for the massive decline in many species of animals and plants. Millions of live animals and plants are illegally shipped around the world each year to supply the pet trade and to meet the demand for decorative plants. Wild animal and plant products, such as skins, meat, ornaments, animal parts and timber, are traded in large quantities.

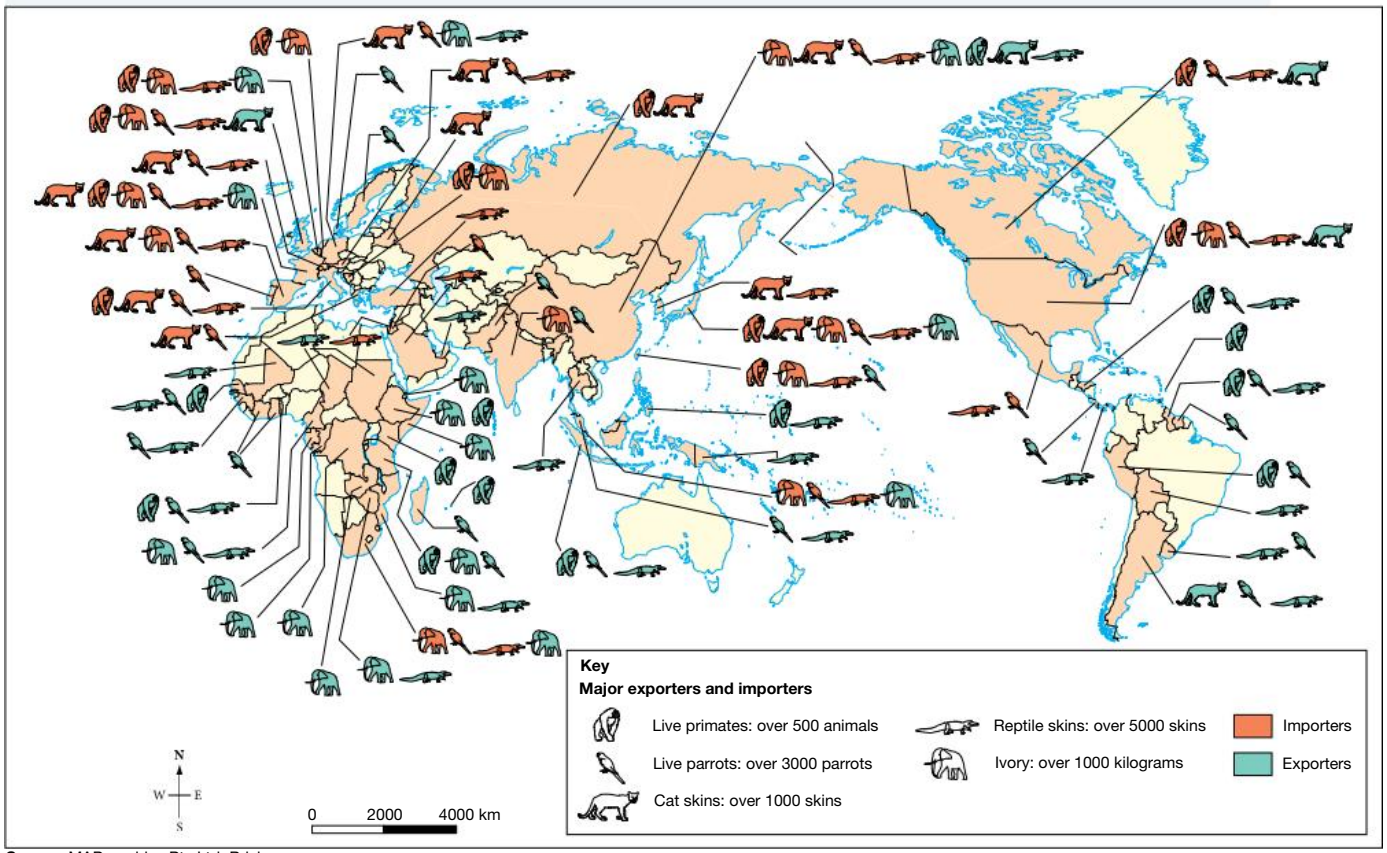
In 1973, an international **treaty** known as the Convention on International Trade in Endangered Species (CITES) was drawn up in Washington to prevent international trade that threatened species with extinction. Any trade in products from threatened wildlife now requires a special permit. Unless there are exceptional circumstances, no such permits are issued for species threatened with extinction. These include species of tigers, elephants, rhinoceroses, apes, parrots and all sea turtles.

The live pet trade

Trade in threatened wildlife still takes place through **smuggling**. Birds are drugged and stuffed into plastic tubes; snakes are coiled into stockings and posted; lizards are stitched into suitcases. Many of the animals die.

Prices on the **black market** can be very high. Bird traffickers can earn more than $150 000 for taking 30 eggs out of a country in specially designed vests that keep the eggs warm. Overseas collectors will pay up to $50 000 for a breeding pair of endangered red-tailed black cockatoos

FIGURE 1 Who trades what — exporters and importers of endangered species



Source: MAPgraphics Pty Ltd, Brisbane

FIGURE 2 Some of the skins and stuffed animals seized from poachers in India. The skins were later destroyed to discourage illegal hunting.

Traditional Chinese medicine

Traditional Chinese medicine (TCM), the most widely practised traditional medicine system in the world, uses more than 1000 plant and animal species. While TCM has been practised for perhaps 5000 years, some of the wild plants and animals used are now threatened or in danger of extinction. Among them are certain orchids, musk deer, rhinoceroses, tigers and some bear species.

All five species of rhinoceros are threatened with extinction because people have been hunting them for many years, poaching them just to sell their horns. The horn of the black rhino is sometimes called 'black gold' because it is so expensive. Asian rhinoceros horns are mostly used for medicines said to reduce fever. Horns are cut into oblong pieces and smuggled into other countries in jars of honey, cartons of matches or raw meat.

Rhinoceroses are also endangered because of other factors. Rhinos prefer shade and, owing to the cutting down of trees in grasslands, their source of shelter is being wiped out. Pollution is also endangering these animals; toxic waste and pesticides are left on the grass that the rhinos eat.

Although international trade in rhino horn has been banned under CITES since 1977, demand remains high, and this encourages rhino poaching in both Africa and Asia. Criminal syndicates link the poachers, in places like South Africa, to transit points, smuggling channels and final destinations in Asia. The main market is now Vietnam, where there is a newly emerged belief that rhino horn cures cancer. Rhino horn is used in other traditional Asian medicine to treat a variety of ailments, including fever and blood disorders. It is also used by wealthy Asians as a cure for hangovers.

FIGURE 3 Conservationists dehorning a sedated rhinoceros

In October 2011, the World Wide Fund for Nature (WWF) helped to successfully establish a new black rhino population in a safer, more spacious place in South Africa. Nineteen critically endangered black rhinos were transported to a new home. Such relocations reduce pressure on existing wildlife reserves and provide new territory, where rhinos have a better chance of increasing in number. Creating more dispersed and better protected populations also helps keep rhinos safe from poachers.

18.10 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Remember

1. Why are wild species traded?

Explain

2. Look carefully at figure 1.
   (a) Which categories of wildlife are traded for their skins?
   (b) Using an atlas, list the ***places*** that are the major exporters of the following.
   - Live primates
   - Cat skins
   - Ivory
   - Live parrots
   - Reptile skins

   (c) Based on your list in part (b), list the continents that are the main sources of wildlife species and wildlife goods.
3. Study figures 4 and 5.
   (a) Which two countries in the Asia–Pacific region have high numbers of threatened mammals and threatened birds?
   (b) What reasons can you think of for Indonesia having the greatest number of threatened mammal and bird species?

Discover

4. Look at figure 2.
   (a) List the smuggled items seized from poachers.
   (b) Suggest what could be done to persuade people not to buy these products.
5. Refer to figure 3.
   (a) How does the action shown support the ***sustainability*** of rhinoceros populations?
   (b) Why are conservationists taking this action?

Predict

6. Other than the loss of endangered species, what other negative consequences may occur through the illegal export and import of wildlife?
7. What would be the impact on the Australian ***environment*** if animals such as koalas were to become a target for smugglers?

FIGURE 4 Number of threatened mammal species

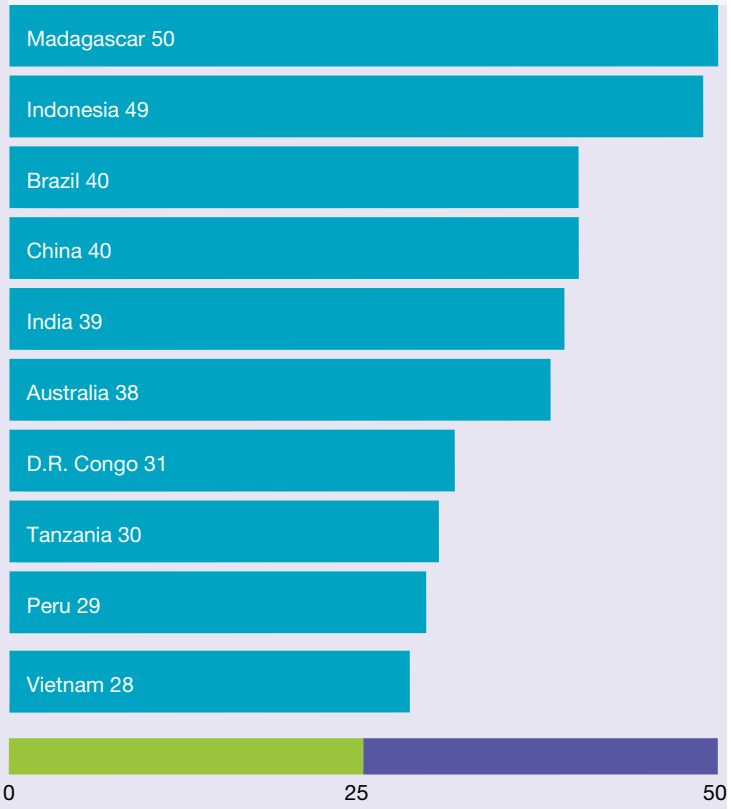
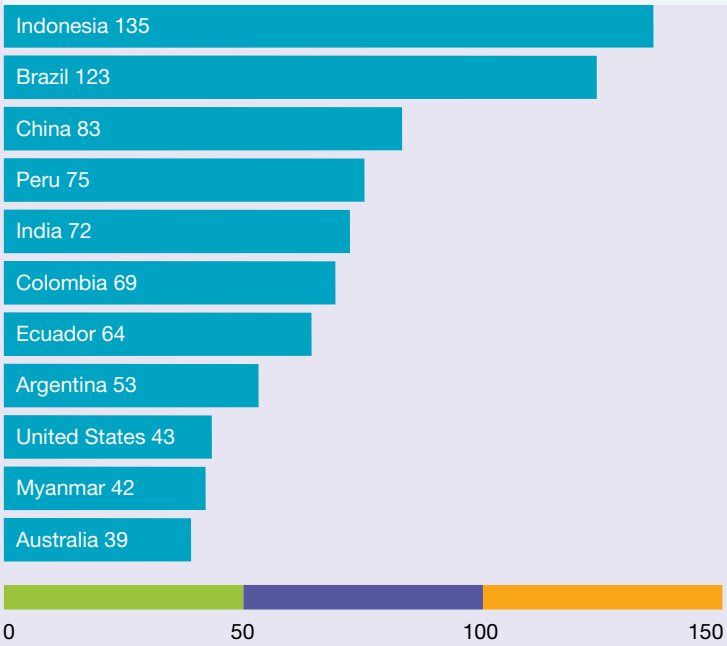


FIGURE 5 Number of threatened bird species



18.11 SkillBuilder: Constructing and describing a flow map

18.11.1 Tell me

What is a flow map?

A flow map is a map that shows the movement of people or objects from one place to another. Arrows are drawn from the point of origin to the destination. Sometimes these lines are scaled to indicate how much of the feature is moving. Thicker lines show a larger amount; thinner lines show a smaller amount.

Why is a flow map useful?

A flow map is used to give us a visual image of the movement of something that might otherwise be provided through a set of statistics or a lengthy paragraph of text. Interconnections between destinations and places of origin are made very clear, and regional patterns can be readily identified.

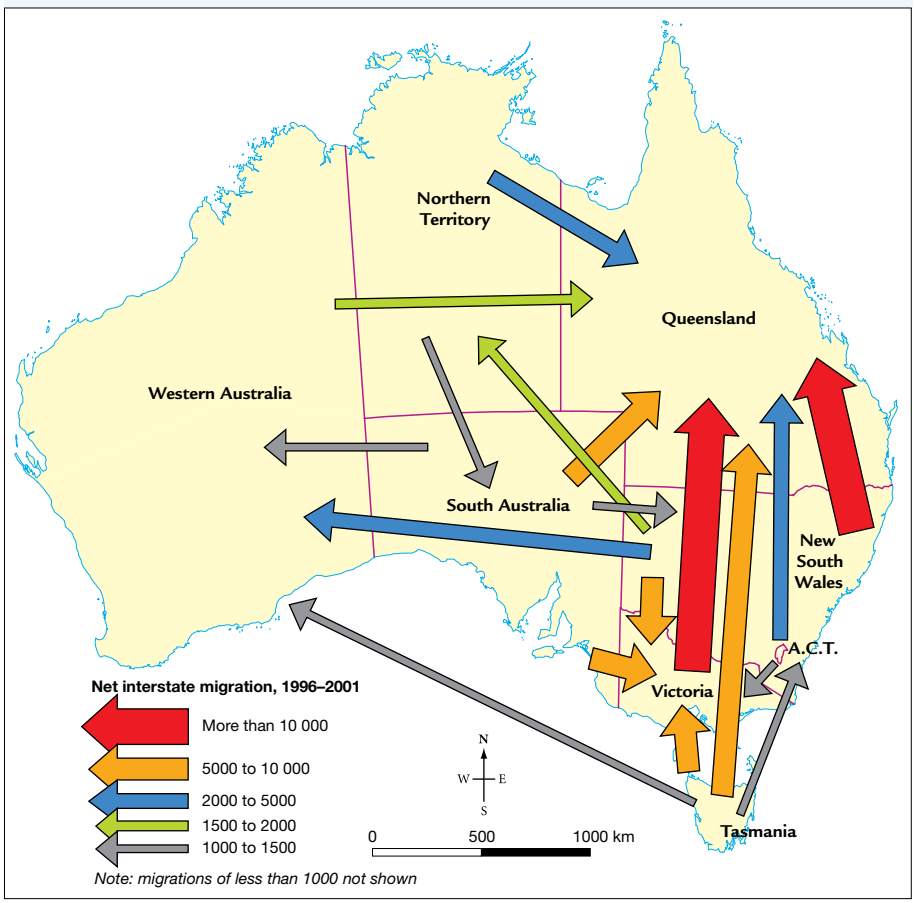
Flow maps are useful when trying to understand:

- individual movements, such as use of transport systems and aisles in supermarkets
- local movements, such as traffic flows at intersections or the use of pathways in parks
- national movements, such as the importation of cars to Australian states
- regional movements, such as flows between states of Australia or between countries within the Pacific
- global movements, such as imports and exports, human movement and communication.

Model

Between 1996 and 2001, people moved from the southern states to Queensland, and from the eastern states to Western Australia. All states experienced migration of residents to Queensland, with more than 10 000 from each of Victoria and New South Wales, and 5000–10 000 from Tasmania and South Australia. New South Wales lost more people than it gained, with inflows of 1000 to 1500 from South Australia and Tasmania only. Victoria, however, had inflows from all the surrounding states, including Tasmania (totalling between 16 000 and 31 500), which indicates that Victoria's net loss — more than 10 000 to Queensland — was far less than that of New South Wales, which had a loss of 13 500 to 17 000 or more.

FIGURE 1 Interstate migration flows, 1996 to 2001



Source: Spatial Vision

A good flow map:

- is drawn in pencil initially and then coloured appropriately
- uses arrows to indicate flow directions
- may use scaled arrow widths, which are also explained in a key/legend
- includes labelled features as necessary
- has a clear title, which identifies places and dates.

A description of a flow map:

- identifies and communicates key features of the movement, patterns and places shown
- clearly represents and communicates the data with the use of statistics, places and dates.

18.11.2 Show me

How to construct and describe a flow map

You will need:

- a set of data that shows the movement of some object
- a base map that corresponds to the places included in your data set
- a light grey pencil
- a set of coloured pencils
- a ruler
- an eraser.

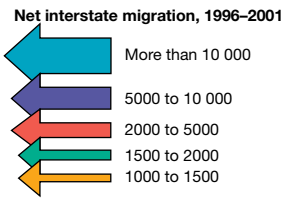
Procedure:

To complete a flow map, you will need to convert a table of data to a coloured map.

STEP 1

If you are planning to simply show the flow between places, then you need only identify each place and draw an arrow from the origin to the destination, as shown in figure 1 in subtopic 18.2. Writing numbers on the flow lines is another method for creating a basic flow map. (If you use this method, go now to step 5.) On the other hand, if you want to create a map that provides an instant snapshot of the quantities of a feature being moved, then a scaled flow map is a better option. Your first step is to determine the scale you will use. Look over the data set that you have, and establish no more than five categories that will allow you to represent the data. Figure 2 shows how these appear in the key of figure 1.

FIGURE 2 Scaled arrows for the flow map in figure 1



STEP 2

Draw up the key, or legend, for the base map. Note that you will have to work in millimetres; otherwise, your arrows will dominate the map. In a key such as figure 2, one millimetre could be used to represent 1000 people. This will avoid having very wide arrows for the larger values, and allow the arrows to fit within the map. Label your key appropriately.

STEP 3

Now you need to rule an arrow, of an appropriate width, from a place of origin to a place of destination. Before you begin, think where you will place each arrow, as it is best to avoid overlapping them. This is most important if you are mapping global data; look at figure 1 in subtopic 18.4 to see how complex this can become.

STEP 4

As you draw arrows between the places of origin and destination, use your ruler to keep the arrow widths consistent. Neatness is important. Colour the arrows as you go to avoid confusion at the end.

STEP 5

Ensure that the completed map includes geographical conventions (BOLTSS).

STEP 6

Look at the completed map and identify any patterns that are evident. Is there an interconnection between the widest arrows? Is there an interconnection between the narrowest arrows? Write a few sentences to explain any patterns you can identify. In figure 1, people moved from the southern states to Queensland — more than 10 000 from Victoria, 5000–10 000 from Tasmania, 2000–5000 from the ACT and more than 10 000 from New South Wales. They also moved from the eastern states to Western Australia — 2000–5000 from New South Wales, 1000–1500 from Tasmania, and 1000–1500 from South Australia.

STEP 7

Look for any anomalies in the pattern — arrows that stand out as being different. Write a sentence to identify any anomalies. For example, in figure 1, although Victoria had an inflow from all its surrounding states, including Tasmania, fewer than 1000 Victorians moved to each of the states of Western Australia, South Australia, New South Wales, ACT or Tasmania.

18.11.3 Let me do it

Developing my skills

Using a blank world map and the data in table 1, construct a flow map of ivory smuggled from Africa to Asia. Think carefully about the scale you choose, as the data for China is high. Note that the flow is from Africa to Asia, so the arrows need to go from Africa to the appropriate country in Asia. Write a description of the supply of smuggled ivory to Asia.

TABLE 1 Ten Asian countries with the most ivory seized, 1989–2011 — total weight of seizures in kilograms

India	Singapore	Malaysia	Japan	Philippines	Vietnam	Taiwan	Hong Kong	Thailand	China
6758	8028	8527	8618	10 659	13 426	18 370	20 638	21 364	41 095

Source: TRAFFIC, Tom Milliken

Questions

1. Which Asian country had the most smuggled ivory seized?
2. Which Asian country had the least smuggled ivory seized?
3. Describe the areas of Asia to where smaller quantities of ivory are smuggled and the areas where more smuggled ivory arrives.
4. Does distance seem to affect the amount of ivory smuggled? Explain your answer, using the map ***scale*** to help you.
5. Does the level of a country's development influence the smuggling of ivory? Explain your answer.

Checklist

In drawing a flow map I have:

- drawn in pencil initially and then coloured appropriately
- used arrows to indicate flow directions
- used scaled arrow widths, which are also explained in a key/legend
- included labelled features as necessary
- provided a clear title, which identifies places and dates.

In interpreting a flow map I have:

- identified and communicated key features of the movement, patterns and places shown
- clearly represented and communicated the data with the use of statistics, places and dates.

Skills questions

1. Flow maps are used to show:
   (a) the ***scale*** of a product
   (b) the shape of the land between two ***places***
   (c) the movement of goods and people
   (d) the level of production.
2. A flow map would never include information about:
   (a) the value of goods
   (b) the number of goods and people
   (c) the rainfall of a ***place***
   (d) the type of goods and people.
3. Why do you need to determine origin and destination on a flow map?
4. Why is it useful to use arrows of different widths?

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Watch this eLesson: Constructing and describing a flow map (eles-1741)

Try out this interactivity: Constructing and describing a flow map (int-3359)

18.12 Review

18.12.1 Review

1. Australia's major trade market has switched from Europe and the United Kingdom to Asia. Suggest reasons for this ***change***.
2. Name the top ten nations that Australia exports to and imports from. Based on percentage data, draw graphs to represent these trade figures. What do your completed graphs reveal?
3. Why is trade in live animals such a controversial topic?
4. Which two countries have the largest share of the international car export market?
5. The Honda Motor Company has assembly plants in many ***places*** around the world. Why are so many located in developing countries?
6. Why is Fairtrade such an important idea for countries in the developing world?
7. Explain how Australian Aid promotes social justice through its foreign aid program.
8. Why do you think some species become endangered?

18.12.2 Reflect

9. Does the increase and expansion of the human population have to result in the loss of other species?
10. Use the **Australian Aid** weblink in the Resources tab and refer to the map of countries that receive Australian aid to answer the following questions.
    (a) Make a list of the Pacific Island nations that Australia assists with aid.
    (b) Write a summary of the Australian Aid program for the Middle East, North Africa and sub-Saharan Africa based on the information provided when you click on the *Program overview* links for those regions.
    (c) Use the menu on the left of the web page to explore features of the Australian Aid program in Indonesia. Write a brief report about the program.
    (d) Select an Australian Aid country from the map. Using this and other online sites, prepare a three-minute oral report on your country of choice. Include images that you can show your class in a PowerPoint presentation.
11. Imagine a world without trade. How would this affect your day-to-day life?
12. Would Australia be failing to respect and tolerate other countries' cultural practices if we were to ban the live export of animals?
13. What ethical principles are taken into consideration when deciding if a business can be given a Fairtrade label?

UNIT 5
THE MAKING OF THE MODERN WORLD

Depth study 1: Investigating the Industrial Revolution (1750–1914)

19 Technology and progress: Industrial Revolution (1750–1914) 391

20 The impact of people: Industrial Revolution (1750–1914) 436

21 Movement of peoples (1750–1914) 475

TOPIC 19
Technology and progress: Industrial Revolution (1750–1914)

19.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

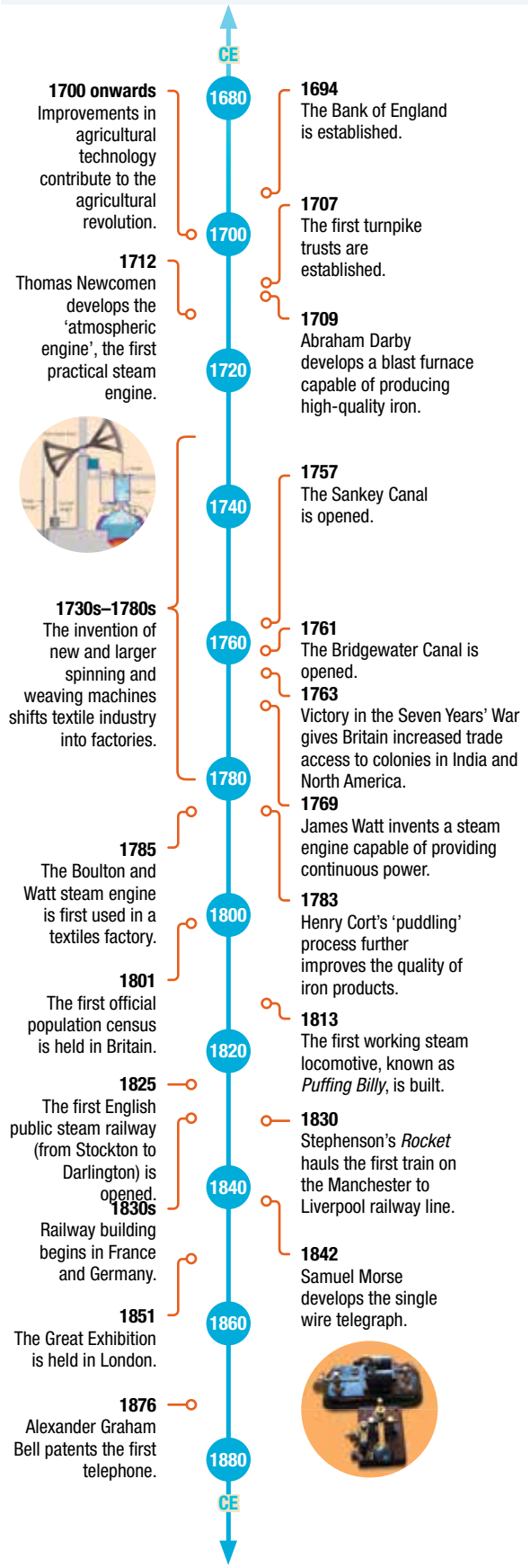
19.1.1 Links with our times

Since the late 1990s the development of smartphone technology, touch screens, and the ability to capture and transmit images has revolutionised the way we communicate with one another.

What is a revolution? What do we mean by the Industrial Revolution? Most historians think of a revolution as a time of very rapid change. Historical change usually takes place through a series of small steps that can be easily understood by people living through the time. Every now and then change speeds up and, within a generation or less, old ways of doing things disappear.

The Crystal Palace in London (below) was designed to show off British industrial achievements during the Great Exhibition, 1851. To the people of the late eighteenth and nineteenth centuries, the changes that took place in manufacturing, transport, agriculture, trade and living conditions were every bit as revolutionary as the technological changes that are happening today.

A timeline of technology and progress during the industrial revolution



Big questions

1. Why did the agricultural revolution, wealthy middle class, cheap labour, transport system, and expanding empire cause the Industrial Revolution in Britain?
2. How important was the British Empire, and the raw materials it provided, in influencing the growth of industrialisation?
3. What were the major changes in technology in the Industrial Revolution which led to the growth of factories and cities?
4. What innovations did Britain develop that later spread to other parts of the world, such as Europe, USA and Japan?
5. What was the role of the Industrial Revolution in creating a growing need for labour and transportation?

Starter questions

1. What do you think are the main differences between industrial and agricultural societies?
2. From what you know of different countries around the world, list those you would consider to be industrialised and those you would consider to be primarily agricultural.
3. Aside from communications, what other examples of rapid change can we see in the world today?

INQUIRY SEQUENCE

19.1	Overview		391
19.2	Examining the evidence		393
19.3	Causes of the Industrial Revolution		395
19.4	The agricultural revolution		398
19.5	The growth of empire		403
19.6	Entrepreneurs, banks and the middle class		407
19.7	The population explosion		410
19.8	Power: from horses, wind and water to steam		413
19.9	Making textiles: from home to factory		417
19.10	Coal and iron		421
19.11	Canals, roads, railways and shipping		424
19.12	Industrial innovation spreads to the world		431
19.13	**SkillBuilder:** Identifying continuity and change	online only	434
19.14	**Review**	online only	435

learnON RESOURCES — ONLINE ONLY

Watch this eLesson: The Industrial Revolution: Technology and progress (eles-2392)

Complete this digital doc: Worksheet 19.1 Open fields are enclosed

19.2 Examining the evidence

19.2.1 How do we know about the Industrial Revolution?

In this topic we will look at the great technological changes that took place in Britain during the eighteenth and nineteenth centuries. These changes completely reshaped the way in which food, clothing and other necessities were produced. New materials and sources of power, along with new forms of transport, transformed a society that had not changed dramatically since the Middle Ages. This transformation is the source of many of the features of our way of life today. Britain provided an inspiration for the other countries of Europe and North America, which soon experienced industrial revolutions of their own. In more recent times, countries such as China and India are making their own transitions to modern industrialised nations.

Why industrial 'revolution'?

The term *Industrial Revolution* was first popularised by the English historian Arnold Toynbee in the late 1870s and early 1880s. Historians such as Toynbee looked at the society in which they lived and compared it with what they knew of English society a little over a hundred years earlier. To these observers the nature and speed of the changes they documented were 'revolutionary' because they brought about radical changes in the way many people lived.

Primary sources

How do we know about the changes that occurred during the period in history known as the Industrial Revolution? We have a number of sources available to us, including the following.

Inventions and patents

Early in the eighteenth century, farming in Britain was carried out largely as it had been for hundreds of years. The processing and manufacture of goods took place on a small scale in local villages and small towns. By the middle of the nineteenth century, new methods of crop management, **animal husbandry** and new inventions had completely transformed the agricultural landscape. Clothing and other goods were no longer made by hand in homes or small workshops but in factories using large machines. We know about these changes because the creators of new inventions took out **patents** on their inventions. Patents could be issued only when the inventor submitted a full written description of their invention, and many of these

descriptions survive today. By the mid-nineteenth century, steam was driving machinery of all types. We can trace the development of steam power by examining the models of early steam engines that still exist, and the diagrams and descriptions submitted by their inventors when applying for patents.

Contemporary writers

Many of the creators of new farming methods wrote books and pamphlets publicising their methods. Other writers of the time wrote first-hand accounts of the improvements in agriculture they had observed. By the mid-nineteenth century, writers were also commenting on working conditions in newly built factories and life in the rapidly growing cities. Clearly, some very dramatic changes had occurred within people's lifetimes, and writers of the time were keen to document these changes.

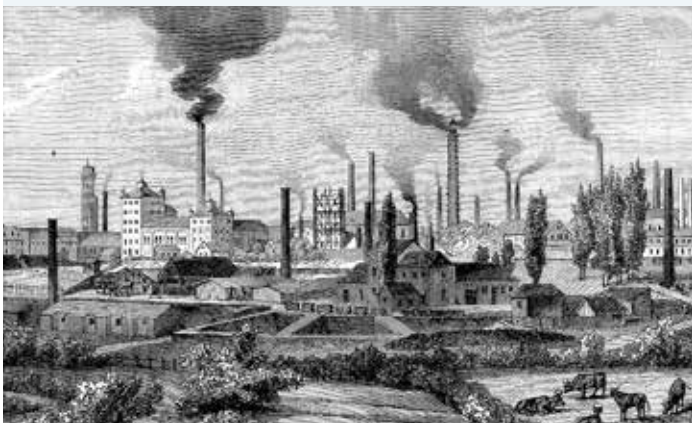
Census figures

When the first complete population census of England and Wales was taken in 1801, the population was measured at 8.8 million. By 1881 the population had virtually tripled to 25.9 million. Never before in history had population growth on this scale been recorded over such a relatively short period of time. These same census figures show a change from a predominantly **rural population**, engaged mainly in farming, to an **urban population**, engaged mainly in employment in manufacturing.

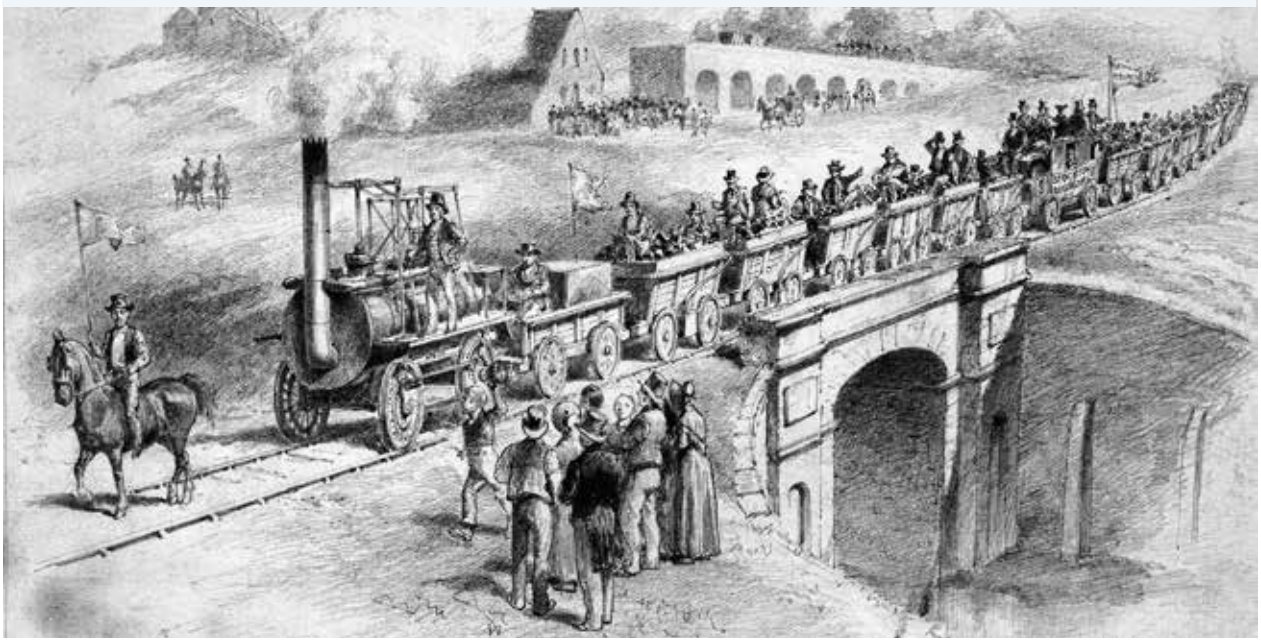
Paintings and drawings

In the eighteenth century, British artists were famous for producing paintings of country landscapes. By the early nineteenth century, artists began to record scenes of the new industrial towns that accompanied the Industrial Revolution. These often contrasted dramatically with the peaceful calm of the country scenes, showing billowing smoke from factory chimneys and the busy activity of the industrial town. Changes in transport, such as the development of railways, also attracted the attention of artists. Many paintings and drawings were produced to celebrate these new developments.

SOURCE 1 Contemporary artists depicted the growth of factory production, located in large towns.



SOURCE 2 A drawing of the opening of the first British railway line in 1825.



19.2 Putting it all together

Using historical sources as evidence

1. Explain why the registration of patents provides us with useful information about the period of the Industrial revolution.
2. Examine Source 1. What evidence is there in this picture of the types of changes brought about by the Industrial revolution?
3. Explain what evidence you can see in Source 2 that a completely new form of transport was being celebrated.
4. What impression of the new industrial towns do you believe the artist of Source 1 was trying to create for viewers of this work?

Identifying continuity and change

5. What sort of significant changes are evident in population census figures for nineteenth-century Britain?
6. How can the work of writers and artists inform us of the types of changes occurring during the Industrial revolution?
7. Using examples from the information provided above, explain why late nineteenth-century historians believed the changes of the previous hundred years were a major 'revolution'.

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Complete this digital doc: Worksheet 19.2 Cause-and-effect wheel

19.3 Causes of the Industrial Revolution

19.3.1 The importance of cause and effect in history

The Industrial Revolution was arguably the most important period of change in modern history. It marked the beginning of the technological revolution that continues to affect our lives. Before the Industrial Revolution, people produced things they needed in ways that had not changed in centuries. The Industrial Revolution saw new ideas being applied to producing goods. It began in Britain in the mid-eighteenth century. By the mid-nineteenth century it had effected enormous changes in the ways people worked and lived, and these changes had begun to spread around the world. Why did it happen when it did? And why did it begin in Britain?

One of the reasons to study history is to identify cause and effect. If we understand the factors that caused something bad to occur in the past, we may be better able as a society to avoid it happening again. If we can recognise the causes of something beneficial, we may be able to repeat it in a different location, or different time. The process of **industrialisation** has raised the **standard of living** of the vast majority of people living in those countries that have experienced industrialisation. It is currently raising the standard of living in countries such as China and India. Nevertheless, many countries in the world have not experienced industrialisation, and their inhabitants live in relative poverty. If the citizens and governments of those countries can recognise the factors that have contributed to industrialisation, they may be able to encourage the process and raise their own standard of living.

SOURCE 1 Farmers in developing countries still use methods that have been used for centuries, while industrialised countries have long since mechanised agriculture.

19.3.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. How can an understanding of the causes of a historical event be of benefit to future generations?
2. Outline one reason why the process of industrialisation might improve the standard of living of a country.

Using historical sources as evidence

3. Examine Source 1. Explain how you think the farming techniques shown here could be made more efficient by the use of mechanical equipment.

19.3.2 Underlying causes and immediate causes

When we plant a seed in the garden, we expect a plant to grow from that seed. The immediate cause of the plant growing is the placing of the seed in the soil. However, if the soil is of poor quality, has low levels of nutrients, and the seed is never watered, the plant may not grow. Good-quality fertile soil is an underlying cause of plant growth. When we look to the causes of the Industrial Revolution, we can examine them in a similar manner. The following are often identified as causes of the Industrial Revolution that began in Britain in the mid-eighteenth century. Some can be considered as underlying causes or long-term trends — the fertile soil in which industrialisation flourished. Some can be considered immediate causes — the short-term triggers that led directly to the changes we identify as the Industrial Revolution.

A map showing major sites of industry in Britain during the Industrial Revolution

Source: Spatial Vision

Technology

The Industrial Revolution first took off as a result of two developments in technology. The first was the invention of a number of new machines designed to process raw cotton into cloth. These machines were too large to be located in an average house or cottage, and so factories were built to accommodate them. The second development was the invention of steam engines capable of powering these cotton-processing machines. The use of steam power allowed factories to become larger and produce huge quantities of cotton cloth. The textile industry set the pattern for other industries, and large-scale factory production soon became the norm across a range of different manufacturing activities.

Agricultural revolution

Prior to the eighteenth century, most of the population of Europe was engaged in food production. In Britain, two broad changes were occurring by the middle of the eighteenth century.

- New methods of farming were gaining popularity, improving the quantity and quality of food and the output of fibres such as wool for clothing.
- Changes in land ownership had been underway for over 100 years. Common land that had been shared by villagers was enclosed by wealthy landowners, creating larger farms on which the new farming methods could be applied.

These changes contributed to an increase in population, but did not require the extra people to work on farms. They would eventually become the factory workers of the Industrial Revolution.

Access to raw materials

Driving steam engines depended heavily on good-quality coal to provide strong reliable heat. Britain had large deposits of coal, most of which was readily accessible, and so mining developed alongside the growth in factory production. As you can see from the interactivity below, the location of coalfields strongly influenced the location of industry during the period of the Industrial Revolution. Britain also had plentiful deposits of iron ore, which could be processed into steel, and used for building factory machinery and other useful equipment.

Wealthy middle class

In medieval Europe and Britain, the vast majority of the population consisted of lower-class peasants who worked the land owned by the upper-class aristocracy. The middle class were the specialised craftsmen and merchants who usually lived in the towns. The middle class usually relied on trade and commerce, and were a small minority throughout the Middle Ages. As Britain grew to become a major trading nation, many members of the middle class became very wealthy, and had spare money to invest in business ventures. It was this investment that funded the growth of factories during the Industrial Revolution.

Transport

Britain is a relatively compact nation geographically, with easy access to the sea through large ports. The transportation of raw materials to factories and of finished products to customers, both local and overseas, was relatively simple. River transport was very efficient, and canals could be built to connect many of these rivers. The development of steam as a means of locomotion eventually transformed transport networks across Britain, and later the world.

Expanding empire

Since the great age of exploration in the sixteenth century, European ships and merchants had sailed to all parts of the world, and had discovered a wide variety of new products that could be imported into Europe. The Spanish and Portuguese had conquered most of South America and the Dutch had colonised the islands that now make up Indonesia. The British had established colonies in North America, the Caribbean, the Indian subcontinent and West Africa. The British were quick to realise the possibilities of importing raw materials from their colonies, and transforming them into finished products to sell to the increasing population. Improving the methods of producing finished cotton products to meet this growing market became very important in the latter half of the eighteenth century.

19.3.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Identify the two key technological advances that allowed industrialisation to take off in Britain in the latter part of the eighteenth century.
2. What was the impact of changes in agriculture during the eighteenth century in Britain?
3. Describe why the existence of a wealthy middle class was important to the development of the Industrial Revolution.
4. Explain why an efficient transport system was useful in the process of industrialisation.
5. What contribution did an expanding empire make to the Industrial Revolution in Britain?

Using historical sources as evidence

6. Using Source 2, identify the main sites of economic activity and population growth during the Industrial Revolution.
7. What does Source 2 tell us about the importance of access to raw materials and transport during this period?

19.3 Putting it all together

Analysing cause and effect

1. Of the causes identified above, which do you believe to be underlying causes of the Industrial Revolution, and which do you think were immediate causes? Give reasons for your answers.

Determining historical significance

2. Why could the Industrial Revolution be described as the most important period of change in modern history?
3. Explain how developing countries could benefit from the example of the Industrial Revolution in Britain.

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Complete this digital doc: Worksheet 19.3 The power revolution

19.4 The agricultural revolution

19.4.1 Traditional open-field farming

At the time of the Industrial Revolution major changes in farming practices were already occurring throughout Britain. These changes completely revolutionised agriculture. Increases in farm production provided food for the growing population, particularly the expanding urban workforce.

The traditional open-field village was based on **subsistence farming**, producing only enough food for its inhabitants, who were peasants or tenants of the landowner. It usually involved the rotation of different activities across three large fields. One field would carry a crop of wheat or rye, and one a crop of barley, while one would be allowed to lie **fallow**. Each year the crops would be rotated, so each field would lie fallow for one year in every three. Each village household was allotted a number of strips in each field. These would usually be spread out so that everyone had equal access to the best land. There was also an open area of common land where everyone had the right to graze livestock and collect firewood. Grazing also took place in the fallow field, helping to fertilise it, making it ready for planting the following year.

SOURCE 1 Three-field rotation meant that one-third of the land would lie idle each year.

Disadvantages of the open-field system

The open-field system had worked well for centuries, and in 1750 about half of all farming in England still relied on this approach. But the system had a number of disadvantages.

- It was very inefficient because:
  - one-third of the land was left unplanted each year
  - pathways separating the strips of land were not used for crops
  - time was wasted when each farmer had to look after a number of strips scattered across the different fields.
- Weeds and animal diseases could spread easily when everyone was sharing so much of the available land.
- There was very little opportunity to try new crops or new methods, because everyone had to grow the same crops and work together.

19.4.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain how the traditional three-field rotation system worked.
2. What were the major disadvantages of the three-field rotation system?

Using historical sources as evidence

3. In Source 1, identify the areas that would have been common land.
4. What use was made of fallow land? Explain why this would have improved the land for crops for the next two years.

19.4.2 Enclosure

The agricultural revolution involved three main developments:

- enclosure of the open fields
- the adoption of new techniques of farming
- the change to a more business-oriented approach to farming.

Enclosure involved the consolidation of open fields into single farms, owned by one farmer, and separated from neighbouring farms by hedges or low stone walls. This process had begun as early as the

sixteenth century, when some wealthy landowners began to enclose their land, voiding the rights of peasant farmers to pursue their traditional strip farming. If the newly enclosed farm was large enough, it could be subdivided and smaller farms leased out to these same peasants. The peasants were forced either to become paid employees on the enclosed farm or to seek work in nearby towns. Enclosure gave the farmer/landowner greater control over the total area of the farm; less productive land was wasted, and animals were kept separate from neighbours' livestock.

SOURCE 2 Stone walls were often used to enclose farms during the eighteenth century.

19.4.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What is meant by 'enclosure' in relation to farming lands?
2. What impact did the enclosure of farms have on the peasants and tenant farmers who had previously worked the land?

Using historical sources as evidence

3. Examine Source 2. Explain why enclosure made the continuation of communal strip farming impossible.
4. How could enclosure allow a farmer to maintain good health and breeding within his livestock?

19.4.3 Adoption of new techniques of farming

Increased control over their farms and stock allowed farmers to adopt new, more efficient methods of farming. These included the following.

SOURCE 3 Jethro Tull's seed drill, as seen in this nineteenth-century illustration, revolutionised the planting of crops in England.

Jethro Tull's seed drill

Traditionally seed was scattered by hand into ploughed furrows. This often meant a lot of wastage as the wind could blow much of the seed away or birds could eat it. In 1700, agricultural inventor Jethro Tull developed a horse-drawn seed drill that could plant three rows of seed at a time (Source 3). A hole would be drilled for seeds to be dropped in, the hole covered and the drill moved forward to the next planting position. It is estimated that this invention produced a five times bigger crop for the same area of land than had been achieved using the old methods.

The Rotherham plough

In 1730 Joseph Foljambe patented the Rotherham triangular plough. This plough had an iron blade and was lighter and easier to handle than the rectangular wooden ploughs that had been used previously. Instead of being drawn by a team of four oxen, and requiring both a ploughman and an ox driver, the Rotherham

plough could be drawn by two horses and handled by one person. The Rotherham plough proved to be quicker and more efficient, and significantly reduced costs for farmers.

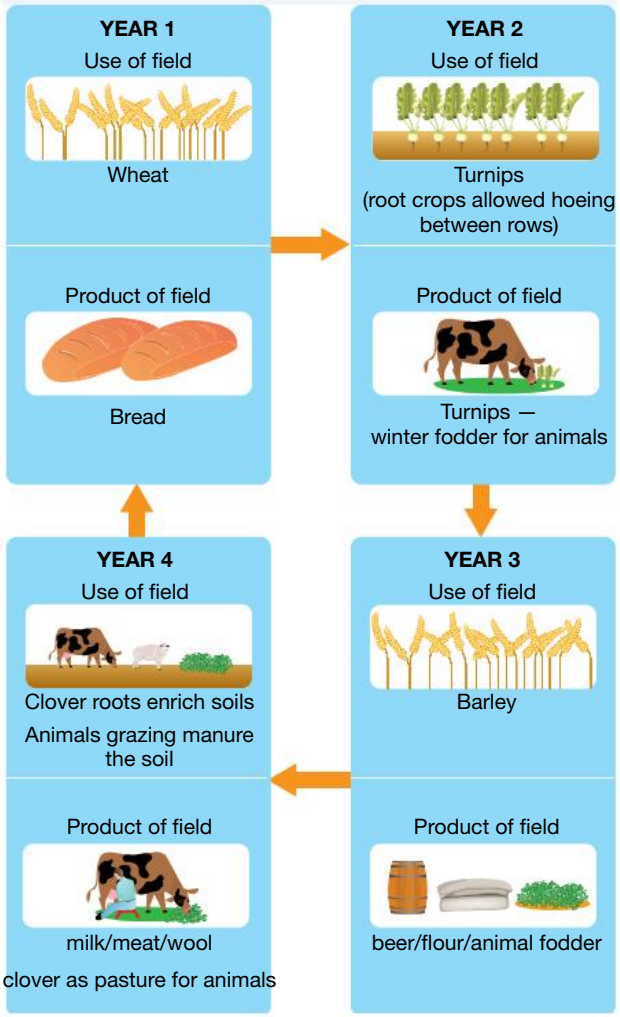
SOURCE 4 Traditional ploughing required a team of four or more oxen, an ox driver and a ploughman to operate the heavy rectangular wooden plough as shown in this artwork based on fourteenth-century illustrations.

SOURCE 5 The Rotherham plough, developed in 1730, could be operated by one ploughman and two horses as shown in this artwork.

Changes in crop rotation methods

As the open fields were enclosed, new systems of crop rotation were introduced. The most successful of these was the four-crop rotation system introduced on his own estates by Lord Charles Townshend, or 'Turnip' Townshend as he became known. His farm was divided into four fields, with wheat in the first, turnips in the second, barley in the third, and clover in the fourth. Each year the crops would be rotated by one field, so that in the second year, the first field would contain clover, the second wheat, the third turnips and the fourth barley. This rotation continued over a four-year cycle. The planting of clover and turnips following the crops of wheat and barley helped replace nutrients in the soil, and therefore helped produce better crops the following year. The clover was used as a nutritious summer food for livestock, while turnips could be fed to animals in winter. This meant that livestock no longer needed to be slaughtered before each winter, as had traditionally been the case.

SOURCE 6 Four-crop rotation in one field



Improved stock breeding methods

Farmers such as Robert Bakewell began selective breeding of sheep and cattle. Only the largest and strongest animals were mated, and this produced offspring with the best characteristics. Bakewell also cross-bred different types of sheep to produce the best breeds for both wool and meat production. His New Leicester breed, introduced in 1755, proved to be a great success.

SOURCE 7 New Leicester sheep were bred by Robert Bakewell. Can you see why they were successful for both wool and meat production?

19.4.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Outline the contribution of each of the following people to the improvements in agriculture in England in the eighteenth century:
   (a) Jethro Tull
   (b) Joseph Foljambe
   (c) 'Turnip' Townshend
   (d) Robert Bakewell
2. Explain how the four-field rotation system operated.

Using historical sources as evidence

3. Compare the different methods of ploughing depicted in Sources 4 and 5. Explain two ways by which the use of the Rotherham plough could have reduced costs for the farmer.
4. By comparing Sources 1 and 6, explain how enclosure and the use of the four-field system might have overcome the disadvantages of the three-field rotation system.

19.4.4 A business approach to farming

Before the eighteenth century, farming activity was mainly directed towards satisfying local food and clothing needs. Any produce left over could be sold or traded at markets, but this would entail only a small proportion of farming output. The great improvements of the agricultural revolution not only increased the amount of food available to the farmers and their workers, but provided increasing surpluses that could be sold to feed the growing urban population. The rural population grew very slowly, but the output per person employed in agriculture rose dramatically. Exporting grain to other countries also brought profits to farmers who were prepared to innovate and embrace new methods of production.

SOURCE 8 Improvements in farming output

The agricultural revolution produced great improvements in the quantity and quality of both crops and livestock. In 1705 England exported 150 million kilograms of wheat, but by 1765 this had risen to 1235 million kilograms. In 1710 sheep sold at market weighed an average 13 kilograms, while cattle weighed an average 167 kilograms. By 1795 this had risen to 36 kilograms for sheep and 360 kilograms for cattle.

19.4.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What do we mean when we refer to 'a business approach to farming'?
2. Identify how this approach differed from the subsistence approach that had operated previously.

Using historical sources as evidence

3. Examine Source 8 and answer the following.
   (a) By what percentage did wheat exports rise between 1705 and 1765?
   (b) How might we explain the increase in the weight of livestock sold for slaughter between 1710 and 1795?

19.4 Putting it all together

Analysing cause and effect

1. Explain why each of the following innovations could only have occurred after the enclosure of farms:
   (a) the four-field crop rotation system (b) selective breeding of animals.
2. The Industrial Revolution relied on the availability of an urban workforce to work in factories. Identify and explain two ways in which the changes in agricultural methods supported the growth of such a workforce.

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Complete this digital doc: Worksheet 19.4 Textile technology

19.5 The growth of empire

19.5.1 The British East India Company

In the fifteenth century, European countries such as Portugal and Spain set out to explore the lands around the Atlantic Ocean to expand their trading links. This led to the establishment of **trading posts** on the western coast of Africa and the discovery of the Americas. In the early sixteenth century, Vasco da Gama found a sea route to India, and the Dutch, French and English soon joined in the race to establish **colonies** and trading posts in the newly discovered lands. As British maritime power grew during the sixteenth and seventeenth centuries, Britain began to lay the foundations of what was to become the most extensive of the European **empires**.

In December 1600, Queen Elizabeth I granted a charter to a group of merchants, giving them exclusive rights to control trade between England and all areas of Asia east of the Cape of Good Hope at the southern tip of Africa. This became the East India Company, and it sent ships to the Indian Ocean to establish trade links with India, and with other parts of eastern and south-eastern Asia. The company

SOURCE 1 The officers of the British East India Company became very wealthy and powerful as they brought more and more of India under their control.

expanded its influence throughout the sixteenth century, establishing trading links in China, Japan and the Malay Peninsula. Its major area of influence was the Indian subcontinent, and it gradually came to control large areas of that subcontinent. The company employed its own private armies, and used them to conquer areas of India previously controlled by the French, Portuguese and Dutch. The company engaged in trade in silk, cotton, spices and tea, shipping these in large quantities back to Britain.

19.5.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What special rights did the charter of 1600 grant to the East India Company?
2. How did the company gain control of large areas of the Indian subcontinent?
3. What were main goods the company traded to Britain?

Using historical sources as evidence

4. What does Source 1 tell us about the relationship between the officers of the East India company and the native Indians?
5. What evidence is there in Source 1 of the great wealth of these officers?

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› **British Empire**

19.5.2 The British in North America

The Spanish, Portuguese and French were quick to establish colonies in North and South America during the sixteenth century. The first successful British colony in North America was established in Virginia in 1607, and over the next hundred years, the British set up a string of colonies along the east coast of North America. The Caribbean was also a target of British colonisation, with islands such as Trinidad and Tobago, the Bahamas and Jamaica coming under British control. During this time, the French were also expanding into North America. They had established colonies in what is now Canada, and in 1681 had sailed up the Mississippi River and claimed a huge area that they called Louisiana. This would bring the French into direct conflict with the British, as Louisiana was directly to the west of Britain's thirteen coastal colonies, and would prevent the British from spreading inland.

SOURCE 2 French and British settlements in North America before 1756

Source: Spatial Vision

19.5.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. When and where was the first British settlement in North America?
2. Where were the main French colonies in North America?

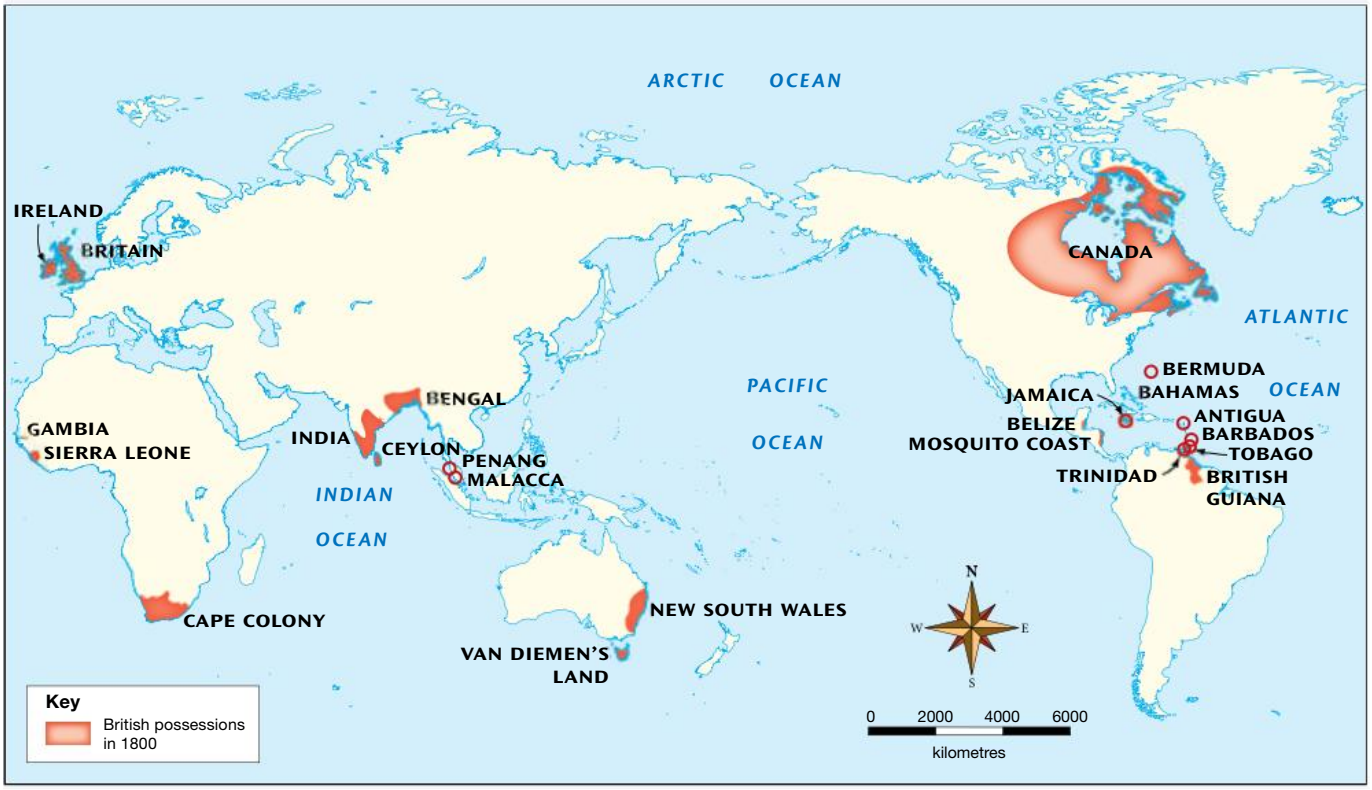
Using historical sources as evidence

3. Explain how Source 2 helps you to understand why Britain and France were likely to come into conflict in North America.
4. How many British colonies were there on the east coast of North America by 1756? Name the three largest.

19.5.3 The Seven Years' War (1756–63) and the American Revolution

In 1754 Britain and France both claimed control of the Ohio country, located to the west of Pennsylvania. The dispute soon led to skirmishes between British and French troops in this area, and in other parts of North America. France was successful in maintaining control of the Ohio country, but lacked the military power to attack the established British colonies. Between 1756 and 1760 the British waged a campaign in the Canadian territories, eventually defeating the French, and taking control of eastern Canada. During this same period, French troops clashed with the private armies of the East India Company on the Indian sub-continent. The British side ultimately proved victorious and extended British influence over most of India. By the end of the Seven Years' War in 1763, Britain controlled an extensive empire, spreading from North America, through parts of Africa, to India and East Asia.

SOURCE 3 The British Empire in 1800



Source: Spatial Vision

In 1775 the British colonists in the coastal colonies of North America rebelled against British rule, and a war began which would see Britain lose control of those colonies. In 1783 the Treaty of Paris was signed between Britain and the representatives of the former colonies, which subsequently became the modern-day United States of America. While this war saw the British lose their wealthiest colonies in America, their expansion in India and ongoing rule of Canada and many of the Caribbean islands still left Britain with an extensive empire by the end of the eighteenth century. In 1788 the British also took control of the eastern coast of modern-day Australia with the establishment of the colony of New South Wales.

19.5.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What was the dispute that led to the outbreak of skirmishes between the French and British in North America in 1754?
2. Which additional territory did Britain gain in North America after 1763?
3. How did the British come to lose control of their original colonies on the east coast of North America?

Using historical sources as evidence

4. Examine Source 3. Why would it have been important to control Cape Colony in southern Africa at this time?

19.5.4 The British Empire and the Industrial Revolution

Access to the empire was an essential factor in the industrialisation of Britain. Raw materials would be imported by ship and processed in British factories, and then the finished products exported, often to the same colonies that had provided the raw materials. By 1800, Britain had the beginnings of a worldwide empire, which provided valuable sources of raw materials to feed industrial growth. Initially the cotton industry was a major source of industrial growth, but British industry was soon able to process raw materials imported from almost every continent. In order to protect its trading routes, Britain also established the most powerful navy in the world, along with a very prosperous shipbuilding industry.

SOURCE 4 Main sources of raw materials from different parts of the British Empire

British colony	Raw materials provided
Canada	Furs, timber, fish
Jamaica	Sugar, coffee
British Guiana	Sugar, tobacco
Gambia	Cocoa
Bermuda	Salt, whale oil, baleen
India	Cotton, tea, timber, sugar
Penang and Malacca	Spices, timber
Ceylon (now Sri Lanka)	Tea, timber, cocoa
New South Wales	Whale oil, baleen, wool

19.5.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why was the development of an empire an important factor in the industrialisation of Britain?
2. Why was it important for Britain to have a powerful navy during the eighteenth and nineteenth centuries?

Using historical sources as evidence

3. Examine Source 4. Which colonies were the major source of cotton and sugar for Britain?
4. The English are famous for their love of tea, but the tea plant is not grown in Britain. Identify which colonies supplied their tea.
5. Source 4 refers to baleen as a raw material imported from the colonies. Find out what baleen is, and research its various uses during the nineteenth century.

19.5 Putting it all together

Identifying continuity and change

1. Many of the raw materials imported from the colonies were not naturally grown in Britain, but their importation made significant changes to British life. Identify three such raw materials, and explain how they might have had an impact on the lives of ordinary British people.
2. At the beginning of the nineteenth century, most of Africa had not yet been colonised by European powers; by the end of that century, most of Africa was under the control of various European empires. From what you know so far about industrialisation and the importance of empire, suggest possible reasons for this huge change during that century.

Analysing cause and effect

3. Was the growth of the British Empire in the seventeenth and eighteenth century an underlying or an immediate cause of the Industrial Revolution? Give reasons for your answer.
4. The British Empire continued to grow even more strongly during the nineteenth century. Explain why the Industrial Revolution may itself have been a cause of this further growth.

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Complete this digital doc: Worksheet 19.5 On the move

19.6 Entrepreneurs, banks and the middle class

19.6.1 Entrepreneurship and the middle class

Many of the innovations of the eighteenth century that fuelled the Industrial Revolution could not have occurred without a willingness of people to invest their savings in new enterprises, and a banking system able to channel that money into the most profitable of these businesses.

In medieval Europe, the most powerful class was that of the land-owning aristocracy, while the most numerous group was the peasant class, who worked the land. The middle class consisted of the tradesmen, craftsmen and merchants, most of whom lived in the towns. The sixteenth century in Britain saw an increase in trade and commerce, and a growth in the wealth of many of the middle class, including many who bought land from aristocrats and established farming on a commercial basis. Many of these middle-class businesspeople entered parliament and sought to have laws passed that would favour trade and commerce.

From 1642, the English Civil War broke out in Britain between the middle class parliamentarians and their supporters on the one side, and the king and the aristocracy on the other. King Charles I was deposed and executed in 1649, and parliament ruled without a king for 11 years. When the monarchy was restored

in 1660, the new King Charles II had to negotiate with a much more powerful parliament. The victory in the civil war had given a powerful place to the middle class in Britain, and the English Parliament came to strongly represent the interests of the merchants, traders and others involved in running businesses.

Government support for business

Between 1650 and 1673 Parliament passed the *Navigation Acts*, which required all goods traded between Britain and its colonies to be carried in British ships. There was also stronger enforcement of the *Statute of Monopolies* of 1623, which protected the rights of inventors to profit from patents on their inventions. By the eighteenth century an environment that favoured **entrepreneurship** had developed in Britain.

Entrepreneurship

More and more people saw the advantages of investing in business opportunities. Developments in agriculture encouraged farmers to operate their farms as profit-making businesses. Innovations in the textile industry encouraged investment in larger and larger factories. The increasing demand for iron and coal made investment in larger scale mining a profitable activity. Much of the progress made during the Industrial Revolution was due to the availability of money through a well-organised banking system, and a willingness of **entrepreneurs** to invest that money in business ventures.

SOURCE 1 Adam Smith, *The Wealth of Nations*, 1776

Scottish philosopher Adam Smith recognised the value of having a government supportive of trade and commerce when he wrote in 1776:

> To found a great empire for the sole purpose of raising up a people of customers may at first sight appear a project fit only for a nation of shopkeepers. It is, however, a project altogether unfit for a nation of shopkeepers; but extremely fit for a nation whose government is influenced by shopkeepers.

SOURCE 2 Adam Smith, whose head appears on the British £20 note, believed that entrepreneurship was a significant factor in the creation of wealth.

19.6.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. How did the middle class in Britain become so powerful by the beginning of the eighteenth century?
2. In what ways did the English Parliament support business interests during the late seventeenth and early eighteenth centuries?
3. Explain what is meant by entrepreneurship.

Using historical sources as evidence

4. From Source 1, explain Adam Smith's attitude to the role of the middle class in influencing government decisions.
5. Examine Source 2. What can you see depicted in front of Adam Smith's face on this banknote? What does this tell us about the importance that many people place on Adam Smith's ideas as an influence on the Industrial Revolution?

19.6.2 The importance of banks

Today we are accustomed to banks as places where we deposit our savings and borrow money for a variety of personal and business purposes. A modern industrial economy could not survive without a banking system. In pre-industrial times, for example, production of textiles was a cottage industry and coalmining took place in shallow pits, so little expensive equipment was needed. The costs of building a factory and equipping it with machinery, or providing steam-driven pumps for a deep-pit coalmine were a very different matter. Anyone wishing to set up these types of businesses needed access to finance, so a well-organised banking system was essential.

Growth of the banking system

Modern banking as we now understand it dates from Renaissance Italy, and particularly the wealthy cities of Venice and Florence. The sixteenth and seventeenth centuries in England and Scotland saw the spread of banking practices that were the forerunners of today's modern banks. Before 1546 in England, it was illegal to charge interest on money lent, but the law was changed after that date. This change provided an opportunity for profits to be made from lending money to merchants wishing to set up business ventures.

SOURCE 3 Renaissance Italy was the birthplace of modern banking. This artwork from the fifteenth century shows an Italian banking house.

Goldsmith bankers

Through the sixteenth and seventeenth centuries, many of the activities we now associate with banks were carried out by **goldsmiths**. While their major activity involved working with gold and other precious metals, goldsmiths could also provide safe custody for money and other valuables. They also kept quantities of foreign currency that could be exchanged by merchants wishing to travel overseas. By the early eighteenth century, these goldsmith bankers had developed a well-organised network of private banks that were ready to lend money for worthwhile business enterprises.

DID YOU KNOW?

The first banknotes were issued by goldsmiths as receipts for gold held in safekeeping. The Bank of England was established in 1694 to lend money to the government, and gained a virtual monopoly over the issuing of banknotes in England in 1708.

SOURCE 4 The Bank of England, established in 1694, became the major source of lending for the government. This artwork was created in the nineteenth century.

19.6.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why were cottage industries able to survive without access to a modern banking system?
2. Explain the significance of the English law legalising the charging of interest on borrowed money.
3. What was the role of goldsmiths in the development of the banking system?

Using historical sources as evidence

4. Compare and contrast Sources 3 and 4. What does the image of the inside of the Bank of England in Source 4 tell us about the importance of banking in England, when compared to the activities shown in Source 3?

19.6 Putting it all together

Analysing cause and effect

1. French leaders are believed to have used Adam Smith's term 'a nation of shopkeepers' as an insult against the British. How might the qualities of a 'nation of shopkeepers' have contributed to the progress of the Industrial Revolution?
2. How important was a successful banking system as an underlying cause of the Industrial Revolution?

Determining historical significance

3. Adam Smith is often described as the father of modern economics and of modern capitalism. Using the internet and/or library resources, find out who Adam Smith was and what he did to earn these titles.

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Complete this digital doc: Worksheet 19.6 British domination: production and export

19.7 The population explosion

19.7.1 Before the eighteenth century

The period of the agricultural and industrial revolutions saw rapid population growth throughout Great Britain, but particularly in England and Wales. Improved farming methods appear to have been one cause of the population explosion that occurred between 1750 and 1850. The increase in population provided a ready workforce for newly industrialised factory production.

Population figures for most of Great Britain before the nineteenth century are estimates only, as the first official census was not held until 1801. The best information suggests that population levels had moved up and down dramatically between 1300 and 1700. From a high of close to 6 million people in 1300, the influence of the **Black Death** and years of **famine** had seen the population depleted to around 2 million by 1500. During the sixteenth century the population appears to have doubled, but it grew more slowly during the first half of the seventeenth century, reaching only about 5 million by 1650. Disease epidemics such as the Great Plague of the 1660s had caused the population to level out during the second half of the seventeenth century and, by 1700, it remained at about 5 million.

SOURCE 1 The Black Death, which struck Europe in the late 1340s, kept the population low in Britain for centuries, as shown in this seventeenth-century engraving.

DID YOU KNOW?

Bubonic plague, or the Black Death, was caused by bacteria carried by a flea that was a parasite of the black rat. Its eradication in England after the 1660s is said to have occurred because of the arrival in England of the larger brown rat. Brown rats, which did not carry the disease-causing flea, soon drove the black rats out of their habitat.

19.7.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. In which years between 1300 and 1700 was the British population growing?
2. During which years of the same period was the population falling?
3. What was the estimated population of Britain in 1700?

Using historical sources as evidence

4. Explain the influence of the Black Death or plague, as depicted in Source 1, on the British population in the fourteenth century.
5. Why did the plague continue to have an influence on the population?

19.7.2 Eighteenth-century population growth

The British population began to increase steadily again during the first half of the eighteenth century, reaching six million by the late 1750s. Eradication of the plague and improvements in medical science saw a fall in the death rate. By mid century the changes in agriculture had begun to have an impact, increasing the supply of good-quality food capable of feeding a larger population. Dietary deficiency diseases such as **scurvy** and **rickets** declined as food quality improved, leading also to a decline in the **infant mortality rate**.

The population explosion

The population really took off in Britain after 1760, doubling over the next sixty years, and doubling again in the following sixty years (see Source 3). Agricultural improvements meant that good crops could be relied on every year, removing fears of periodic famine that had been common for centuries. Fresh meat was now available in winter; cheaper potatoes could be eaten all year round, and dairy produce such as

SOURCE 2 Edward Jenner pioneered vaccination against smallpox in 1796, as shown in this nineteenth-century artwork.

SOURCE 3 Population growth in England and Wales, 1761–1881

Year	Population
1761	6 146 000
1781	7 042 000
1801	8 893 000
1821	12 000 000
1841	15 914 000
1861	20 066 000
1881	25 974 000

From J. Gardiner and N. Wenborn (eds), *The History Today Companion to British History*, London, 1995, p. 610

butter and cheese was enjoyed more widely. In the latter part of the eighteenth century vaccination against diseases such as smallpox began to reduce deaths from infectious diseases. The widespread use of child labour in factories and mines in the late eighteenth and early nineteenth centuries appears to have encouraged many families to have more children as a means of increasing family income.

19.7.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain how the changes in agricultural production methods contributed to population growth after 1700.
2. What medical advances contributed to population growth during this time?
3. How might the use of child labour in the early days of the Industrial Revolution have encouraged families to have more children?

Using historical sources as evidence

4. Explain how we can tell that the medical procedure carried out in Source 2 was still a relatively new development.
5. Using the information in Source 3, construct a graph depicting population growth in England and Wales between 1761 and 1881. You may use a bar graph or a line graph; make sure your graph is to scale.

19.7.3 Impact of the population explosion

The Industrial Revolution saw small-scale domestic production superseded by factory production. The rapid growth in population provided a market for the products of these new factories, with cheap clothing readily available because of improvements in textile production. The growing demand provided incentives for the owners of factories to increase production and improve their methods. The population explosion also provided a workforce to work in these factories. While wages were not high (see topic 20), if all members of the family were employed, they could earn enough to provide for the basic essentials of food, clothing and shelter.

SOURCE 4 As seen in this artwork from 1840, all members of a family, including mothers and children, were often employed in English textile factories.

19.7.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. How did the growth in population encourage factory owners to increase production?

Using historical sources as evidence

2. What conclusions can you draw from Source 4 about the conditions experienced by women and children working in factories?
3. Why was it necessary for whole families to be employed in this way?

19.7 Putting it all together

Identifying continuity and change

1. Explain why it is fair to describe the population growth in Britain from the early eighteenth century to the late nineteenth century as unprecedented in all of British history.

Analysing cause and effect

2. It could be said that population growth in Britain before 1800 helped *cause* the Industrial Revolution, while population growth after 1800 was an *effect* of the Industrial Revolution. Explain why you agree or disagree with this proposition, using what you have learned so far about industrialisation in Britain in this period.

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Complete this digital doc: Worksheet 19.7 Identifying continuity and change: 'canal mania'

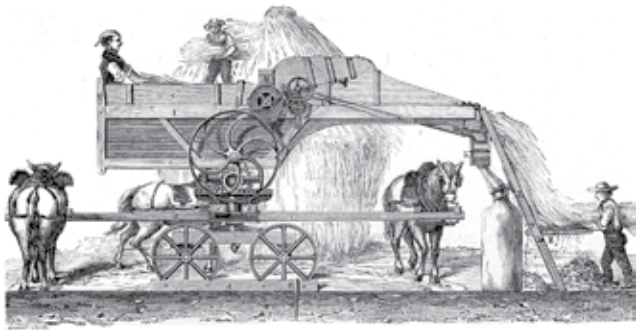
19.8 Power: from horses, wind and water to steam

19.8.1 Horse power

The early years of the Industrial Revolution relied on traditional sources to provide power for agricultural use, for machinery in factories and for transport. With the development of a viable steam engine, steam power rapidly replaced horse, wind and water power.

The oldest form of power available to humans was their own physical muscle power. Horses, donkeys and oxen had been used as beasts of burden since ancient times, and were still commonly used in the eighteenth century. Long-distance travel was usually carried out on horseback or in a horse-drawn cart or carriage. Poor people who did not own a horse tended not to travel more than a day's walk from their homes. Carts drawn by teams of oxen were used to transport goods over long distances, and teams of oxen had been used for centuries to plough the fields.

SOURCE 1 Andrew Meikle's threshing machine, shown in this engraving from c. 1850, is an example of a horse-powered machine.



Horses in agriculture and mining

With the coming of the agricultural and industrial changes of the eighteenth and nineteenth centuries, there was a continuing reliance on horses as a source of power. For example, the horse-powered threshing machine was used to separate grain from the stalks and husks of the wheat plant (see Source 1). This machine was invented in 1784 by a Scotsman, Andrew Meikle. Small ponies, known as pit ponies, were used to haul carts full of coal in underground coalmines. Canal boats or barges used to move goods were hauled along by horses walking along tow-paths on the canal bank (see Source 2).

SOURCE 2 Barges were towed along canals by horses as shown in this c. 1880 artwork.

19.8.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain why horses and similar animals were very valuable in pre-industrial times.
2. Identify and explain two examples of the use of animals as a source of power that continued even after the agricultural and industrial changes of the eighteenth century.

Using historical sources as evidence

3. Explain how Source 1 demonstrates the combination of new technology with traditional sources of power.
4. Identify the advantages that the towing of barges full of goods, as shown in Source 2, has over the transportation of goods in a horse-drawn cart on land.

19.8.2 Water power

Water power had been used in England since ancient Roman times. A water wheel with blades or buckets around its rim would be driven by flowing water from a stream or river (see Sources 3 and 4). The power generated by the turning water wheel was used to mill grain into flour. Early sawmills used water wheels to power large circular saws. Many of the first textile mills in England were powered by water, with the force of the water sufficient to drive machines in multi-storey factory buildings.

SOURCE 3 A medieval flour mill with water wheel

SOURCE 4 Early cotton mills were built next to rivers to make use of the water flow for power.

19.8.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain how water was traditionally used to provide power.

Using historical sources as evidence

2. In Source 3, where is the water coming from to drive the mill wheel? What method might be used to stop the wheel?
3. Explain why the site shown in Source 4 was chosen as a suitable location for a water-powered textile mill.
4. What does Source 4 tell us about the limitations of water power as a means of driving factory machines?

19.8.3 Wind power

Like water power, wind power had been used in England for centuries. The wind had been used to drive ships since ancient times, and sailing ships were the standard form of sea transport for several hundred years until the mid-nineteenth century. Windmills were introduced to England in the twelfth century. They were used primarily for milling grain to make flour, and later to drive pumps to drain surplus water from marshlands.

SOURCE 5 This sixteenth-century English windmill was used to mill grain into flour.

19.8.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Outline two uses of wind power in traditional pre-industrial society.
2. What is the major limitation of wind power?

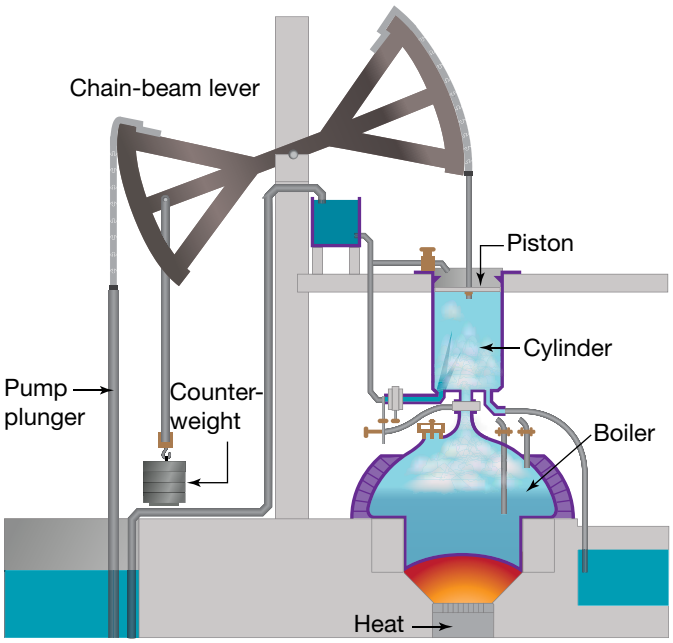
Using historical sources as evidence

3. Explain why, while a windmill as in Source 5 might have worked well for milling grain, wind power would have been unsuitable for driving machinery in a factory.

19.8.4 Steam power

One of the most significant advances of the Industrial Revolution was the development of steam power. While the potential of using steam to provide power had been known for centuries, the first practical steam engine was the 'atmospheric engine' developed by Thomas Newcomen in 1712 (see Source 6). This machine used steam to drive a piston, which powered a large horizontal beam. The Newcomen atmospheric engine was used primarily to pump surplus water out of underground mines, particularly coalmines.

SOURCE 6 The Newcomen steam engine drove a large beam that worked a pump to remove water from underground mines.



Steam power in coalmines

The Newcomen engine was a huge step forward because it allowed underground coalmines to be sunk to greater depths. Removing excess water had always been one of the barriers to deep-pit mining, and so had restricted the amount and quality of coal that could be extracted (see

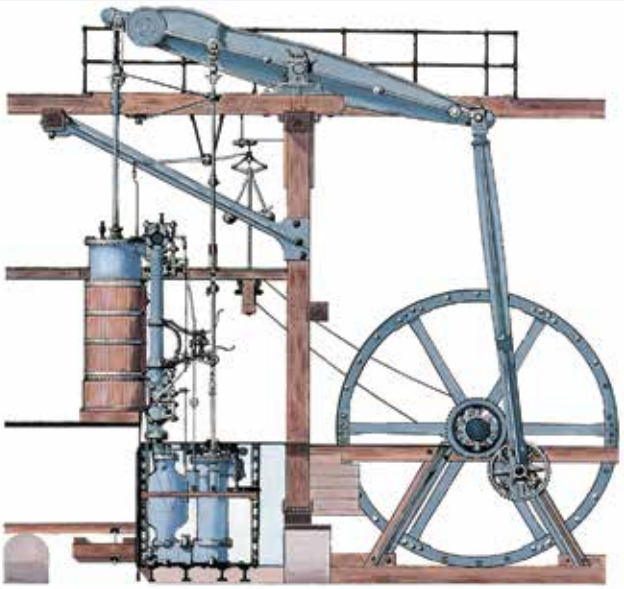
subtopic 19.10). The coalmining industry really took off from the mid-eighteenth century. As the Industrial Revolution gathered pace, coal would prove to be a very important fuel.

James Watt's steam engine

The next big step forward was James Watt's steam engine, developed about 1769. Watt produced an engine that had a separate compartment for cooling the steam back to water, after it had been used to drive a piston. Instead of driving a large beam, Watt's steam engine powered a large flywheel, so it could provide the same type of continuous power that had previously been possible only with a water wheel. This meant the steam engine sold by Watt and his partner, Matthew Boulton, could be used to power many different types of machinery (see Source 7).

As we shall see later in this topic, the development of the steam engine was to be a pivotal event in the Industrial Revolution. Steam engines were able to power larger and larger machines, which in turn led to bigger factories (see Source 8). Their successful use in coalmines saw coal replace wood as the major fuel source. Steam was to revolutionise both land and sea transport in the nineteenth century as railways and steam-driven ships came into use.

SOURCE 7 The Boulton and Watt steam engine drove a large wheel that could be used to power many different types of machines.



SOURCE 8 Artwork of factories in the English city of Manchester, c.1840

DID YOU KNOW?

James Watt developed the idea of 'horsepower' as a unit of measurement of power. His original calculations compared the power of a steam engine with the work done by horses in providing power to drive machines. The term is still used today to measure the output of many different types of engines. The 'watt', as a unit of energy, was named after him.

19.8.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain how the Newcomen steam engine operated.
2. Explain how the Boulton and Watt steam engine operated.

Using historical sources as evidence

3. Compare Sources 6 and 7 and explain how Watt's improvements to the steam engine would have increased the usefulness of steam as a source of power.
4. Explain what Source 8 tells us about the main form of power in Manchester, England, by the middle of the nineteenth century.

19.8 Putting it all together

Identifying continuity and change

1. The early years of the Industrial Revolution did not rely on new forms of power, but made innovative use of traditional forms of power. Outline two examples where this was the case.

Analysing cause and effect

2. Many historians claim that the Industrial Revolution did not really take off until steam power was widely used. Identify and explain three major contributions that steam power made to the Industrial Revolution.

Determining historical significance

3. Newcomen's steam engine is often compared unfavourably with that of Boulton and Watt. Given that the Newcomen engine was developed over fifty years before Watt's improvement, and considering its main use, why is it still considered a significant historical development?

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Complete this digital doc: Worksheet 19.8 Word search

19.9 Making textiles: from home to factory

19.9.1 The traditional textile industry

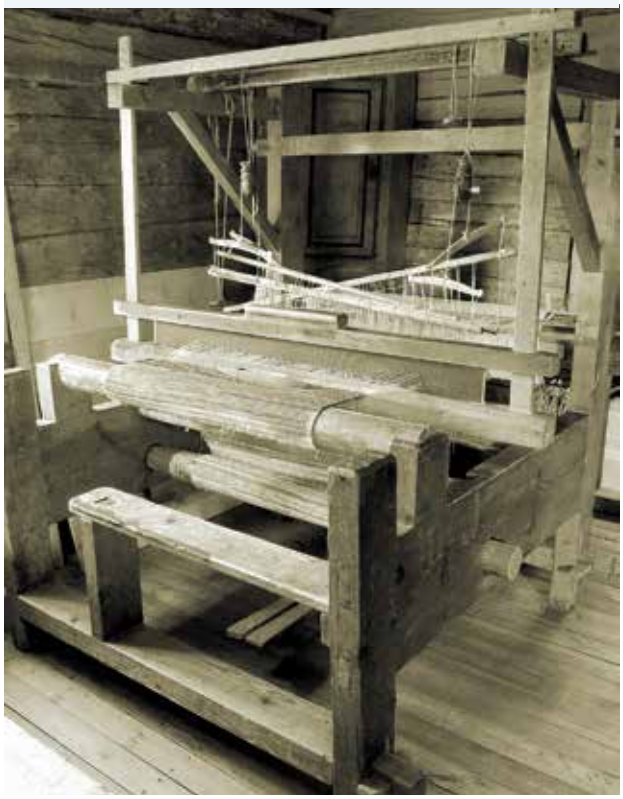
Historians generally agree that it was the textile industry, and particularly the cotton industry, that was the main driver of the Industrial Revolution. During the second half of the eighteenth century the production of cotton textiles changed from being a **cottage industry** to a factory-based enterprise.

Textile production had been an important part of the English economy for centuries, but the emphasis was mainly on woollen goods. Cotton cloth was produced only in small quantities, as English cotton producers could not compete in quality or price with imported cloth from India. Until the eighteenth century, textile production was a cottage industry, carried out by farmers and agricultural workers in their homes after normal working hours. Children would clean and prepare the raw fibres, women would spin the yarn, and men would weave the cloth. Raw wool was sourced from English sheep, while raw cotton came largely from America where it was grown by slaves (see topic 21), the West Indies and the eastern Mediterranean area.

SOURCE 1 Traditional textile production — step 1

SOURCE 2 Traditional textile production — step 2

SOURCE 3 Traditional textile production — step 3



19.9.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why was the English textile industry traditionally based on wool rather than cotton?
2. Create a flow chart to outline the step-by-step process by which textiles were produced.

Using historical sources as evidence

3. What is happening in Source 1? Which members of the family would carry out this task?
4. What function is carried out by the machine depicted in Source 2?
5. In Source 3, describe which part of the machine is the weft, and which part is the warp.

Raw fibre was delivered to villages by merchants, who later collected the finished products, and paid the villagers for their work. Traditional textile production is described in the gallery below.

19.9.2 Innovation in the textile industry

Early innovations in the textile industry applied to both cotton and woollen production, but the period after the 1750s saw a greater demand for cotton products. This was due to an increased foreign market for cotton goods, particularly in Europe, and increases in population and domestic incomes. With the domestic-based industry no longer able to meet this demand, inventors began to develop spinning and weaving machines to improve both the quantity and quality of cloth produced.

Spinners and weavers

Traditionally, one weaver required three or four spinners to provide enough yarn for his loom. After John Kay's flying shuttle (see Source 4 below), patented in 1733, made weaving more efficient, it required the output of as many as a dozen spinners to supply the necessary yarn for one weaver. As the flying shuttle came to be used more widely during and after the 1750s, it became clear that a more efficient method of spinning was needed. The development of the spinning jenny in the 1760s responded to this need (see Source 5 below). Early models were able to spin eight spindles of yarn simultaneously, and later models were able to hold more than 100 spindles at one time.

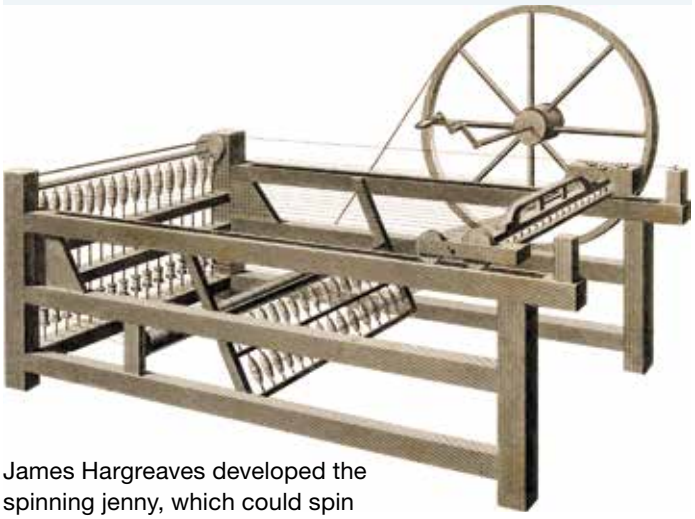
The move to factory production

The new spinning and weaving machines had outgrown the cottages of spinners and weavers. Larger buildings were needed to house them, and textile production began to be moved into specialised factories, known as cotton mills. By the 1780s all stages of textile manufacture were becoming centralised in mills, particularly in the growing towns of Lancashire in northern England. Sources 4, 5, 6, 7, and 8 show the progress made in the textile industry over 50 years.

SOURCE 4 Innovation in the textile industry — 1733

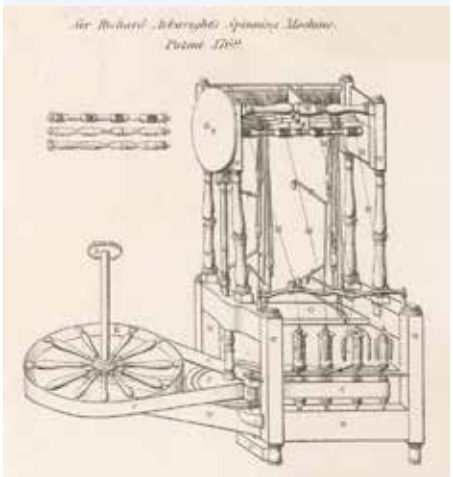
John Kay invented the flying shuttle, which allowed weaving to be performed more quickly.

SOURCE 5 Innovation in the textile industry — 1764



James Hargreaves developed the spinning jenny, which could spin multiple threads simultaneously.

SOURCE 6 Innovation in the textile industry — 1769

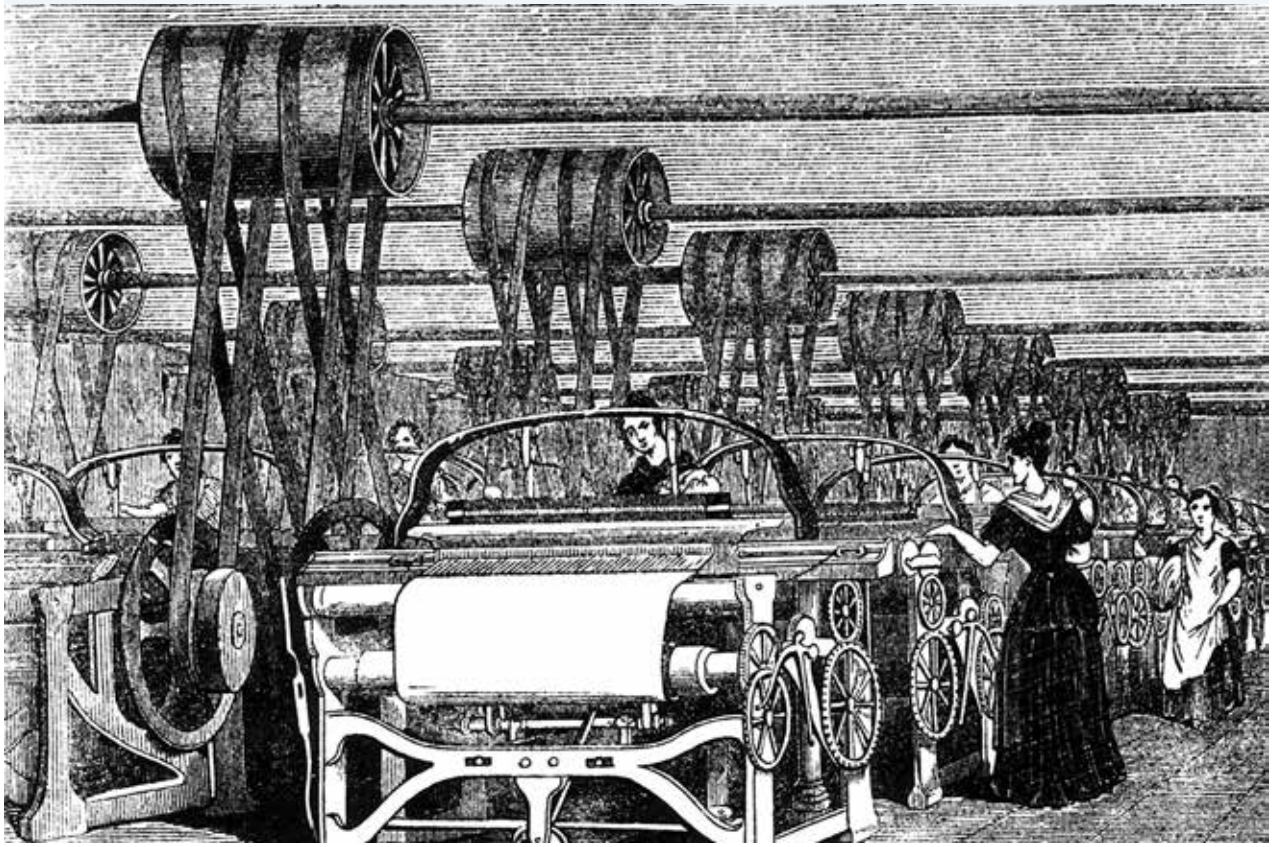


James Arkwright patented the water frame, a spinning machine powered by running water. Similar machines were later powered by steam.

SOURCE 7 Innovation in the textile industry — 1779

Samuel Crompton invented the spinning mule, which improved the spinning process to produce better quality thread.

SOURCE 8 Innovation in the textile industry — 1780s



Textile production began to be centralised in factories. Initially they were built close to rivers to draw on water power, but eventually this became unnecessary as steam power was adopted.
Edmund Cartwright developed the power loom, shown in this artwork from c. 1844, which mechanised the weaving process.

DID YOU KNOW?

The first large textile factories in England were located in and around the city of Manchester. The term *manchester* is still used today to describe household cotton-based items such as tablecloths, bedding and towels.

19.9.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain two factors that led to an increased demand for cotton products by the 1750s.
2. Why did it become necessary to move away from cottage textile production to factory production?

Using historical sources as evidence

3. Explain why the invention of the flying shuttle shown in Source 4 made it necessary for a machine such as the spinning jenny (Source 5) to be invented.
4. Explain the significance of machines such as those shown in Sources 6 and 7 in the move away from cottage industry.
5. The power loom in Source 8 was originally powered by water, and later by steam. Examine the source and explain how either source of power drove the loom.

19.9 Putting it all together

Identifying continuity and change

1. It is often said that 'necessity is the mother of invention'. Describe the ways in which each of the new inventions in the eighteenthcentury textile industry was a response to necessity.

Analysing cause and effect

2. Most historians agree that the Industrial Revolution in Britain began with the textile industry. Explain whether you think the developments in this industry were an underlying or an immediate cause of the Industrial Revolution.

Determining historical significance

3. Imagine you were a farm worker earning extra money by spinning or weaving in your cottage
   (a) What effect would the change to factory production have on your way of life?
   (b) Why would you have regarded this as a significant change?
   (c) Explain your likely reaction to this change.

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Complete this digital doc: Worksheet 19.9 Summing up

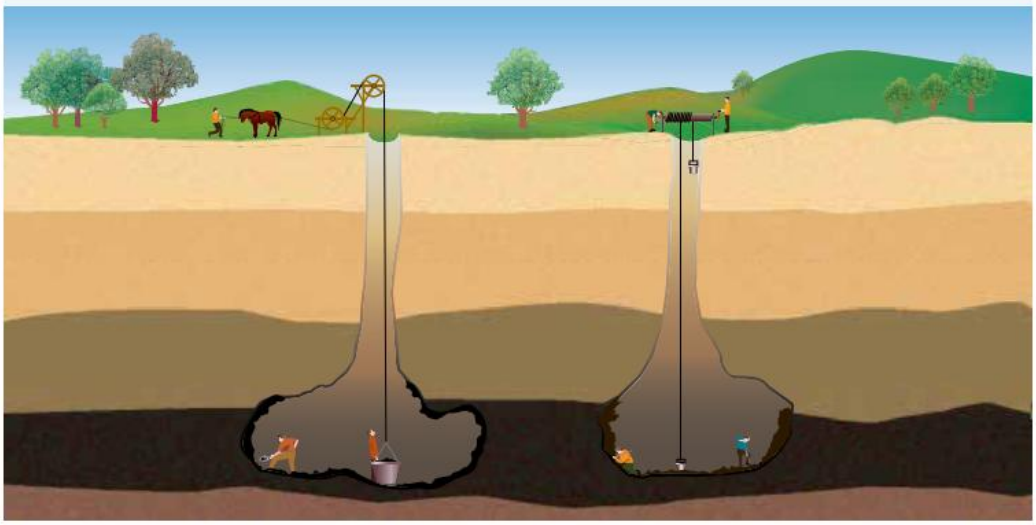
19.10 Coal and iron

19.10.1 Coalmining

The progress of the Industrial Revolution was assisted by the increased use of coal, a more efficient fuel than wood and charcoal. Also, improvements in the production of iron and steel resulted in metals that were stronger and cheaper to produce, and could be applied to a wider variety of uses.

Coal is a much more efficient fuel than wood; that is, a given weight of coal will burn for longer and provide greater heat than a similar weight of wood. Britain had a very rich supply of coal, but traditional coalmining practice allowed only the extraction of coal from shallow **bell pits** (see Source 1). This meant that coal was not widely available and was therefore more expensive than wood. Deep-pit mining could not be pursued because of the amount of water that would flood the shafts. Pumping out surplus water from mines with the use of steam-driven pumps (see subtopic 19.8) made coal more readily available and cheaper to mine. This coal could be used as fuel for the steam engines that would come into more widespread use as the Industrial Revolution progressed.

SOURCE 1 Coalmining was traditionally carried out in shallow bell pits.



19.10.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why was coal a preferable fuel to the burning of wood?
2. How did deep-pit mining become possible during the eighteenth century?

Using historical sources as evidence

3. Describe how coal was extracted from the bell pits depicted in Source 1.
4. Explain how this method of mining limited the use of coal before the eighteenth century.

19.10.2 Developments in iron production

Methods of producing iron had been known throughout Europe since ancient times. To produce iron that could be used for tools, weapons and other implements, iron ore extracted from the ground had to have various impurities removed. This was achieved by a process known as smelting, in which heat was applied to the ore in a **blast furnace**. For centuries the source of heat for English blast furnaces had been charcoal, obtained by the heating and partial burning of wood. The product of the blast furnaces was known as **pig iron**.

Burning coke in blast furnaces

The growth in coal production meant that coal became more widely available for use in the smelting process, but impurities in the coal tended to contaminate the iron, compromising its quality. During the seventeenth century methods of burning out the impurities in coal to produce **coke** were improved. In 1709 Abraham Darby developed a blast furnace that burned coke to produce iron of a superior quality. The use of coke also allowed the construction of larger blast furnaces capable of producing greater quantities of pig iron.

SOURCE 2 The Iron Bridge in Shropshire, England, built by the grandson of Abraham Darby, is an example of late eighteenth-century iron construction.

DID YOU KNOW?

Pig iron was so called because of the method of casting molten iron from blast furnaces into moulds. These moulds were laid in a row in a bed of sand, and fed the molten iron from a common channel. The process was said to resemble a litter of piglets being fed by a mother sow, and so the iron at this stage was called 'pig iron'.

Henry Cort and 'puddling'

While pig iron had many uses, it could be brittle because of the presence of carbon. In 1783 Henry Cort developed a method of reducing the carbon content of pig iron through a process known as 'puddling'. This resulted in a product that was stronger and could be bent, rolled or cast into many different shapes. High-quality iron could now be used for making machinery, boilers for steam-driven engines, and a huge variety of tools and implements, as well as bridges and the framework for buildings.

As iron production methods improved, quantities increased, and large-scale production made good-quality iron cheaper. By 1850 Britain was producing more than seventy times as much iron as it had in 1760 (see Source 3).

SOURCE 3 British pig iron production, 1760–1850

Year	Tons
1760	30 000
1785	50 000
1796	125 000
1806	244 000
1823	455 000
1830	677 000
1840	1 400 000
1850	2 200 000

Source: P. Riden, 'The output of the British iron industry before 1870', in *Economic History Review*, 2nd series, pp. 443, 448, 455

19.10.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What process was employed to remove impurities from iron ore extracted from the ground?
2. What had been used as the traditional source of heat for English blast furnaces?
3. What was the name of the product that came from the blast furnace?
4. Identify the problem that Abraham Darby was able to solve, and explain his solution.
5. In what way did Henry Cort improve the production of iron?

Using historical sources as evidence

6. The Iron Bridge shown in Source 2 was opened in the 1780s. Explain why such a bridge would not have been practical before this time.
7. Present the information in Source 3 as a line graph. Make sure you keep it to scale.

19.10 Putting it all together

Identifying continuity and change

1. Would it have been possible to increase the quantities and improve the quality of iron products if coal mining techniques had not also improved at around the same time? Give reasons for your answer.

Analysing cause and effect

2. Would you describe the improvements in coal mining practices in the eighteenth century as an immediate or underlying cause of the Industrial Revolution?
3. Would you describe the developments in production of higher-quality iron in the eighteenth century as an immediate or underlying cause of the Industrial Revolution?

Determining historical significance

4. In what ways do you think the figures in Source 3 suggest that a revolutionary change occurred in Britain between 1760 and 1850?

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Complete this digital doc: Worksheet 19.10 Reflection

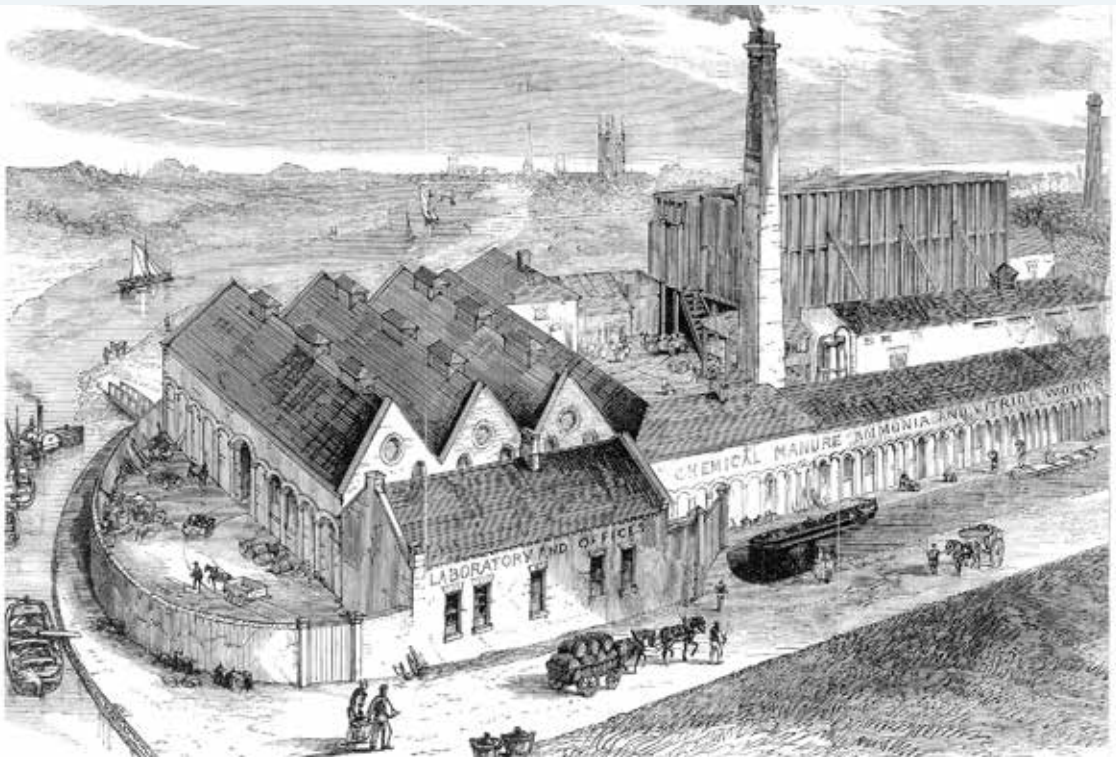
19.11 Canals, roads, railways and shipping

19.11.1 The importance of transport

As new technologies were transforming agriculture, the textile industry and mining, the Industrial Revolution also brought great changes in the field of transport. Rapid improvements in methods of transport greatly increased the availability of the raw materials needed to feed the new factories. They also allowed the rapid distribution of finished products to larger numbers of customers.

In pre-industrial times, most goods were produced in small quantities by local producers to suit local needs. Industrialisation often meant that production moved away from local supplies and local markets. If a factory relied on water power, it had to be located next to a fast-flowing river. If it relied on steam power, proximity to coal and water supplies would be necessary. Factories were not producing just for the local market. They needed reliable means for transporting large quantities of raw materials to the factory and finished products away from the factory.

SOURCE 1 A factory needed access to efficient means of transport to bring in raw materials and send out finished products.



19.11.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why were reliable methods of transport more important to the process of industrialisation than they had been in pre-industrial society?

Using historical sources as evidence

2. What is being produced at the factory depicted in Source 1?
3. Describe the methods of transport available to this factory.

19.11.2 Canals

Transportation of goods by water had always been important in the island nation of Britain. With a large number of navigable rivers, coastal and river shipping had been widely used for centuries. Most roads were still no more than muddy tracks, and horse-drawn carts could carry only small loads without getting bogged. Much larger loads could be transported on boats and barges, so rivers and canals were one answer to transporting the products of industrialisation. The first major canals of the Industrial Revolution were built to transport coal from the Lancashire coalfields to newly developing industrial cities. The Sankey Canal, built to carry coal to the city of Liverpool, was opened in 1757. The Bridgewater Canal, opened in 1761, carried coal to the growing city of Manchester. Alongside each canal was a towpath on which the horse towing a barge would walk (see subtopic 19.8). One horse could tow a barge carrying ten times the weight that could be loaded onto a cart.

SOURCE 2 The Duke of Bridgewater, shown in this c. 1754 artwork, financed the building of a canal to transport coal from his mine to the city of Manchester.

'Canal mania'

The canals were privately owned, so those who built them were able to charge a fee to anyone wishing to transport goods on them. This meant they paid for themselves within a few years, and were soon making a profit for their owners. Even with the fees paid to canal owners, transporting coal by canal was considerably cheaper than transporting by road. In a few years the price of coal in cities like Liverpool and Manchester had halved, making steam power even more economical. The financial success of the Sankey and Bridgewater canals inspired many others to invest in canal building, and the next fifty years saw a period of 'canal mania'. Between the 1760s and 1815 more than three thousand kilometres of canals were built across England to carry raw materials to factories and finished products away to markets.

SOURCE 3 Canals became the major method of transporting goods to and from factories.

19.11.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What was the purpose of the first canals built in Britain?
2. Why was the use of a barge towed by a horse on a canal more economical than a loaded cart pulled by a horse?
3. Why was the period between the 1760s and 1815 known as the period of 'canal mania'?

Using historical sources as evidence

4. Why would Source 2, the portrait of the Duke of Bridgewater, have been painted with the particular background depicted?
5. Explain the likely location of the scene shown in Source 3. What is the function of the building on the right side of the painting? Give reasons for your answer.

19.11.3 Roads

Before the eighteenth century, every man in a village was expected to provide his labour free of charge for a certain number of days each year to maintain local roads. Major roads between large towns and cities received little maintenance and were often in a very poor state of repair. In the late seventeenth century, local magistrates were given the power to charge tolls on the use of main roads to provide funds for maintenance.

Turnpike trusts

From 1707 onwards groups of nominated **trustees** were given the power to collect these tolls and supervise road maintenance. These toll roads were known as **turnpikes**, and the groups of trustees called **turnpike trusts**. By the 1750s most of the main roads leading to London had been converted to turnpikes. By the 1830s more than 30 000 kilometres of turnpikes connected most of the major cities in England, Wales and Scotland. The quality of roads between major cities improved dramatically during this time, although the less important roads remained in a poor state. Eventually the railways took business away from the turnpikes, rendering them unprofitable, and road maintenance became the responsibility of local councils.

SOURCE 4 Main roads were often in a poor state of repair, as shown in this artwork from c. 1824.

SOURCE 5 Extracts from the toll sign at Aberystwith Turnpike in Wales

RATE OF TOLL TO BE TAKEN AT THIS GATE

For every Horse or other Beast drawing any Coach, Chariot, Berlin, Landau, Landaulet, Barouche, Chaise, Phaeton, Vis-a-vis, Calash, Curricle, Car, Chair, Gig, Hearse, Caravan, Litter, or any such like Carriage — 6 d [pence]

For every Horse or other Beast except Asses drawing any Waggon, Wain, Cart, or other such like Carriage — 4 d.

For every Ass drawing any Cart, Carriage, or other Vehicle — 2 d

For every Horse or Mule, laden or unladen, and not drawing — 1½ d

For every Ass, laden or unladen, and not drawing — 1 d

EXEMPTION FROM TOLLS

Horses or Carriages attending her Majesty, or any of the Royal Family, or returning therefrom; Horses or Carriages employed for the repairs of any Turnpike Roads, Highways or Bridges; Horses or Carriages employed in conveying Manure (save Lime) for improving Lands …

19.11.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Who was responsible for the maintenance of local roads before the eighteenth century?
2. Why did main roads between larger towns and cities so often fall into a state of disrepair?
3. What were turnpike trusts and how were they able to improve road transport?

Using historical sources as evidence

4. What message was the artist who produced Source 4 attempting to convey?
5. Examine Source 5. Give three examples of groups of people who were exempt from tolls on the Aberystwyth turnpike in Wales.

19.11.4 Railways

One of the biggest advances in transport came with the growth of the railways. This development came as a result of applying steam engines to tramway systems. In coal and iron ore mines, horses were used to draw wagons out of the mines along tracks. By the beginning of the nineteenth century steam technology had developed sufficiently for experiments to begin in the use of steam to drive moving vehicles. The first locomotives were used to haul trucks loaded with coal from mines. These inspired an engineer, George Stephenson, to promote the use of steam locomotives to haul a wide variety of goods, as well as passengers.

SOURCE 6 Steam locomotives were first used to haul trucks from coalmines, as shown in this nineteenth-century artwork.

DID YOU KNOW?

The first successful locomotive was known as *Puffing Billy*. Built in 1813, it was used to haul coal from the mines to a nearby port in Northumberland, in north-east England. Today it is located in the British National Science Museum in London. Its name was the inspiration for the steam train that today travels between Belgrave and Gembrook in the Dandenong Ranges east of Melbourne.

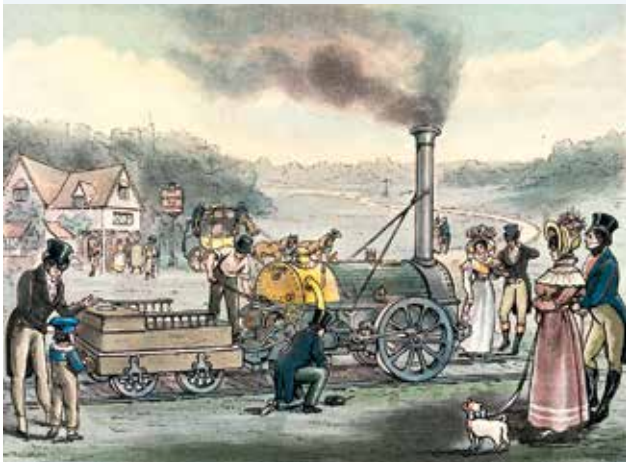
The first successful railways

The first public railway was opened in north-east England in 1825. Designed to carry coal from mines near Darlington to the port of Stockton, it employed George Stephenson's 'Locomotion No. 1' locomotive. Before long, the owners expanded its activities to provide a passenger service with a regular timetable.

In the meantime, Stephenson and his son Robert were contracted to build a railway line between Manchester, the largest textile producing city, and Liverpool, a major port almost 60 kilometres away. The line, opened in 1830, was constructed as a double track to allow trains to travel in both directions. It was designed to bring imported raw materials to Manchester and to return completed goods to Liverpool for export. Stephenson's latest locomotive, the 'Rocket', was used to haul both goods and passengers between the two cities. The line was a huge financial success and became the model for a succession of railways that were soon constructed throughout Britain.

SOURCE 7 Stephenson's *Locomotion No.1* is now on display at the Darlington Railway Museum.

SOURCE 8 Stephenson's *Rocket*, shown in this 1894 illustration, was first used on the very successful Manchester to Liverpool line.



The railways expand

The growing demand for fast, efficient transport for both raw materials and the products of industrialisation led to a rapid expansion in railway construction. The following 20 years saw huge growth in the rail network. By 1852 there were more than 10000 kilometres of track in Britain. Lines extended from London to the coast of Wales and north to Glasgow and Edinburgh in Scotland. The industrialised north and Midlands of England were serviced by extensive rail networks, transporting both passengers and a huge variety of goods.

SOURCE 9 The march of progress! In the 1830s, a railway bridge was built over the original Sankey Canal. This artwork was published in 1831.

19.11.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What was the purpose of the first locomotives built in Britain?
2. When was the first railway built in Britain, and what was its purpose?
3. What specific features did the railway line between Manchester and Liverpool have that made it a model for other railways?
4. How did the construction of railways revolutionise transport in Britain between 1830 and 1852?

Using historical sources as evidence

5. What does Source 8 tell us about the possible future use of rail transport in the period after 1830, when compared with Sources 6 and 7?
6. Explain why it is appropriate to label Source 9 'the march of progress'.

19.11.5 Developments in shipping

Until the late eighteenth century, all ships were built of timber and powered by sail. The Industrial Revolution brought two major changes to shipping. Advances in the processing of iron led to the development of iron hulls for ships. The strength this gave the hull allowed the building of larger ships able to carry more cargo. The second change was the application of steam power to shipping.

DID YOU KNOW?

The owners and crews of clipper ships were very proud of the speeds their ships could achieve and regularly set out to break new records. The fastest time recorded for a clipper to sail from Plymouth in England to Sydney, NSW, a distance of 22 130 km, was recorded by the *Cutty Sark*, which completed the journey in 72 days. The ships of the First Fleet took around 250 days to complete the same voyage in 1787–88.

The age of the clippers

Despite the development of steam power, square-rigged sailing ships continued to be widely used until the 1870s. Built for speed, these ships were said to travel at a 'good clip' (or speed), and were therefore known as clippers. They generally had iron hulls, were able to compete with steam-driven ships because they were much faster than the early steamships and did not need to use valuable cargo space for carrying coal for fuel. Clippers were used extensively from the 1840s until the 1870s for trade between Britain and her colonies.

SOURCE 10 Clippers such as the *Cutty Sark*, shown in this twentieth-century artwork, could transport goods more quickly than many steamships of the time.

Steam power

The first steam-driven ships were paddle steamers, either with one large rear-mounted paddle, or with paddles mounted on either side of the hull. While these proved effective for travel in rivers and for coastal use, paddle-driven ships were not really suitable for ocean travel. It was not until the development of the screw propeller in the 1840s that large ocean-going steam ships began to dominate sea travel, both for freight and passenger travel.

19.11.5 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Identify the two main changes to shipping that resulted from the Industrial Revolution.
2. Why were paddle steamers not appropriate for international trade? Which development ultimately allowed steamships to take over international shipping?

Using historical sources as evidence

3. What does Source 10 tell us about the two main advantages of clipper ships as a form of transport for goods to and from Britain?

19.11 Putting it all together

Identifying continuity and change

1. Draw up a timeline that shows the developments in road, canal, rail and shipping transport in Britain between 1700 and 1860. For each point on the timeline, explain why you think it was a major step forward.

Analysing cause and effect

2. Were improvements in transport during the eighteenth and nineteenth centuries an immediate or underlying cause of the Industrial Revolution? Justify your conclusion.
3. Canals and railways were initially privately owned and designed to make a profit for their owners. Explain why a factory owner might be prepared to pay these additional transport costs.

Determining historical significance

4. While initially designed to carry goods, railways soon began carrying passengers, and were able to do so at a relatively cheap fare. What impact might this have had on ordinary people and their families?

19.12 Industrial innovation spreads to the world

19.12.1 Industrialisation in Europe

As the first country to experience industrialisation, Britain led the world in factory production and the mechanisation of transport and agriculture.

By 1850 Britain had become the most dominant industrial power in the world. It produced more than half the world's textile products, 80 per cent of its coal and close to half of its iron. Other countries turned to British engineers to build their railways and imported British machinery to set up their own factories. British steam engines were the biggest and most powerful and were exported to all parts of the world.

With the end of the **Napoleonic Wars** in Europe in 1815, Britain and the continent of Europe were once more free to exchange ideas and trade. The new industrial methods that had been pioneered in Britain were quickly taken up in other countries.

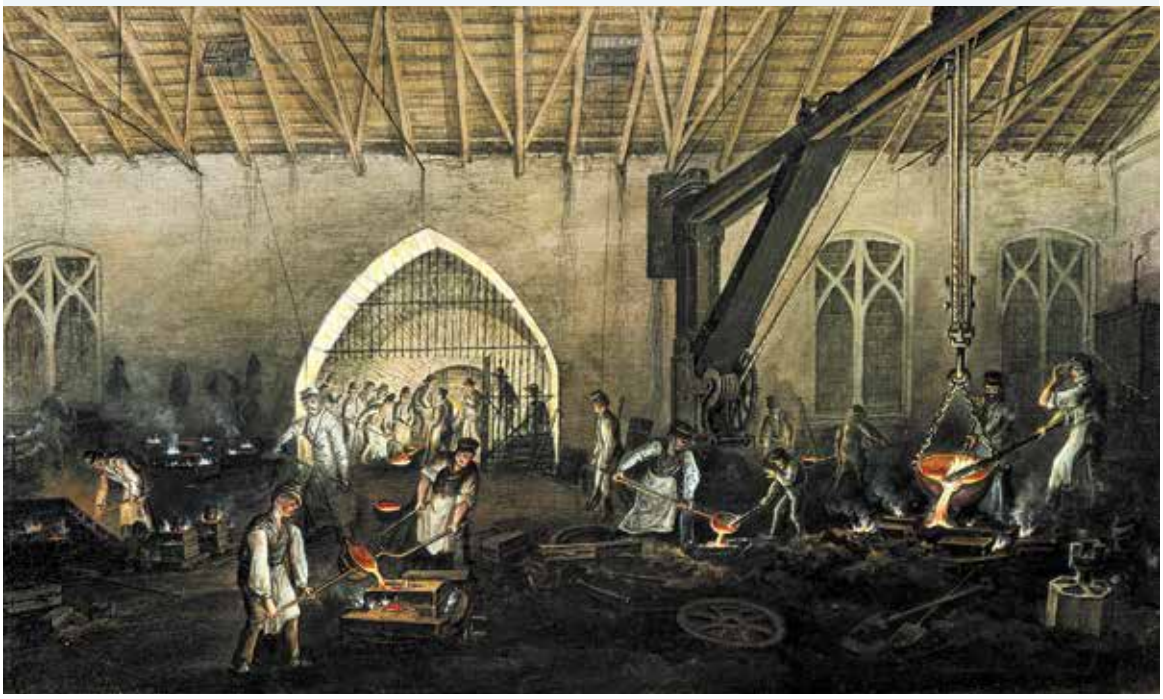
France

In France the first railways were begun in 1832. While these were financed by French entrepreneurs and banks, virtually all railway construction was carried out under the supervision of British engineers. Imported British locomotives were used until the 1850s, when French industry began to produce its own. Industrialisation progressed slowly during the nineteenth century in France, where agriculture remained the dominant economic activity.

Germany

Germany did not become a unified country until 1871. Industrialisation occurred initially in Prussia, the most powerful of the independent German states. With access to the rich coal and iron ore deposits of the Rhineland, the Prussians quickly established a thriving iron and steel industry. The first German railways were built in 1835 but, by 1850, the German states had built almost half as much railway track as in Britain, and twice as much as in France. After unification in 1871 Germany quickly expanded its industrial production; by the beginning of the twentieth century it was producing more steel than Britain.

SOURCE 1 Coloured lithograph, created in 1856, showing German iron smelting. Germany was to become Europe's largest iron and steel producer by 1900.



19.12.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. In what ways was Britain the dominant industrial power in the world in 1850?
2. How did the end of the Napoleonic Wars in 1815 contribute to the spread of industrialisation into Europe?
3. Describe the key features of the spread of the Industrial Revolution into France.
4. In what way was Germany able to overtake Britain in the industrialisation process by the beginning of the twentieth century?

Using historical sources as evidence

5. Source 1 shows a German iron foundry in 1856. What factors enabled Germany to rapidly expand its iron and steel production in the second half of the nineteenth century?

19.12.2 The United States is industrialised

The Industrial Revolution also spread quickly to North America. Following their independence from Britain in 1783, the Americans set about developing their own industries, with innovations of their own. In 1794 Eli Whitney developed the cotton gin, a machine for separating the seeds from raw cotton. Samuel Slater introduced the technology for water-powered textile production in 1793. The application of steam power to boats was pioneered by American inventors such as Robert Fulton in the early nineteenth century. Samuel Morse developed the telegraph in the 1840s, and Alexander Graham Bell was the first to patent a workable telephone in 1876. Both inventions were to revolutionise communications. As in Europe, the Americans were also quick to develop iron and steel industries, and to push through a network of railways during the nineteenth century.

SOURCE 2 Alexander Graham Bell was the first to patent a workable telephone. In this photograph, he is making the first call from New York to Chicago in 1892.

DID YOU KNOW?

By 1900 the United States had overtaken Britain as the world's leading industrial power. By this time the industrial output of the US was almost seven times what it had been in 1870. Large American corporations run by entrepreneurs such as Cornelius Vanderbilt, Andrew Carnegie and John D. Rockefeller were by then among the most prosperous in the world.

19.12.2 Activities

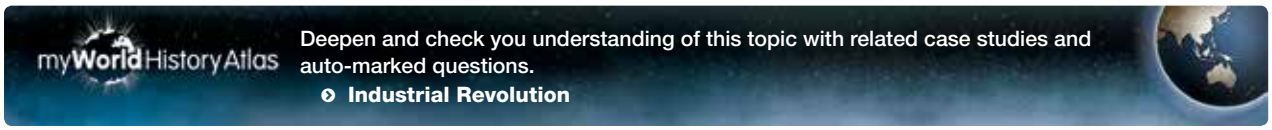
To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Give two examples of innovations contributing to industrialisation that were pioneered in the US.
2. How were American inventors able to contribute to the eventual development of worldwide communications networks?

Using historical sources as evidence

3. Identify another form of technology that Source 2 tells us was in common usage by the end of the nineteenth century.



19.12.3 Japan industrialises

From the early seventeenth century until 1868, Japan had largely turned its back on the outside world. However, in 1868, the newly installed Meiji Emperor decided that Japan should look to the west to modernise, and so began a series of reforms. He built up the navy and sent Japanese ships all around the world to trade. A modern communications system was set up, and railways were constructed to connect all of the major cities and towns. An education system was set up based on modern western knowledge and practices, and Japanese students travelled the world to learn of the latest technological developments. Japan learned from Britain about the significance of a successful textile industry, and quickly overturned the traditional home-based industry into modern factory production. By the beginning of the twentieth century, Japanese textiles were competing successfully on world markets. The Japanese also learned of the importance of importing raw materials and exporting finished products, and they established a successful iron and steel industry based largely on imported iron ore and coal.

SOURCE 3 Industrialisation was a key part of Japanese modernisation in the late nineteenth and early twentieth centuries.

Year	Japanese industrial growth 1875–1913		
	Coal production (metric tonnes)	Railway distances (kilometres)	Rolled steel production (metric tonnes)
1875	600 000	30	
1885	120 000	750	
1895	5 000 000	3500	
1901	10 000 000	5800	5 000
1905	13 000 000	7850	65 000
1911	19 000 000	10 500	184 000
1913	21 300 000	11 850	219 500

Adapted from http://www.sjsu.edu/faculty/watkins/meiji.htm and *The Cambridge History of Japan*, Volume 6 at p. 430

19.12.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Outline two aspects of industrialisation that the Japanese were able to learn from the established industrial powers.
2. Why did Japan concentrate so heavily on education in its modernisation program?

Using historical sources as evidence

3. Calculate the percentage growth between 1875 and 1913 of:
   (a) Japanese coal production
   (b) Japanese railway distances.
4. Japanese steel production only commenced in 1901. Construct a line graph demonstrating the growth in production between 1901 and 1913.

19.12 Putting it all together

Determining historical significance

1. Based on the experiences of Europe, the USA and Japan, identify three factors that you believe are necessary for a pre-industrial society to make the transition to an industrial society in a relatively short period of time.

19.13 SkillBuilder: Identifying continuity and change

online only

IDENTIFYING AND EVALUATING CONTINUITY AND CHANGE IN THE INDUSTRIAL REVOLUTION

The period of the Industrial Revolution brought more rapid change than had ever occurred previously anywhere in the world. It is important to be able to identify turning points that caused change, and to be able to describe the speed, rate and extent of the change by examining the significance of events, ideas, people and groups.

Go online to access:

- An explanation of the skill (Tell me)
- A step-by-step process to develop the skill, with an example (Show me)
- An activity to allow you to practise the skill (Let me do it)
- Questions to test your application of the skill (Applying skills)

19.14 Review

19.14.1 Review

This final subtopic provides a range of opportunities for you to review and respond through:

i. revising and checking your historical knowledge
ii. demonstrating your ability to apply historical concepts and skills.

Go online to access:

- A key chronology of events relevant to the topic
- A summary of the key knowledge presented in the topic
- A 'Big Questions' activity
- A multiple choice topic test
- Short answer or extended writing responses

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: Industrial Revolution: Technology timeline (int-2962)

19.13 SkillBuilder: Identifying continuity and change

19.13.1 Tell me

The importance of identifying continuity and change

We study history to help us understand the world around us and the society we live in. Our society never stands still, and change is all around us. Nevertheless, many elements of society have remained constant for long periods of time. By recognising those elements, and comparing them with those things undergoing rapid change, we can begin to understand the significance of those changes. For example, as we have seen in this topic, farming practices in Britain at the start of the eighteenth century had changed very little in over 600 years. This is an example of long-term continuity. During the eighteenth century, farming practices were revolutionised so that in less than 100 years there had been a complete change. It is the speed of that change that makes it so significant. The period of the Industrial Revolution brought more rapid change than had ever occurred previously anywhere in the world. It is important to be able to identify turning points that caused the change and to be able to describe the speed, rate and extent of the change, by examining the significance of events, ideas, people and groups.

19.13.2 Show me

How to identify continuity and change

We learn to identify periods of continuity and periods of change by examining a variety of historical sources. Contemporary writers and artists often record rapid change happening around them. Statistics from the period in question can often inform us of dramatic or significant change. Look back at the statistical tables in subtopics 19.6 and 19.9. In each case the figures demonstrate periods of significant change through the Industrial Revolution. They contrast with statistics from previous centuries that indicate very little change over long periods of time.

Examining an example: the growth of the railways

One dramatic change that occurred during the period of the Industrial Revolution was the development of the railways. In 1825 and 1830, the first railway lines were experiments in attempting to use steam power to transport goods and people. Within 50 years, railway lines criss-crossed all of Britain, and rail travel had become a major form of transport.

Consider the following question:

'To what extent did the development of the railways bring significant change to the way of life of people in Britain?'

We can begin to answer this question by examining the following historical sources.

What conclusions can we draw from these sources in response to the above question? Look first at Source 1.

What change occurred? These figures show us that one train hauling a number of goods wagons could carry 20 times the weight of goods as a horse drawn cart, and could cover 10 times the distance in a day.

SOURCE 1 Transport capability

Method of transport	Tonnage carried	Distance travelled in a day
Horse-drawn cart	2 tonnes	30 kilometres
Railways	40 tonnes	300 kilometres

SOURCE 2 Journey times from London (in hours)

Destination	By horse-drawn carriage (1836)	By train (1850)
Edinburgh	43	12
Liverpool	24	7
Exeter	18	5
Birmingham	11	3
Brighton	6	1.5

SOURCE 3 Total British railway length (in kilometres)

Year	Total length
1840	3000
1845	4000
1850	10 000
1860	14 000
1880	25 000
1900	30 000

SOURCE 4 Number of passengers carried

Year	Total population	Total number of passengers carried
1845	18 million	30 million
1900	32 million	1100 million

SOURCE 5 A description of a major railway junction on the outskirts of London in 1876

It is quite unnecessary to describe the Tenway Junction, as everybody knows it. From this spot, some six or seven miles distant from London, lines diverge east, west, and north, north-east, and north-west, round the metropolis in every direction, and with direct communication with every other line in and out of London. It is a marvellous place, quite unintelligible to the uninitiated, and yet daily used by thousands who only know that when they get there, they are to do what some-one tells them. The space occupied by the convergent rails seems to be sufficient for a large farm. And these rails always run one into another with sloping points, and cross passages, and mysterious meandering sidings, till it seems to the thoughtful stranger to be impossible that the best trained engine should know its own line.

Trollope, Anthony. *The Prime Minister*. [1876]

What was the impact of the change? This ultimately meant that both raw materials for factory production, as well as finished goods, could be transported more cheaply, because of the greater volumes and speed. It also meant that fresh food could be transported to the growing cities and still be fresh when it arrived, as the journey would not take much more than a day.

Conclusion: Access to cheaper goods and a greater variety of food would have brought significant change to the way of life of people in Britain.

Source 2 allows us to draw similar conclusions about the level of changes to people's way of life.

What change occurred? Before the nineteenth century, most people did not travel far from their hometown or village. The railway allowed people to travel more easily and quickly.

What was the impact of the change? With the ability to travel to other towns and cities in around a quarter to a third of the time, people could become more mobile and travel greater distances, to find work or for other purposes.

Sources 3 and 4 help us draw similar conclusions.

What change occurred? By the middle of the nineteenth century, most of Britain was accessible by rail with all major cities connected to each other. This rail network continued to expand, so that by the end of the century there was hardly anywhere in Britain that was more than a few kilometres from a railway line or a station.

What was the impact of the change? In 1845 the railways carried 30 million passengers, with a total population of 18 million – the equivalent of 1.6 rail journeys per head of population for the year. By 1900 this had grown to the equivalent of 34 rail journeys per head of population.

Conclusion: This level of usage is a clear indication of a major change in the way of life of the British people in little over half a century.

Anthony Trollope's description in Source 5 carries some additional implications.

What change occurred? Trollope was born in 1815, so was 60 years old when he wrote these words. He had grown up in the era before the railways, and had lived through the period of its greatest expansion.

What was the impact of the change? His description of the junction as a 'marvellous place' and 'quite unintelligible to the uninitiated' is an indication of his amazement at the rail system and the way it had grown so rapidly. Most people of his age would have had similar feelings about this new technology.

Conclusion: This extract also tells us how sophisticated the system had become by 1876, with large rail junctions controlling dozens of trains going in all directions across the country.

Each of these sources tell us of a revolutionary rail transport system that not only captured the imagination of people in Britain (and ultimately around the world), but brought major changes to people's way of life. So efficient and effective was rail transport that it is still a highly favoured means of transport today. The change that occurred rapidly in the nineteenth century remains as a continuity affecting us in the early twenty-first century.

19.13.3 Let me do it

SOURCE 6 A map of Britain showing the location of major coalfields

Source: Spatial Vision

Using the example above as a model, and Sources 6, 7 and 8, consider the following question:

'Explain the relationship between the following significant changes that occurred in Britain during the nineteenth century:

- improvements in coal mining
- the use of steam power
- the growth of the textile industry
- rapid increases in the population of particular cities.'

Consider the following questions in your answer:

What change occurred?

What was the impact of the change?

What conclusions can you draw about the individual change?

What conclusion can you draw about all the changes looked at together?

SOURCE 7 Number of cotton mills in Great Britain, 1787 and 1835

County	1787	1835		
		Operating	Empty	People employed
Berkshire	2	—	—	—
Cheshire	8	109	7	31 512
Cumberland	—	13	—	1 658
Derbyshire	22	93	3	11 585
Durham	—	1	—	33
Lancashire	41	683	32	122 415
Leicestershire	—	6	—	592
Middlesex	—	7	—	350
Nottinghamshire	17	20	—	1 723
Staffordshire	—	13	—	2 048
Westmorland	5	—	—	—
Yorkshire	11	126	—	11 211

Source: From R. Burn, *Statistics of the Cotton Trade* (1847), p. 26; in A. Aspinall and E. Anthony Smith (eds), *English Historical Documents*, XI, 1783–1832, Oxford University Press, New York, 1959, p. 512.

SOURCE 8 Population growth in major English cities 1750–1861

Town/City	1750 (estimated)	1801	1861
London	675 000	959 000	2 804 000
Bristol	45 000	64 000	154 100
Birmingham	24 000	74 000	296 000
Liverpool	22 000	80 000	443 900
Manchester	18 000	90 000	338 300
Leeds	16 000	53 000	207 200
Sheffield	12 000	31 000	185 200

Source: British census figures

19.13 APPLYING SKILLS

Identifying continuity and change

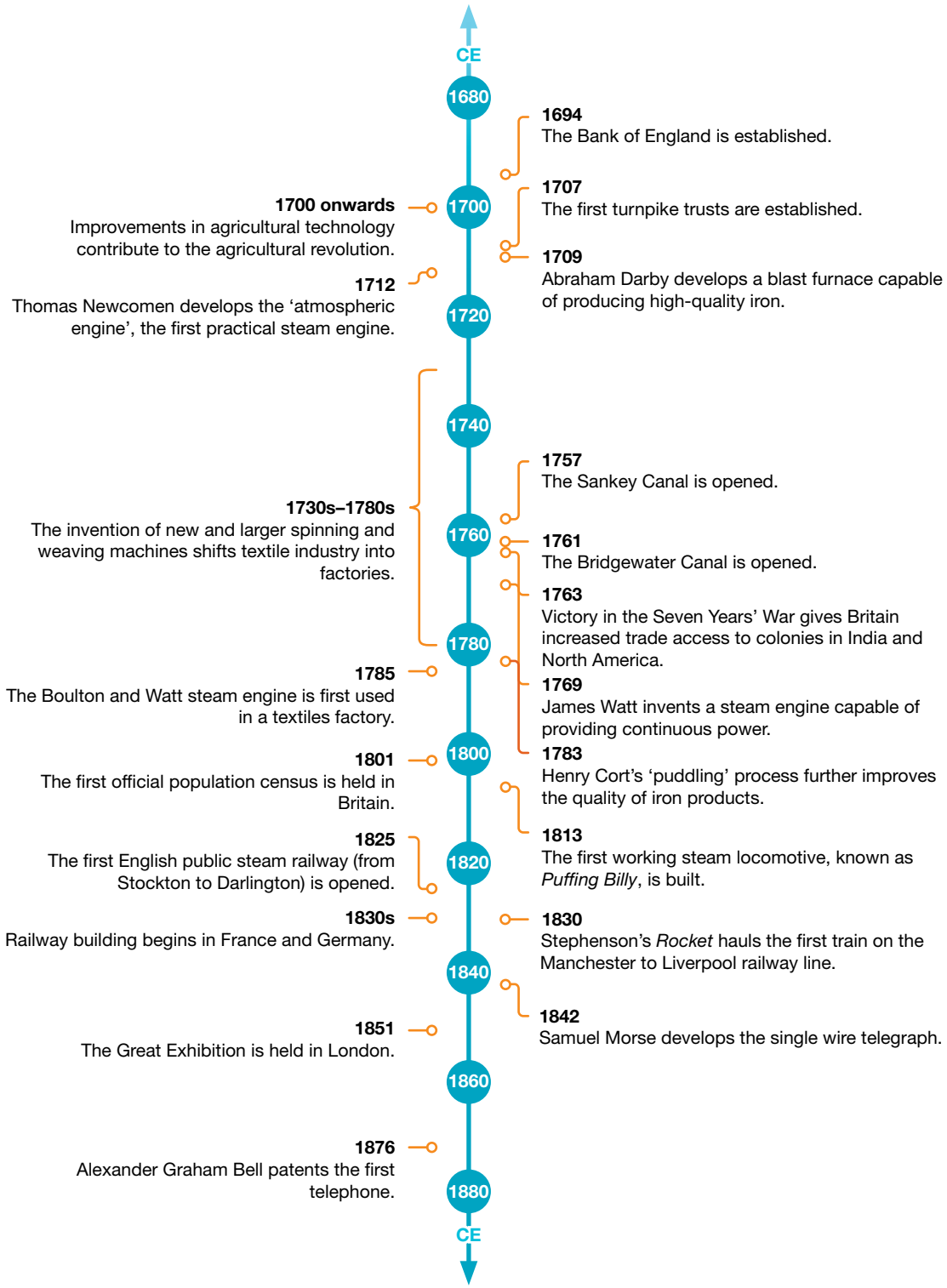
Based on what you have learned in this SkillBuilder:

1 Outline two changes caused by improvements in coal mining.
2 How did the development of steam power affect the location of textile factories?
3 What general conclusions about the changes in population patterns can you draw from the sources in this SkillBuilder?

19.14 Review

19.14.1 Review

Chronology: Timeline of technology and progress in the Industrial Revolution



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Try out this Interactivity: Industrial Revolution: Technology and progress timeline (int-2962)

Key knowledge: summary

19.2 Examining the evidence

- The term 'Industrial Revolution' was coined to describe the rapid changes that had occurred in Britain from the late eighteenth through the nineteenth century.
- New inventions that contributed to changes were usually patented, so we have details of these inventions and the years they were introduced.
- Contemporary writers and artists depicted the developments they saw around them during the changes brought by the Industrial Revolution.
- Census figures can provide us with details of population growth, as well as the locations of increased population.

19.3 Causes of the Industrial Revolution

- Technological developments were a major contributing factor to the growth of industrialisation in Britain during the eighteenth and nineteenth centuries.
- Changes in agriculture became an underlying cause of the Industrial Revolution, by contributing to population growth.
- Easy access to raw materials also contributed to the development of industrialisation in Britain.
- A wealthy middle class willing to invest in new production methods was another contributing factor.
- The development of transport systems assisted the movement of raw materials and finished products.
- The growth of empire provided a source of raw materials, as well as markets for the sale of finished products from British factories.

19.4 The agricultural revolution

- British agriculture had used the traditional open-field system, which had a number of disadvantages.
- Enclosure of farming land consolidated open fields into large farms, changing farming methods.
- New techniques in seed planting, ploughing and crop rotation improved the efficiency of farming and increased crop yields.
- Improved stock breeding methods also improved the quality of farm animals.
- The introduction of a business approach to farming provided farmers with the opportunity to sell surplus produce for a profit.

19.5 The growth of empire

- The British East India Company began trading with a number of Asian regions in the early seventeenth century, and eventually brought most of India under British control.
- The thirteen North American colonies and colonial possessions in the West Indies had become important parts of the British Empire by the middle of the eighteenth century.
- The Seven Years' War provided Britain with further opportunities to expand empire in both North America and India.
- The American Revolution eventually saw Britain lose the 13 colonies, but retain control of Canada.
- The empire became an important source of raw materials to fuel the Industrial Revolution in Britain.

19.6 Entrepreneurs, banks and the middle class

- The seventeenth century saw the rise of a powerful middle class in Britain, with strong commercial interests.
- The growth of the banking system provided middle-class merchants and factory owners with a source of finance to invest in new industrial processes.
- The British government strongly supported the growing commercial middle class, passing laws that favoured trade and commerce.
- The middle class developed strong entrepreneurial attitudes which made them willing to embrace new methods of production.

19.7 The population explosion

- Prior to the eighteenth century, the British population had been kept fairly stable because of regular reappearances of the plague, as well as recurring famines.
- Improvements in medical science and the eradication of the plague saw a steady increase in the British population during the first half of the eighteenth century.
- Improvements in farming led to a more regular food supply, which contributed to a population explosion from the mid-eighteenth century onwards.
- The rapid rise in population provided a market for new cheap industrial goods, as well as a workforce for the new factories.

19.8 Power: from horses, wind and water to steam

- Horses had been a traditional source of power in medieval Europe, both for personal transport and the haulage of goods.
- Horse power was used for agricultural machinery and to haul barges along newly constructed canals.
- Water power had traditionally been used for milling of grain, and it became the first power source for newly built factories.
- Wind power was another traditional source of power in Britain.
- Steam power proved to be a great advance for both mining and manufacturing by providing a reliable means of driving machinery.

19.9 Making textiles: from home to factory

- Until the eighteenth century, textile manufacturing had been carried out in the homes of farm workers.
- During the eighteenth century, larger and more efficient spinning and weaving machines were developed and needed factories to house them.

19.10 Coal and iron

- Coalmining had traditionally taken place in bell pits, but these could not be made very deep because they would soon flood with water.
- The introduction of steam-driven pumps to pump out the surplus water allowed for larger, deeper coalmines, and a consequent increase in coal production.
- The use of coke in blast furnaces resulted in the improvement in quality of the iron produced.
- New techniques such as ‘puddling’ produced a stronger, more flexible form of iron, leading to an increased variety of uses.

19.11 Canals, roads, railways and shipping

- Large factories needed reliable transportation to bring raw materials, and to distribute the goods produced to the marketplace.
- The building of canals to supplement river and coastal transport provided quick and efficient movement of goods.

- The establishment of turnpike trusts in the latter part of the eighteenth century saw improvements to the maintenance of roads.
- The use of steam to drive locomotives revolutionised transport in Britain after 1830.

19.12 Industrial innovation spreads to the world

- With the end of the Napoleonic Wars, countries in Europe became more interested in adopting many of the industrial techniques pioneered in Britain.
- France and Germany began to industrialise during the 1820s, and began building their own railways during the 1830s.
- The United States had begun to industrialise soon after its break from Britain in the early 1780s, and American inventions were to revolutionise communications during the nineteenth century.
- Following the Meiji restoration, Japan looked to the west and soon adopted industrialisation as a means of modernising its economy.

19.14.2 Respond

Using historical sources as evidence

SOURCE 1 Pittsburgh in the US became a major centre for steel production in the nineteenth century.

SOURCE 2 Distribution of the world's manufacturing production, 1870 and 1913 (as a percentage of world total)

	Great Britain	US	Germany	France	Russia	Italy	Canada	Belgium	Sweden	Japan	India	Other countries
1870	31.8	23.3	13.2	10.3	3.7	2.4	1.0	2.9	0.4		11.0	
1913	14.0	35.8	15.7	6.4	5.5	2.7	2.3	2.1	1.0	1.2	1.1	12.2

Source: From Fordham University Internet Modern History Sourcebook, www.fordham.edu/halsall/mod/indrevtabs1.html.

1. Examine Source 2. Great Britain's share of world manufacturing production dropped from 31.8 per cent to 14 per cent between 1870 and 1913. Does this mean that Britain was producing less in 1913 than in 1870? Explain your answer.
2. Identify the country that increased its manufacturing output by the greatest amount in the period covered by this table.
3. What is the total percentage of manufacturing production that can be clearly identified as occurring in Europe and North America?
4. In the late nineteenth century one Asian country set out to change from a rural to an industrialised society. Identify that country from Source 2, and explain how you came to this conclusion.

5. The city of Pittsburgh (see Source 1) became a major centre for American steel production in the nineteenth century. Identify three features that Pittsburgh and its surrounding area must have had to become a successful steel-producing centre.

Analysing cause and effect

1. Examine Source 1.
   (a) What were enclosures?
   (b) How did they change who had control over farming land?
   (c) What sort of changes in farming practices could have been introduced as a result of these enclosures?
2. Examine Source 2 and Source 3.
   (a) What do you think was the cause of this increase in wheat exports?
   (b) How would you explain the improvement in body weights of animals sold for meat production?
3. Examine Source 4.
   (a) Explain a possible causal relationship between the data contained in Sources 2 and 3, and the data contained in Source 4.
   (b) Using the data contained in all four sources, prepare an answer to the following question: 'In what ways did the enclosure of farmland in Britain during the eighteenth century contribute to a dramatic increase in the population?'

SOURCE 1 Enclosures in Britain

Years	Area subject to enclosure (hectares)
1727–1760	30 000
1761–1792	194 000
1793–1815	405 000

Source: From P. Deane, *The First Industrial Revolution*, Cambridge, 1967, p. 43.

SOURCE 2 British wheat exports

Year	Wheat exports (kilograms)
1705	150 million
1765	1235 million

Source: From The Open Door Web Site, www.saburchill.com/history/chapters/IR/003f.html.

SOURCE 3 Improvements in livestock

Year	Average weight of sheep sold at market (kilograms)	Average weight of cattle sold at market (kilograms)
1710	13	167
1795	36	360

Source: From The Open Door Web Site, www.saburchill.com/history/chapters/IR/005.html.

SOURCE 4 British population growth

Year	Population
1761	6 146 000
1801	8 893 000
1821	12 000 000

Source: From J. Gardiner and N. Wenborn (eds), *The History Today Companion to British History*, London, 1995, p. 610.

Responding to the big questions

At the beginning of this topic several big questions were posed. You can now apply what you have learned to answer them.

1. Why did the agricultural revolution, wealthy middle class, cheap labour, transport system, and expanding empire cause the Industrial Revolution in Britain?
2. How important was the British Empire, and the raw materials it provided, in influencing the growth of industrialisation?
3. What were the major changes in technology that accompanied the Industrial Revolution and led to the growth of factories and cities?
4. What innovations did Britain develop that later spread to other parts of the world, such as Europe, USA and Japan?
5. What was the role of the Industrial Revolution in creating a growing need for labour and transportation?

TOPIC 20
The impact on people: Industrial revolution (1750–1914)

20.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

20.1.1 Links with our times

When a new suburb is established today, roads and footpaths are built, services such as water and electricity are connected, and underground pipes are installed to take away sewage and stormwater. A range of laws determine wages and conditions, health and safety is closely regulated and it is illegal to employ children under 15. The situation was very different 200 years ago, as seen in the image to the right. Housing was often shoddily built, workplaces dangerous and children as young as four could be working in mines or factories.

A timeline of changes during the Industrial Revolution

CE

1790

1795
Food riots in parts of England protest high bread prices.

1799–1800
Parliament passes the Combination Acts, making trade unions illegal.

1800

1810

1811–13
Luddites engage in damaging textile machines.

1819
Parliament passes a Factory Act limiting hours of factory work by children.

Large numbers of protesters are killed or injured in the Peterloo Massacre.

1820

1824
The Combination Acts are repealed, allowing workers to form trade unions.

1830
The 'Swing Riots' result in damage to farm machinery in parts of rural England.

1830

1833
Parliament passes a Factory Act banning children nine years and younger from working in factories.

1834
The Poor Law Amendment Act forces the poor to live in workhouses.

1840

1842
The Mines Act bans the employment in coalmines of girls and women, and boys under the age of 10.

The six 'Tolpuddle Martyrs' are transported to Van Diemen's Land for swearing an oath of loyalty to their trade union.

1850

1848
The Public Health Act sets up Boards of Health to deal with sanitation problems in cities and towns.

1860

1871
The Trade Union Act gives unions official legal status.

1870

1874
Parliament passes a Factory Act, setting maximum allowable working hours per week for all workers.

1875
The Public Health Act extends the powers of Health Boards to control water supply and sewerage systems.

1880

CE

Big questions

1. What was the impact on towns and cities as people moved away from the countryside to find employment in factories?
2. How were men, women and children affected by changes in working conditions in factories, mines and on farms?
3. How did the growth of factories and cities affect the environment and people's living conditions?
4. To what extent did social unrest lead to the growth in the trade union movement and support for movements such as Chartism?
5. How did the changes in economic and social circumstances lead to the development of new ideas and proposals for reform and improvement?

Starter questions

1. How would you react if your way of life, was taken away from you and you had to move somewhere else to do a job you hated?
2. What do you think might happen if there were no laws enforcing health and safety in the workplace?
3. Why do we have laws today that prevent children under the age of 15 from being employed?
4. What are some of the problems that might occur if large numbers of people move into a town or city over a short period of time?

INQUIRY SEQUENCE

20.1	Overview		436
20.2	Examining the evidence		438
20.3	The impact of enclosure		440
20.4	Conditions in factories and mines		445
20.5	Child labour		449
20.6	Urban conditions and people's health		453
20.7	Poor laws and workhouses		455
20.8	Social unrest and trade unions		459
20.9	The growth in ideas		463
20.10	Reformers and progress		470
20.11	**SkillBuilder:** Analysing different perspectives	online only	474
20.12	**Review**	online only	474

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Complete this digital doc: Worksheet 20.1 Recognising different perspectives

20.2 Examining the evidence

20.2.1 How do we know about life during the Industrial Revolution?

In this topic we will look at the effects of the Industrial Revolution on many of the ordinary people in Britain. These were the people who worked in factories and mines and lived in the towns that sprang up around these workplaces. Many of them had lost access to their livelihood because of the enclosure of traditional farming land and had suddenly been thrown into poverty.

Contemporary writers and commentators

It was natural that writers of the eighteenth and nineteenth centuries would comment on the rapid changes that took place in Britain at the time.

The enormous changes in technology, the development of large factories, the rapid growth of cities and dramatic changes in methods of transportation all happened within little more than one lifespan. While some writers set out to record **impartial observations** of the changes happening around them, many others gave **biased accounts**. Charles Dickens wrote about the working and living conditions of the factory workers and the poor in novels such as *Oliver Twist, Hard Times* and *Little Dorritt*. Others such as Karl Marx and Friedrich Engels used their observations as a basis for attacks on the political system of Britain. By contrast, supporters of the changes to agriculture and industry gave glowing accounts of the economic benefits of these changes, while ignoring the negative effects on workers and their families.

SOURCE 1 This painting appeared on the cover of a modern edition of Charles Dickens' novel *Hard Times*.

SOURCE 2 An illustration from a nineteenth-century edition of *Oliver Twist*. Charles Dickens used his novels to publicise the social problems of his time.

Government statistics

In the eighteenth and nineteenth centuries the government began to collect statistics on all aspects of British life. As well as total figures for population growth, census figures recorded changes in the numbers of people living in large towns and cities compared with those living in the country. Records of birth and death rates in cities and rural areas can provide information about the health of the people. Wage levels, when compared with the prices of food, clothing materials and housing, can give us information on people's standard of living. All statistics require interpretation, but when combined with other evidence they can often add much to our picture of the past.

Records of government inquiries

The rapid social changes taking place in Britain in the nineteenth century sometimes prompted the government to set up special inquiries to investigate the effects of the changes. Written records include evidence given by witnesses to these inquiries. Many of these witnesses described their own experiences, while others gave accounts of incidents and conditions they had observed. The findings of these inquiries would later be published in reports, and this material also survives today in official government records.

SOURCE 3 Testimony of Thomas Wilson, Esq., of the Banks, Silkstone, owner of three collieries, before the 1842 Mines Commission

I object on general principles to government interference in the conduct of any trade, and I am satisfied that in mines it would be productive of the greatest injury and injustice. The art of mining is not so perfectly understood as to admit of the way in which a colliery shall be conducted being dictated by any person, however experienced, with such certainty as would warrant an interference with the management of private business. I should also most decidedly object to placing collieries under the present provisions of the Factory Act with respect to the education of children employed therein.

Paintings and drawings of contemporary artists

Given the dramatic impact of these events on people's lives, it is not surprising that artists were keen to document the changes they saw happening around them. Surviving paintings and drawings can give us further insights into the conditions in which people lived.

SOURCE 4 *Coalbrookdale by Night*, painted around 1800 by Philip James de Loutherbourg

20.2 Putting it all together

Using historical sources as evidence

1. Coalbrookdale was a coalmining and iron-smelting town in the english midlands.
   (a) From an examination of Source 4, describe what you think it would have been like to live in this town.
   (b) Do you think the artist had a favourable or unfavourable opinion of the town? explain your answer.
2. Identify two ways in which you might be able to detect whether or not a writer, painter or witness at a government inquiry is biased or impartial in their presentation of information.
3. What strategy could you use to ensure that you get the most accurate information about the past?

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Complete this digital doc: Worksheet 20.2 Profits for some, poverty for many

20.3 The impact of enclosure

20.3.1 Changes in population

The enclosure movement and the accompanying changes in agriculture led to an improvement in the quality and quantity of food produced in Britain (see subtopic 19.4). Not everyone benefited from these changes, however. Farm labourers were often worse off as a result of the changes.

Agricultural change that accelerated during the eighteenth century enabled Britain to support a larger population. Most of this population growth occurred in the growing towns and cities. Population statistics tell us that from the second half of the eighteenth century rural population growth slowed when compared with urban population growth (see Source 1).

SOURCE 1 Urban and rural population growth in England and Wales, 1751–1861

Year	Total population	Urban population	Rural population	Urban (%)	Rural (%)	Urban increase	Rural increase	Urban increase (%)	Rural increase (%)
1751	5772000 (estimated)	1443000 (estimated)	4329000 (estimated)	25.00 (estimated)	75.00 (estimated)	—	—	—	—
1801	8893000	3009000	5884000	33.84	66.16	1566000	1555000	108.52	35.92
1821	12000000	4805000	7195000	40.04	59.96	1796000	1311000	59.69	22.28
1841	15914000	7693000	8221000	48.34	51.66	2888000	1026000	60.10	14.26
1861	20066000	11784000	8282000	58.73	41.27	4091000	61000	53.18	0.74

20.3.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Outline one major cause of the increase in population in Britain during the eighteenth and nineteenth centuries.

Using historical sources as evidence

2. Examine Source 1 and answer the following questions, providing evidence from the statistics.
   (a) Was the rural population rising or falling in the period from 1751 to 1861?
   (b) During which period did the urban population experience the greatest increase in actual numbers?
   (c) Between 1751 and 1801 the urban and rural populations grew by a similar number – a little over 1.5 million each. Why does the table show such a huge difference in the *percentage* increase in urban compared to rural population growth during this period?
   (d) In approximately which year would urban and rural populations have each formed 50 per cent of the population?
   (e) If the trends shown in the table continued beyond 1861, what would you expect the statistics for 1881 to show?

20.3.2 The impact on people in the countryside

The owners of farms and large estates throughout Britain benefited enormously from enclosure and other changes to agriculture. Running a farm in a more businesslike manner usually brought good profits, and many landowners became very wealthy during this period. On the other hand, there is evidence to suggest that many in the countryside suffered greatly as a result of these changes.

Before enclosure, labourers living on rural estates had some independence and did not rely only on their wages. They were free to gather firewood from the estate, to keep a cow or pig they could graze on common land, and to raise a small crop of their own. Enclosure removed all these benefits, so the labourer was forced to rely on wages alone. In addition, the opportunity to earn extra money from spinning yarn and weaving cloth disappeared with the growth of textile factories.

Most farm labourers were employed on a casual basis. They were paid a daily rate, according to how much work they did. If the employing farmer had no work on any particular day, the labourer did not get paid. If crops were poor in any given year, a smaller harvest would result in less work for the farm labourer.

The Speenhamland system

Food shortages and low wages in the 1790s meant that many rural families were very poor, and often close to starvation. As we will see in subtopic 20.7, looking after the poor was very much a local problem, with each village community required to look after its own. In 1795, in the village of Speenhamland in Berkshire, in south-east England, a system was devised to help the poor. It involved providing a subsidy to poor families, calculated using a formula based on the price of bread, the level of wages and the number of children in a family.

The formula was used to calculate an amount by which the wages of farm labourers could be topped up to prevent the family from starving. The money was raised by requiring landowners to pay an amount into a central fund, controlled by the local overseer of the poor. In the early stages it was quite successful and it was soon copied by other villages throughout England.

The longer the Speenhamland system remained in place, the less successful it became. Before long, many wealthy farmers realised they could pay low wages because they knew the overseer of the poor would make up the difference. On the other hand, some landowners were having to pay higher and higher amounts into the central fund to cover the increased subsidies to labourers. Many small landowners had to sell their land to cover this cost, and they became labourers themselves.

The system was very demoralising for labourers, for no matter how hard they worked, their wages were never sufficient to support a family, and this forced them to rely on charity. More and more people became dependent on the system, which cost landowners increasing amounts. The Speenhamland system was eventually abolished in 1834.

SOURCE 2 While wealthy farmers benefited from enclosure of their farms, poor farm labourers and their families often suffered.

SOURCE 3 From F. Moore, *Considerations on the Exorbitant Price of Proprietors*, 1773

In passing through a village near Swaffham in the county of Norfolk a few years ago … I beheld the houses tumbling into ruins, and the common fields all enclosed; … I was informed that a gentleman of Lynn had bought that village and the next adjoining to it; … he had thrown one into three, and the other into four farms; which before the enclosure were in about twenty farms; and upon my further enquiring what was becoming of the farmers who were turned out, the answer was that some of them were dead and the rest were become labourers.

SOURCE 4 From D. Davies, *The Case of the Labourers in Husbandry*, published in 1795

… for a dubious economic benefit, an amazing number of people have been reduced from a comfortable state of partial independence to the precarious condition of mere hirelings …

20.3.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Which group in society appears to have benefited most from enclosure? In what ways did this group benefit?
2. What benefits did farm labourers lose as farms were enclosed?
3. Give two reasons why a farm labourer's wages might vary greatly from week to week or season to season.
4. What was the aim of the Speenhamland system?
5. Why did the Speenhamland system ultimately fail?

Using historical sources as evidence

6. In what ways do Sources 2 and 3 demonstrate that different groups of people were affected differently by the enclosure movement?
7. Explain what the writer in Source 4 means when he writes that farm labourers were reduced from a state of 'partial independence to the precarious position of mere hirelings'.

20.3.3 Protests and riots

Conditions in many rural areas became so bad for poor farm labourers that some were driven to extreme action to survive, and to try and protect their traditional way of life.

The food riots of 1795

By the 1790s most country people had to buy food using the wages they earned working on the enclosed farms. Bad weather in 1794–95 had seriously reduced wheat crops throughout Britain. In addition, Britain was at war with France, so importing grain was more difficult than usual. This shortage led to a steep rise in the price of wheat, forcing up the cost of bread. High prices led to protests, known as the 'food riots', in various parts of the country.

SOURCE 5 From the *Ipswich Journal*, August 1795

' … a band of women … entered various houses and shops, seized all the grain, deposited it in the public hall, and then formed a committee to regulate the price at which it should be sold.'

DID YOU KNOW?

The food riots of 1795 involved very little violence. In most cases the rioters took control of the distribution of food, selling it at what they thought was a fair price, and handing the proceeds over to the owners.

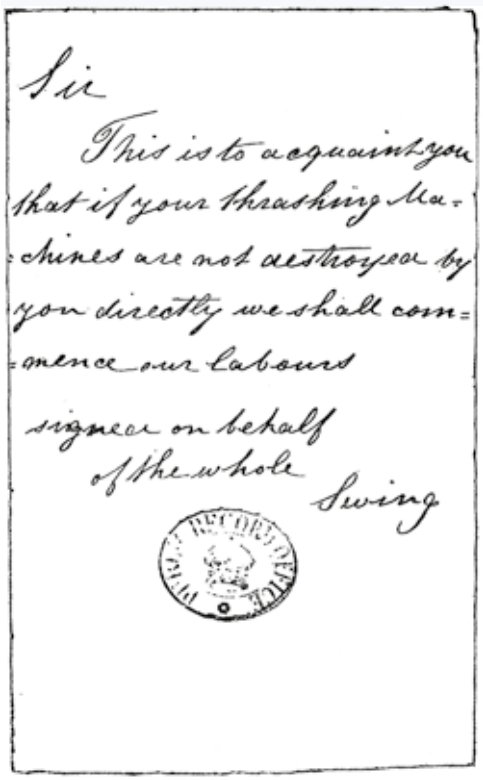
Swing Riots of 1830

In the 1820s the increasing use of labour-saving technology such as the threshing machine (see subtopic 19.8) forced large numbers of labourers and their families into poverty. This placed pressure on the systems in place to care for the poor (see subtopic 20.7). In 1830 riots broke out in the south and east of England. The rioters were usually unemployed farm workers, who would burn down haystacks (see Source 6) and damage the farm machinery they blamed for their hardship. The unrest became known as the Swing Riots because wealthy farmers were sent threatening letters signed by a Captain Swing. It was a name made up by rioters in the county of Kent, but its use soon spread to other parts of England.

SOURCE 6 Burning of haystacks at night was one tactic of the Captain Swing rioters.

The authorities came down very heavily on the rioters when they were caught. Records show that 19 were executed and another 505 were sentenced to transportation to the Australian colonies.

SOURCE 7 Letters threatening to destroy threshing machines were often signed by the fictitious Captain Swing.



Sir

This is to acquaint you that if your threshing Machines are not destroyed by you directly we shall commence our Labours

signed on behalf of the whole

Swing

SOURCE 8 The authorities actively hunted down those involved in the Swing Riots of the early 1830s.

Ten Pounds REWARD.

WHEREAS late last Night, or early this Morning, the Premises of Mr. RICHARD MARSH, of the Parish of RIPPLE in the County of Kent, were unlawfully entered by some Person or Persons at present unknown, and a

Thrashing Machine

THEREIN WAS

Feloniously Broken and Destroyed;

THIS IS THEREFORE TO GIVE NOTICE, --- THAT active Exertions are now making to discover the Offender or Offenders, and a REWARD of TEN POUNDS is hereby offered to be paid by the said RICHARD MARSH, to any Person who will give such Information as will lead to the Conviction of such Offender or Offenders.

Ripple, 5th August, 1831.

DEVEREUX, PRINTER AND BOOKBINDER

20.3.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Describe two factors that led to the high price of bread in 1795.
2. Why had large numbers of farm workers been reduced to poverty by the 1820s?
3. How did these workers respond to their hardship?
4. What was the origin of the name 'Swing Riots'?

Using historical sources as evidence

5. What does Source 5 tell us about the nature of the food riots of 1795?
6. While most of the Swing rioters' anger was directed at threshing machines (see Sources 7 and 8), why do you think they would have engaged in burning haystacks as well?
7. What does the writer in Source 7 mean when he says 'we shall commence our labours'?

20.3.4 A surviving open-field village

Despite the widespread enclosure of farming land in the eighteenth and early nineteenth centuries, some examples of open-field farming survived. One example is the village of Laxton in Nottinghamshire, in the English Midlands. While farming is carried out using some modern methods — the tractor has long ago replaced the horse-drawn plough — many features of the open-field system remain. The three open fields

SOURCE 9 The open field land around the farms forming the English village of Laxton were never fully enclosed and still operate the traditional three-field rotation system managed by a Court Leet and Jury.

are divided into strips as they were in medieval times, and nearly everyone in the village has rights to some of the land, with everyone having grazing rights on common land. The village is said to be prosperous, and the villagers are very proud of their heritage. The village and its farming practices have become an educational resource for both school and university students. The University of Nottingham even has a website dedicated to the village and its farming practices.

20.3.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What features of the traditional open-field system have been retained by the village of Laxton in England?
2. Other than the use of tractors, what other modern methods could be employed by the farmers of Laxton that wouldn't disrupt their open-field system?

Using historical sources as evidence

3. Examine Source 9.
   (a) Describe two features that you can see as evidence of the open-field system.
   (b) Explain why the villagers would have been proud of their system of farming.

20.3 Putting it all together

Using historical sources as evidence

1. From the information provided in this spread, do you believe the food riots of 1795 were justified? Identify one piece of information from the sources that would convince you to either support or oppose the activities of the protesters.

Identifying continuity and change

2. Given the negative effects of enclosure on many of the people, do you believe it would have been better to retain the open-field system as the village of Laxton did? Give reasons for your answer. (You may need to refer back to material in topic 19 to examine both sides of this issue.)

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Complete this digital doc: Worksheet 20.3 Living and working conditions in the towns

20.4 Conditions in factories and mines

20.4.1 Inside a textile factory

Australian employees today are protected by Occupational Health and Safety laws. These laws place a legal obligation on the employer to provide a safe and healthy workplace. At the time of the Industrial Revolution no such laws existed, and workplaces such as factories and mines could be dangerous and unhealthy places.

An early nineteenth-century textile factory was a dangerous and unpleasant place to work. Long working hours — 12 hours or more per day — were common practice. Poor light and ventilation and excessive heat made working conditions very uncomfortable. Machines were not fenced off and had no safety guards around moving parts, so workers were always at risk of injury. Children were often employed to climb under or between machines to keep them operating, so they were in particular danger.

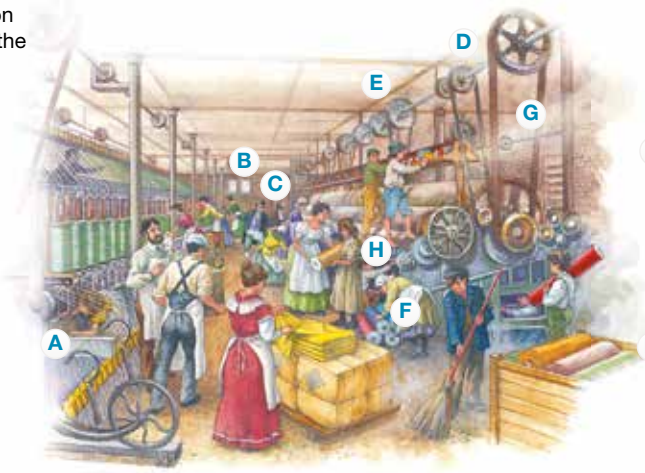
SOURCE 1 An early nineteenth-century textile mill was a dangerous and unhealthy place to work.

A Some children were employed as 'scavengers': they would collect loose pieces of cotton from under machines while the machines were running.

B Small windows and lack of ventilation made the factory air hard to breathe.

C Overseers would punish anyone responsible for slowing or stopping the machines for any reason.

D Machines were driven by belts attached to drive shafts that were powered by a water wheel or steam engine.



E Machines had no safety fences or guards around them, so workers were always at risk of injury.

F Constant bending and working in cramped conditions often led to physical deformities in factory workers.

G Dust and other residues from the cotton found their way into the workers' lungs, causing severe illness.

H Some children were employed as 'piecers': they had to repair broken threads on spinning machines while the machines were still running.

SOURCE 2 From an interview with James Patterson, a factory worker, before a parliamentary committee, June 1832

I worked at Mr. Braid's Mill at Duntruin. We worked as long as we could see. I could not say at what hour we stopped. There was no clock in the mill. There was nobody but the master and the master's son had a watch and so we did not know the time. The operatives were not permitted to have a watch. There was one man who had a watch but it was taken from him because he told the men the time.

SOURCE 3 From an interview with former factory worker Sarah Carpenter, published in *The Ashton Chronicle*, 23 June 1849

There was a young woman, Sarah Goodling, who was poorly and so she stopped her machine. James Birch, the overlooker, knocked her to the floor. She got up as well as she could. He knocked her down again. Then she was carried to the apprentice house. Her bed-fellow found her dead in bed. There was another called Mary. She knocked her food can down on the floor. The master, Mr. Newton, kicked her where he should not do, and it caused her to wear away till she died. There was another, Caroline Thompson. They beat her till she went out of her mind.

SOURCE 4 From the testimony of Dr Michael Ward before a parliamentary committee, 25 March 1819

I have had frequent opportunities of seeing people coming out from the factories and occasionally attending as patients. Last summer I visited three cotton factories with Dr. Clough of Preston and Mr. Barker of Manchester and we could not remain ten minutes in the factory without gasping for breath. How is it possible for those who are doomed to remain there twelve or fifteen hours to endure it? If we take into account the heated temperature of the air, and the contamination of the air, it is a matter of astonishment to my mind, how the work people can bear the confinement for so great a length of time.

20.4.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why were early nineteenth-century textile factories unpleasant places to work?
2. Why were children in these factories in particular danger?

Using historical sources as evidence

3. Examine Source 1 and answer the following.
   (a) Identify two examples of the unhealthy nature of the atmosphere in the factory.
   (b) Identify two examples of the work carried out by children in the factory.
   (c) What was the method used to drive the machines?
   (d) How do we know that factory owners were not interested in the safety of their workers?
4. Explain why factory owners would not want their employees to have access to a clock or watch, as indicated in Source 2.
5. Examine Source 3. How were factory workers punished for stopping their machines, or not following factory rules?
6. What does Source 4 tell us about working conditions in a typical textiles factory in 1819?

20.4.2 Working in the coalmines

As the development of steam engines allowed for the pumping of water from mines, these mines became much deeper, and more hazardous for mine workers. Problems included:

- inadequate ventilation
- the presence of explosive gases
- the need to haul the coal greater distances to the surface.

The lack of ventilation could lead to miners breathing in poisonous gases or coal dust, both of which could lead to serious lung disease. Other gases were likely to explode when exposed to the flame of a miner's lamp, causing death through cave-ins of shafts and tunnels.

SOURCE 5 Coalmines were dark, dangerous places, where miners were exposed to many risks.

Who worked in the mines?

In the early days of deep-pit mining, coal was mined and brought to the surface using human muscle rather than machinery. Whole families were often employed in coalmines. Fathers and sons would 'hew' (cut) the coal with picks, while mothers and daughters 'hurried' (carried) the coal to the surface. This was done in a number of different ways. Sometimes the younger girls would crawl along narrow tunnels, towing a small cart loaded with coal. Older girls and women would climb ladders and steps with baskets of coal on their backs. These baskets were held in place by a strap around the head, wearing away hair and skin.

SOURCE 6 In the early days of deep-pit mining, human muscle was used to 'hurry' carts of coal through narrow passages, as shown in this nineteenth-century artwork.

SOURCE 7 Older girls and women had the hazardous task of hauling baskets of coal up narrow ladders.

DID YOU KNOW?

Because of the hot working conditions in the coalmines, miners wore little or no clothing. When Parliament passed the Mines Act in 1842, the moral question of women and men working together in these circumstances was an important issue. The record of the debates in Parliament indicates that the fact that young girls were working in the presence of 'near naked' men was seen to be a bigger problem by members of Parliament than the harsh working conditions.

20.4.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why did mining become more dangerous as mines became deeper?
2. In what ways might all members of a family be engaged in coalmining?

Using historical sources as evidence

3. From the images in Sources 5, 6 and 7, identify and explain three possible sources of injury to mine workers.

20.4.3 The Mines Commission, 1840–42

In 1840 the British Parliament established a commission to inquire into working conditions in the mines. Over the next two years, many mine workers were called to give evidence, recounting their personal experiences. As a result of the findings of the commission, Parliament passed the *Mines Act 1842*. This changed the law to prevent all girls and women, and boys under 10, from working underground in the mines.

SOURCE 8 Testimony of Isabel Wilson, aged 38, before the 1842 Mines Commission

I have been married 19 years and have had 10 [children]; seven are [alive]. When [I worked in the mines] I was a carrier of coals, which caused me to miscarry five times from the strains, and was [very] ill after each … [My] last child was born on Saturday morning, and I was at work on the Friday night. Once I met with an accident; a coal broke my cheek-bone, which kept me idle some weeks. I have [worked] below 30 years, and so has my husband; he is getting touched in the breath now.

SOURCE 9 Testimony of Jane Johnson, aged 26, before the 1842 Mines Commission

I could carry 2 hundredweight [just over 100 kilograms!] when 15 years of age but I now feel the weakness upon me from the strains. I have been married near 10 years and had 4 children; have usually (worked) till within one or two days of the children's birth. Many women lose their strength early from overwork and get injured in their backs and legs; was crushed by a stone some time since and forced to lose one of my fingers.

SOURCE 10 Testimony of Agnes Kerr, aged 15, before the 1842 Mines Commission

… [I] make 18 to 20 journeys a-day; a journey to and fro is about 200 to 250 fathom [one fathom equals 1.8 metres]; have to ascend and descend many ladders; can carry 1.5 hundredweight [approximately 76 kilograms]. I do not know how many feet there are in a fathom …: know the distance from habit; it is sore crushing work; many lassies cry as they bring up the burdens. Accidents frequently happen from the tugs breaking and the loads falling on those behind and the lasses are much (inflicted) with swelled ankles. I cannot say that I like the work well; for I am obliged to do it.

20.4.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. In addition to mine workers, who else might have been called to give evidence before the Mines Commission of 1840–42?
2. What were the consequences of the findings of the commission?

Using historical sources as evidence

3. Did pregnant women receive any special treatment while working in the mines? Support your answer with evidence from Sources 8 and 9.
4. In Source 8, Isabel Watson describes her husband as being 'touched in the breath'. Explain what you think she means by this statement.
5. From information in Source 10, calculate the total distance that Agnes Kerr travelled each day while working in the mines, and the total weight of the coal she 'hurried' each day.

20.4 Putting it all together

Using historical sources as evidence

1. Examine the individual eyewitness accounts in Sources 2, 3, 4, 8, 9 and 10. For each source, explain why you find the testimony believable or not believable.
2. Most of these sources were evidence given before parliamentary committees or commissions. Why do you think the British Parliament carried out so many inquiries into working conditions at this time?

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Complete this digital doc: Worksheet 20.4 Children and their chores

20.5 Child labour

20.5.1 Children in the textile factories

In the eighteenth century it was normal practice for children to work to help support their family. In agricultural or domestic work situations this had often been under the supervision of parents, who could have some influence over the type of work carried out by their children. This changed in the early years of the Industrial Revolution. Children who worked in factories and mines were subjected to harsh and often brutal conditions.

Owners of textile mills were quick to recognise that they could employ children for lower wages than adults. Indeed, children often outnumbered adults in factory work. It has been estimated that in 1788 more than two-thirds of employees in cotton mills in England and Scotland were children. While older children and teenagers could often take charge of running a spinning or weaving machine, it was the work carried out by younger children that was the most dangerous.

Piecers and scavengers

Children employed as 'piecers' were required to lean over the spinning machine and repair broken threads. They had to do this while the machine was running, and often had more than one machine to watch. It is estimated that a piecer looking after a number of machines could walk as much as 30 kilometres a day. Other children were employed as 'scavengers'. They had to crawl under machines collecting loose cotton and other waste. This task, also performed while machines were running, was particularly dangerous.

SOURCE 1 From *A Narrative of William Dodd, A Factory Cripple*, 1841

At the age of six I became a piecer … each piecing requires three or four rubs, over a space of three or four inches; and the continual friction of the hand in rubbing the piecing upon the coarse wrapper wears off the skin, and causes the finger to bleed. The position in which the piecer stands to his work is with the right foot forward, and his right side facing the frame. In this position he continues during the day, with his hands, feet, and eyes constantly in motion … the chief weight of his body rests upon his right knee, which is almost always the first joint to give way … my evenings were spent in preparing for the following day — in rubbing my knees, ankles, elbows, and wrists with oil, etc. I went to bed, to cry myself to sleep.

SOURCE 2 From F. Trollope, *Michael Armstrong, the Factory Boy*, 1840

A little girl about seven years old, whose job as scavenger was to collect incessantly from the factory floor, the flying fragments of cotton that might impede the work … while the hissing machinery passed over her, and when this is skilfully done, and the head, body, and the outstretched limbs carefully glued to the floor, the steady moving, but threatening mass, may pass and repass over the dizzy head and trembling body without touching it. But accidents frequently occur; and many are the flaxen locks, rudely torn from infant heads, in the process.

20.5.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why was the employment of children so attractive to the owners of textile factories?
2. Describe the roles of 'piecers' and 'scavengers' in a textile factory.

Using historical sources as evidence

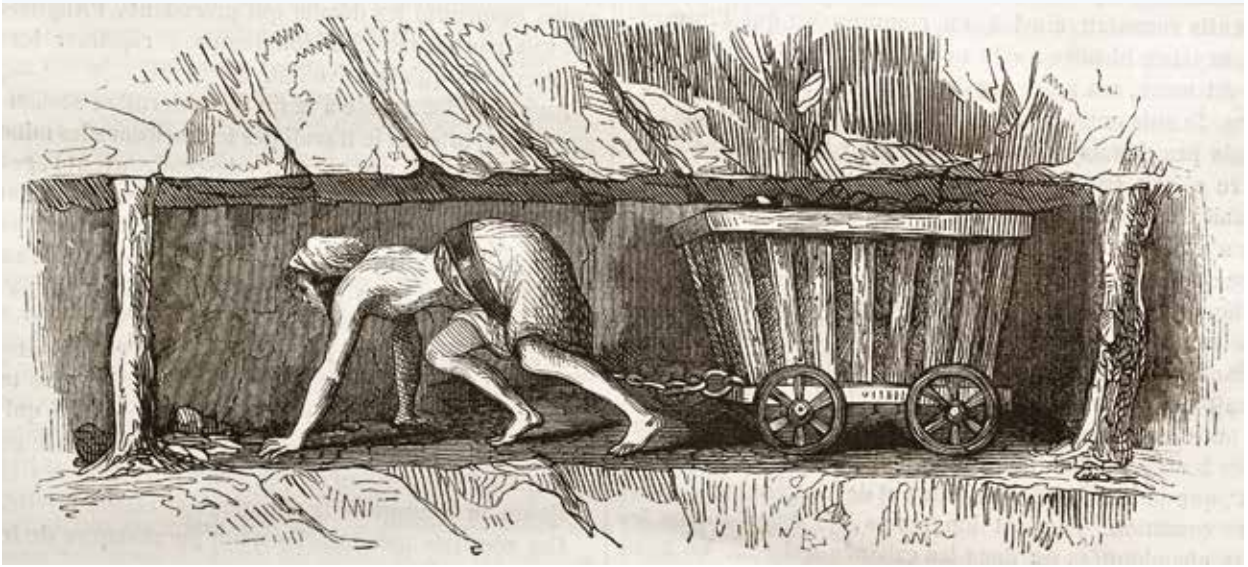
3. From Source 1 identify the main types of injuries that could be suffered by piecers in a textile factory.
4. From the information provided in Source 2, explain why the job of scavenger in a textile factory was so dangerous.

20.5.2 Children in the mines

Children in coalmines were employed as 'hurriers' and 'trappers'. Hurriers were required to carry baskets or tow trucks of coal to the surface. Girls as young as six or seven could be employed in this way, and would continue this work into their teens. The belt or chain around a girl's waist could damage the pelvic bones, and many women who worked in the mines as children later died in childbirth.

Even younger children were employed as trappers. Their job was to open and close the ventilation doors in the underground tunnels to allow the hurriers pulling their carts to pass through. Children as young as four or five could be employed as trappers, and they often sat in the dark for up to 14 hours a day.

SOURCE 3 This sketch of a young person pulling a truck full of coal was created c. 1842.



SOURCE 4 A young trapper opening the door for a truck of coal pushed by children

20.5.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain the roles of 'hurriers' and 'trappers' in coalmines.
2. What were the risks faced by young girls employed as hurriers in coalmines?

Using historical sources as evidence

3. The artists who drew Sources 3 and 4 were attempting to present the negative side of child labour in coal mines. Explain how each artist has achieved this in their drawings.

20.5.3 The 'climbing boys'

Another occupation that employed large numbers of children, some as young as six, was that of chimney sweep. A sweep would employ a number of young boys, known as 'climbing boys', to climb up into chimneys and clean them with a hand brush or metal scraper. It was a dangerous and dirty job. Many choked to death from breathing in the dust and soot, while others were injured by falling or by becoming stuck in narrow chimneys.

DID YOU KNOW?

The British Parliament passed laws in 1788, 1834, 1840 and 1864 that aimed to control the employment of 'climbing boys' by chimney sweeps, but most of these laws were ignored. It was not until after 1875, when the police gained the power to enforce these laws, that the practice of employing young boys in this way was finally stopped.

SOURCE 5 Young boys employed as chimney sweeps worked in dangerous and dirty conditions.

20.5.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Describe the job carried out by climbing boys.
2. What were the hazards faced by children employed as climbing boys?

Using historical sources as evidence

3. What impression was the artist attempting to create in Source 5? Explain how he or she has achieved this aim.

20.5 Putting it all together

Using historical sources as evidence

1. The drawings in Sources 3 and 4 were originally published in the report of the Parliamentary Mines Commission in 1842. Why would the Commission have decided to include drawings of this type in its official report?

Identifying continuity and change

2. In rural communities children had helped with many different tasks, so the employment of children was not new. Explain why child labour became more of a problem during the Industrial Revolution.

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Complete this digital doc: Worksheet 20.5 Help for the poor?

20.6 Urban conditions and people's health

20.6.1 Urbanisation and overcrowding

Increases in population during the late eighteenth and early nineteenth centuries occurred mostly in the Midlands and north of England and in the lowlands of Scotland and southern Wales. Towns and cities grew most quickly close to coal and iron deposits, as these were also the major areas of factory development.

Industrialisation led to the rapid growth of British cities and large towns. In the first 30 years of the nineteenth century, cities such as Birmingham and Sheffield doubled in population. Manchester, Liverpool, Leeds and Glasgow more than doubled in population during this time. Towns and cities grew without any planning or government supervision. A large proportion of the housing was built by the factory owners to rent out to their workers. These factory owners wanted to keep costs down, so the housing was often poorly constructed, with as many houses as possible built on one site. Some families rented older houses that had previously belonged to the wealthier classes. In these cases, each family was often crowded into one room for cooking, eating and sleeping.

SOURCE 1 From Alexis de Tocqueville, a French aristocrat writing about Manchester in 1835

A sort of black smoke covers the city. Under this half-daylight 300 000 human beings are ceaselessly at work. The homes of the poor are scattered haphazard around the factories. From this filthy sewer pure gold flows. In Manchester civilised man is turned back almost into a savage.

SOURCE 2 From a letter to a parliamentary inquiry in 1840, written by Dr Roberton, a Manchester surgeon

Manchester is a huge overgrown village, built according to no definite plan. The homes of the work-people have been built in the factory districts. The interests and convenience of the manufacturers have determined the growth of the town and the manner of that growth, while the comfort, health and happiness [of the workers] have not been considered. Manchester has no public park or other ground where the population can walk and breathe the fresh air. Every advantage has been sacrificed to the getting of money.

SOURCE 3 From Dr William Duncan, *Report on the Sanitary Condition of Liverpool*, 1839

In the streets inhabited by the working classes, I believe that the great majority are without sewers, and that where they do exist they are of a very imperfect kind unless where the ground has a natural inclination, therefore the surface water and fluid refuse of every kind stagnate in the street, and add, especially in hot weather, their pestilential influence to that of the more solid filth … the only means afforded for carrying off the fluid dirt being a narrow, open, shallow gutter, which sometimes exists, but even this is very generally choked up with stagnant filth.

20.6.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why did the population of cities such as Birmingham, Manchester and Leeds grow so rapidly in the first 30 years of the nineteenth century?
2. Explain two ways in which the builders of houses in factory towns kept costs down.

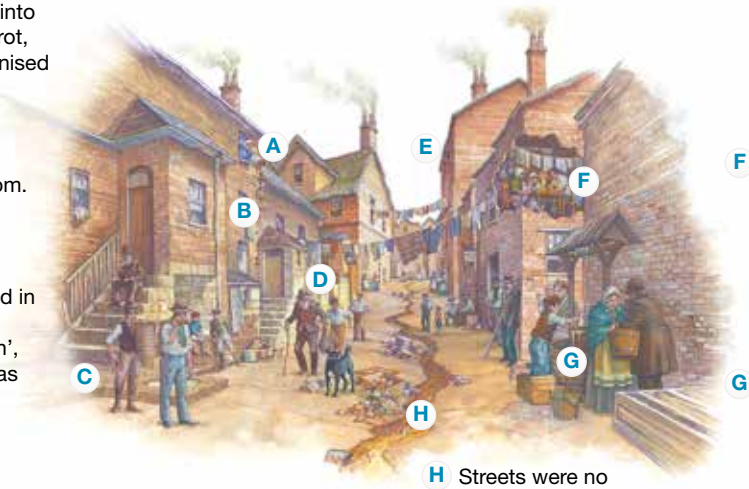
Using historical sources as evidence

3. In Source 1, explain what the writer meant by, 'From this filthy sewer pure gold flows'.
4. Identify the two main criticisms that Dr Roberton (see Source 2) expressed in relation to the planning and layout of Manchester.
5. How might the conditions described in Source 3 have contributed to the spread of diseases such as cholera?

20.6.2 Housing and sanitation

Houses were built with the cheapest possible materials and were often built back to back without any gardens. Amenities that we take for granted, such as water supply, were ignored. Streets were narrow, with poor drainage, and were filled with rubbish and raw sewage. There were no sewerage pipes to remove waste and no council rubbish collection as we know today. Groups of houses relied on **cesspits** for the disposal of sewage, but overcrowding meant that these frequently overflowed, contaminating rivers and wells that were the only sources of drinking water. Diseases such as **cholera** and **typhus** were common and spread quickly through densely populated urban areas.

SOURCE 4 Most factory workers lived in poor-quality, overcrowded housing without sanitation.



A Rubbish was thrown into the street and left to rot, as there was no organised rubbish collection.

B Houses had small windows a single room. or no windows at all.

C Sewage was collected in cesspits, which were emptied by 'nightmen', although not always as regularly or often as necessary.

D Crime, such as pickpocketing, flourished in these squalid conditions.

E Houses were of poor quality, built using the cheapest possible materials.

F Families were often crowded into a single room.

G There was no piped water supply, so water was collected from communal wells or nearby rivers.

H Streets were no more than narrow lanes, with open drains running down the middle.

20.6.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. How did people living in these areas get rid of their rubbish and human waste?
2. Why would disease have spread quickly in towns such as Manchester and Liverpool?

Using historical sources as evidence

3. Use Source 4 to identify five features of nineteenth-century industrial cities and towns that would have made them unpleasant places to live in.

20.6 Putting it all together

Identifying continuity and change

1. Identify what differences in living conditions might a family notice when moving from a small country village to a large industrial city, and what living conditions might they find similar?

Analysing cause and effect

2. Why might crime have flourished in the conditions that prevailed in large cities in the nineteenth century?
3. What is meant by the term 'urbanisation'? Why would you expect there to be a strong connection between industrialisation and urbanisation?

DID YOU KNOW?

In 1696 the English Parliament had introduced a Window Tax, which taxed all houses based on the number and size of their windows. This tax was not removed until 1851, so most builders providing cheap housing in the first half of the nineteenth century used as few windows as possible. Lack of light and fresh air made living conditions even more unhealthy.

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Complete this digital doc: Worksheet 20.6 Social unrest and trade unions

20.7 Poor laws and workhouses

20.7.1 The Old Poor Law

Various structures for helping the poor had existed in Britain since the Middle Ages. In the 1830s this system was reformed, and relief for the poor was restricted largely to those who lived in special institutions called workhouses.

By the time of the Industrial Revolution, the poor in England were looked after by a system that had been set up in the late sixteenth century. Each village or **parish** had to take care of its own poor, and those who owned property paid a special tax called the Poor Rate. Some of the money was used to supply food or other necessities for **paupers** living in their own homes. This was called **outdoor relief**. In some villages or parishes, special places were built to house and feed the poor. Known as **workhouses**, they were often very crowded, unpleasant places to live. Requiring the poor to live in these places was called **indoor relief**.

SOURCE 1 This nineteenth-century painting shows a family living in poverty. Under the Old Poor Law system the workhouse was an unpleasant place to live, but families could at least stay together.

20.7.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Who was responsible for looking after the poor in pre-industrial England?
2. What was the Poor Rate?
3. Explain the difference between indoor relief and outdoor relief.

Using historical sources as evidence

4. In Source 1, the adult male is obviously very ill, and possibly dying. Given that the man would probably have been the main wage earner in the family, describe what message about poverty the painter was attempting to convey?

20.7.2 The New Poor Law

Following the Swing Riots of 1830 (see subtopic 20.3), the British government set up a **royal commission** to investigate the operation of the Poor Laws. The commission made the following recommendations:

- outdoor relief should be abolished
- only those living in the workhouses should be entitled to any assistance
- the workhouse should be as unpleasant as possible to discourage anybody capable of working from wanting to live there.

In 1834 Parliament passed the Poor Law Amendment Act to put these recommendations into effect. This set up a system known as the New Poor Law, and 350 new workhouses were built by 1839. The workhouse system continued into the early twentieth century.

DID YOU KNOW?

A scandal arose in 1845 over conditions in the workhouse in the town of Andover. The Master, Mr McDougal, was a bully and a drunk who savagely beat small children and regularly raped women under his care. He had kept rations to such a minimum that starving inmates were found to be trying to eat animal bones they were supposed to be grinding up for fertiliser. The story was publicised in *The Times* newspaper in London and caused a national outcry.

SOURCE 2 From a Rochester correspondent to *The Times*, 26 December 1840

Upwards of half-a-dozen girls in the workhouse, some of them verging on womanhood, have at times had their persons exposed in the most brutal and indecent manner, by the Master, for the purpose of inflicting on them cruel floggings; and the same girls, at other times, have, in a scarcely less indecent manner, been compelled by him to strip the upper parts of their persons naked, to allow him to scourge them with birch rods on their bared shoulders and waists, and which, from more than one of the statements from the lips of the sufferers, appears to have been inflicted without mercy. One girl says, 'My back was marked with blood'.

20.7.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What were the three main changes brought in with the passing of the New Poor Law?
2. Why was there a deliberate policy to make the workhouse an unpleasant place to live?

Using historical sources as evidence

3. From what you can identify in Source 2, what methods were used to make the workhouse as unpleasant as possible?

20.7.3 Life in the workhouse

Conditions in workhouses were deliberately made as unpleasant as possible. Under the Old Poor Law, families in workhouses could stay together, but under the new system families were split up. Men and women were kept separate and their children were removed from their care. All inmates of the workhouse, except for the very youngest children, were put to work. This work usually consisted of hand-grinding corn, breaking stones or **picking oakum**.

Imposition of strict rules

The workhouse was run by the Master, who was expected to manage it on a very tight budget. Strict regulations were imposed on the inhabitants of the workhouse, and the Master had the power to impose savage punishment on those who disobeyed the rules. Parents were rarely allowed to see their children and outside visitors were not allowed. Meals were kept to the bare minimum necessary to sustain life and had to be eaten in silence. In Charles Dickens' *Oliver Twist*, young Oliver asks for more food and is punished by being placed in solitary confinement. Children were given very little education and were usually apprenticed out to local employers at an early age. In Dickens' story, young Oliver Twist was to be apprenticed to a chimney sweep but is eventually apprenticed to an undertaker at the age of nine.

SOURCE 3 Women in the workhouse could be put to work picking oakum, as shown in this nineteenth-century photograph.

SOURCE 4 Workhouse inmates were fed a minimal diet, and forced to eat in silence, as shown in this nineteenth-century photograph.

20.7.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check Your Understanding

1. Give two examples of the ways in which life in the workhouse was made as unpleasant as possible.
2. In what types of activities were workhouse inmates employed?
3. Explain how children were treated in the workhouse.

Using historical sources as evidence

4. What was oakum? Explain why the women in Source 3 were given the task of picking oakum.
5. Identify two things that Source 4 tells us about life in the workhouse.

20.7 Putting it all together

Identifying continuity and change

1. Compared with conditions under the Old Poor Law, do you think life became easier or harder for paupers after 1834? Give reasons for your answer.

Analysing cause and effect

2. Identify what the treatment of paupers under the New Poor Law tells us about attitudes towards poverty in nineteenth-century Britain. How does this relate to the high value placed on business success and entrepreneurship at this time?

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Complete this digital doc: Worksheet 20.7 Nations become empires

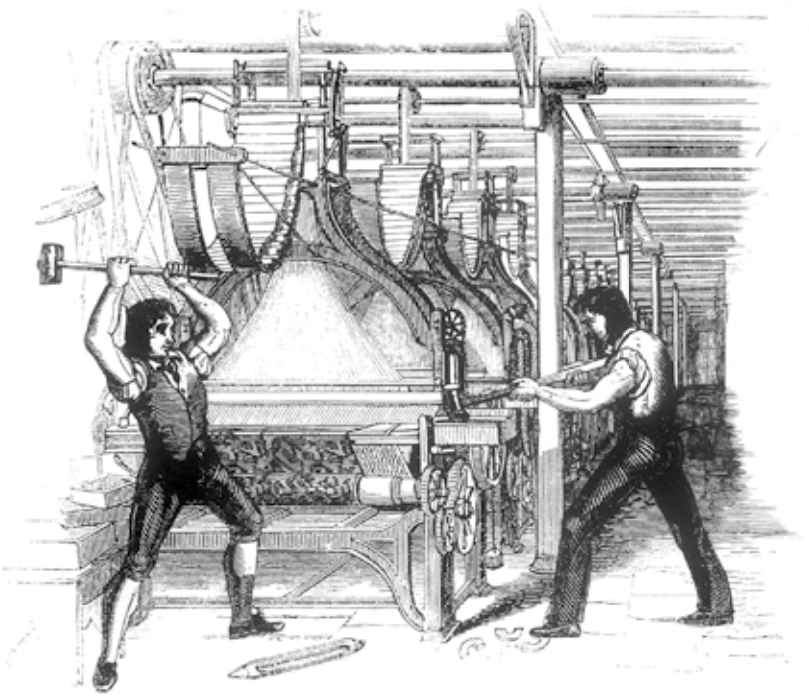
20.8 Social unrest and trade unions

20.8.1 Social unrest, protests and riots

As the industrial and agricultural revolutions progressed, many factory, mine and farm workers were dissatisfied with their working conditions. Initially this showed up as protests and even riots, but as the nineteenth century progressed, workers began to organise into unions to work towards improvements in their working lives.

The social upheaval resulting from the agricultural and industrial changes led to a number of protest movements by ordinary working people in the early nineteenth century.

SOURCE 1 A nineteenth-century artwork of Luddites using a sledgehammer and a crowbar to smash power looms in a cotton mill



The Luddites

Many skilled artisans of the old cottage textile industry felt that the use of machines in factories had robbed them of their livelihood. Between 1811 and 1817, groups of these workers protested by destroying the new machines. They were known as **Luddites**, after their probably fictitious leader, King Ned Ludd. In 1811 more than one thousand industrial machines were smashed. Between 1812 and 1813, 14 Luddites were executed and many more were transported to the colonies for life.

Peterloo Massacre

The most infamous incident of this period was known as the Peterloo Massacre. In August 1819 a group of around 50 000 protesters gathered peacefully at St Peter's Fields near Manchester to demand economic and political reform. Instead they were attacked by mounted troops, with 15 killed and more than 600 seriously wounded. Incidents such as this helped awaken many to the social problems that had arisen from the agricultural and industrial revolutions.

SOURCE 2 An 1819 cartoon depicting the Peterloo Massacre. The officer is calling to his men: 'Remember, the more you kill, the less Poor Rates you'll have to pay, so go to it, lads, show your courage and your loyalty!'

20.8.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Who were the Luddites, and what activities did they engage in?
2. What was the effect of the Peterloo Massacre on attitudes to social problems that had arisen from the Industrial Revolution?

Using historical sources as evidence

3. Examine Source 1. Do you think the artist here was opposed to Luddites, or was sympathetic towards them? Support your answer with evidence from the source.
4. Identify three features of Source 2 that tell us that the artist was opposed to the actions taken by the troops in the Peterloo Massacre.

20.8.2 Trade unions

Trade unions had first developed as associations of people who worked in similar trades. They had very little impact until the growth of factories brought large numbers of workers together in one place. Employers in these factories were opposed to the formation of unions that might have campaigned for improved wages or working conditions. They convinced Parliament to pass laws severely restricting union activity.

The Combination Acts

In 1799 and 1800 Parliament passed the Combination Acts, which effectively banned workers from combining to form unions. The Combination Acts were **repealed** in 1824, but a series of **strikes** led to the passing of the Combination Act of 1825. This allowed unions to bargain with employers over wages and hours of work, but banned them from using strike action.

The Chartists

The right to vote for the election of members of the British Parliament had always been restricted to men who owned property worth a relatively substantial value. This meant that the majority of men could not vote, and that no women could vote. In the period after the end of the Napoleonic Wars (1803–1815), many groups were formed to promote the idea of making the vote more democratic. The meeting that led to the Peterloo Massacre was an example of these campaigns.

In 1832, the Parliament passed the Reform Act, which lowered the value of the property that a voter was required to own, and allowed tenant farmers paying rent above a certain level to vote. In the minds of many people this did not go far enough. When the Poor Law Amendment Act was passed in 1834, it further angered many people, because it was seen to be punishing people who had no voting rights.

In 1836 a group of tradesmen formed the London Working Men's Association. Its leaders, William Lovett and Henry Hetherington, had been active in promoting greater rights for the working class. Hetherington had printed a number of newspapers promoting universal adult male **suffrage**. In 1838 the association published its People's Charter, which set out six aims. These were:

1. the vote for all men over the age of 21
2. secret ballot at elections
3. no property qualification for members of parliament
4. payment of members of parliament, so that standing for parliament was not restricted to the rich
5. equal-sized electorates, so that each vote has equal value
6. annual elections for parliament.

Supporters of the People's Charter became known as Chartists. A number of large public meetings were then held in various parts of England, Wales and Scotland, supporting the aims of the charter. These meetings were attended by many thousands of working-class people.

In 1839 the Chartists presented a petition signed by 1.3 million working people, but the parliament refused to hear the petition. A number of protest marches were held throughout the country, some of which were met with armed troops. Some Chartist leaders were arrested, and Lovett himself spent a year in prison. In 1842 large numbers of workers went on strike in support of improved wages and the principles contained in the People's Charter. Many were arrested, and more than fifty Chartists were sentenced to transportation to the Australian colonies. All of the six aims of the charter, except for annual elections, were eventually adopted within Britain, and have formed the basis for democratic government in many countries around the world.

DID YOU KNOW?

Many participants in the Eureka Rebellion at Ballarat, Victoria, in 1854 had been active Chartists in Britain. The first president of the Ballarat Reform League was Welsh-born Chartist John Basson Humffray. The miners' demands were inspired by Chartist ideals, and Reform League members Henry Holyoake and Thomas Kennedy had both been active Chartists in England.

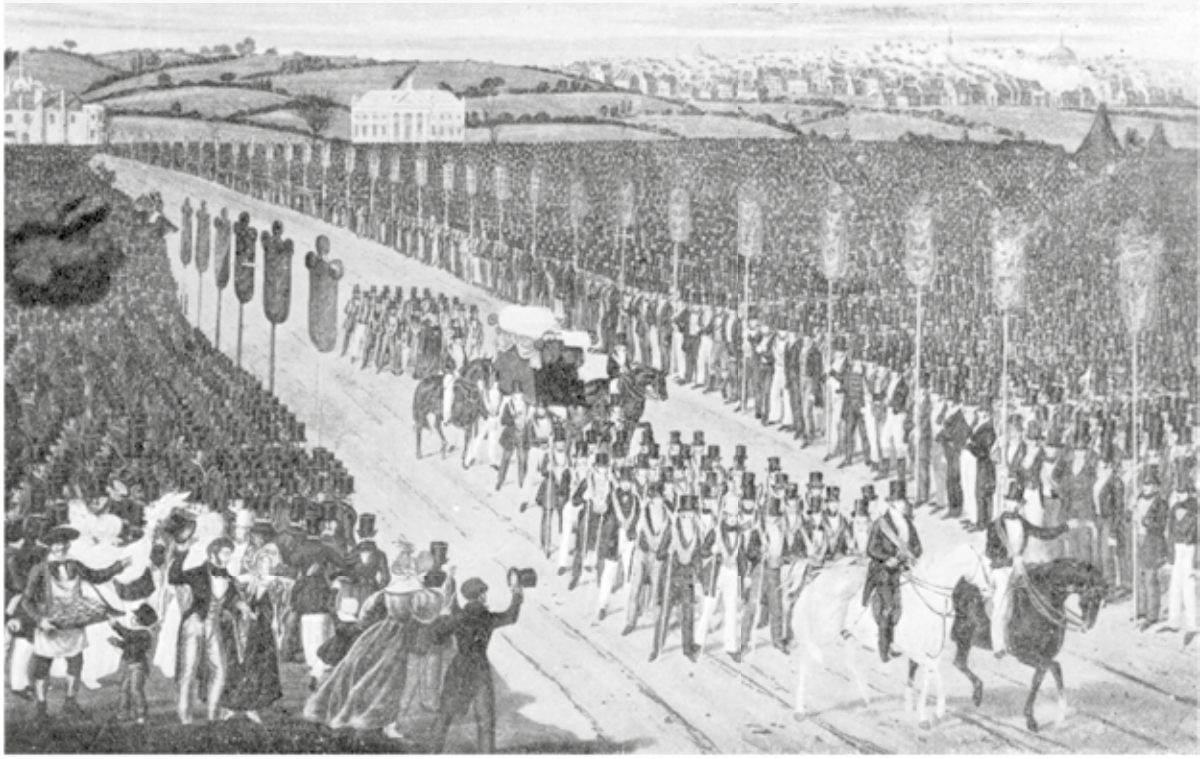
The Tolpuddle Martyrs

In 1834 six farm labourers in the village of Tolpuddle in Dorset were arrested for swearing an oath of loyalty to their union, the Friendly Society of Agricultural Labourers. It was no longer illegal to belong to a union, so they were prosecuted under an obscure law relating to the swearing of oaths. They were sentenced to seven years' transportation to Van Diemen's Land. Outraged public opinion and the presentation of a huge petition to Parliament led to their being pardoned in 1836. They became an important symbol of the right of free association for workers.

The New Model Trade Unions

In the 1850s groups of skilled tradesmen set up their own unions, beginning with the Amalgamated Society of Engineers in 1851. These unions provided their members with a wide range of services, such as sickness benefits. They attracted strong support, and soon became a model for other groups of workers. Because they consisted of skilled tradesmen, these unions tended to be quite conservative, and concentrated on negotiation with employers, rather than strike action. This helped to make unions more 'respectable' in the eyes of many.

SOURCE 3 Between 50 000 and 60 000 trade union members gathered on 21 April 1834 in Copenhagen Fields (outside London) to present a petition to the Prime Minister in support of the Tolpuddle Martyrs.



Improved legal status

In response to the growth of unions, in 1867 Parliament set up a royal commission to investigate trade unions. The commission found that most 'new model' unions served a useful social purpose and should have legal status. The Trade Union Act of 1871 gave unions many of the same legal rights as businesses, including the right to own property. In 1875 unions in Britain gained the legal right to bargain on behalf of their members, including the right to strike.

20.8.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why were factory owners opposed to the formation of unions?
2. What was the purpose of the Combination Acts?
3. Explain the issues that led to the formation of the London Working Men's Association.
4. Outline the demands included in the People's Charter of 1838.
5. Where did the main support for the charter come from?
6. What was the response of the British government at the time to the demands of the Chartists?
7. Why were the Tolpuddle Martyrs transported as convicts to Van Diemen's Land (Tasmania) in 1834?
8. Explain how trade unions had become an accepted part of society by 1875.

Using historical sources as evidence

9. Identify what Source 3 tells us about the nature of the protest against the punishment of the Tolpuddle Martyrs.
10. Why would an artist regard the Tolpuddle Martyrs protest as an important event to document in this painting?

20.8 Putting it all together

Identifying continuity and change

1. To what extent do you believe that the development of the People's Charter in 1838 was a major turning point in both British and Australian history? Give reasons for your answer.

Analysing cause and effect

2. Support for the Tolpuddle Martyrs and the People's Charter demonstrates that many people were becoming more politically active.
   (a) Identify and explain two underlying or long-term causes of this increased activism.
   (b) Which events might have provided the short-term triggers that motivated people to become active in this way?
3. How can we tell that the British Parliament was more strongly influenced by the interests of factory owners than by those of ordinary workers? Why might this have been the case?

Determining historical significance

4. The term 'Luddite' is still used today in particular circumstances. Find out what the term means in today's usage, and explain whether or not you believe this is an appropriate use of the term.

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Complete this digital doc: Worksheet 20.8 Changes for the better

20.9 The growth in ideas

20.9.1 Economic ideas

The seventeenth and eighteenth centuries had been a period of great intellectual growth in Britain and Europe. The Scientific Revolution of the seventeenth century saw great advances in physics, mathematics, chemistry and biology. For the first time scientists began to draw conclusions from experimentation and observation of the world around them, instead of simply accepting religious explanations. The period known as the Enlightenment in the eighteenth century saw a challenge to traditional views of the structure of society and the role of religion, and asserted the rights of individuals to participate as equals, no matter what their social status. The willingness to question existing beliefs and to formulate new philosophies continued into the nineteenth century.

Many of the new ideas related to the operation of the economy, overturning the traditional feudal approach that still operated throughout much of Europe.

Capitalism

A belief in the ability of individuals to create wealth through their own entrepreneurship was central to the ideas of capitalism. These principles were strongly promoted by Adam Smith and others late in the eighteenth century. Central to Smith's beliefs was the removal of excessive regulation of business, so that all businesses were free to compete in open markets. He believed that if all individuals were free to pursue their own self-interest, this would lead to a better and wealthier society for all individuals. He described this as 'the invisible hand' that improves society, even though none of the individuals participating may have had this as their main aim (see Source 1). Central to the belief in capitalism was a belief in competition. By competing against each other, businesses which charged the lowest prices would attract more customers, and therefore be the most successful. Lower prices would be the social benefit that would flow from this competition. By the end of the nineteenth century, capitalism had become the predominant economic theory of Britain, Europe, the United States, and most of the industrialised world.

SOURCE 1 Adam Smith, *The Wealth of Nations*, 1776

By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it.

Socialism

Opposed to capitalism were the ideas of socialism. There were many influential socialist thinkers in the nineteenth century. They shared a belief in greater economic and political equality. They believed this could be achieved only by workers owning and running enterprises collectively or by the state owning these enterprises on their behalf. The British reformer Robert Owen held strong socialist ideals. Another significant proponent of socialism was Karl Marx, a nineteenth-century German philosopher. Marx believed that history was shaped by struggles between social classes. He predicted that revolutions throughout Europe would completely change societies. As the Industrial Revolution proceeded, those who had nothing but their ability to work – the **proletariat** – would overthrow the **bourgeoisie**. The workers would then create a socialist society in which wealth would be shared fairly. Marx thought that socialism would eventually lead to a stage of even greater equality that he called 'communism' (see Source 2).

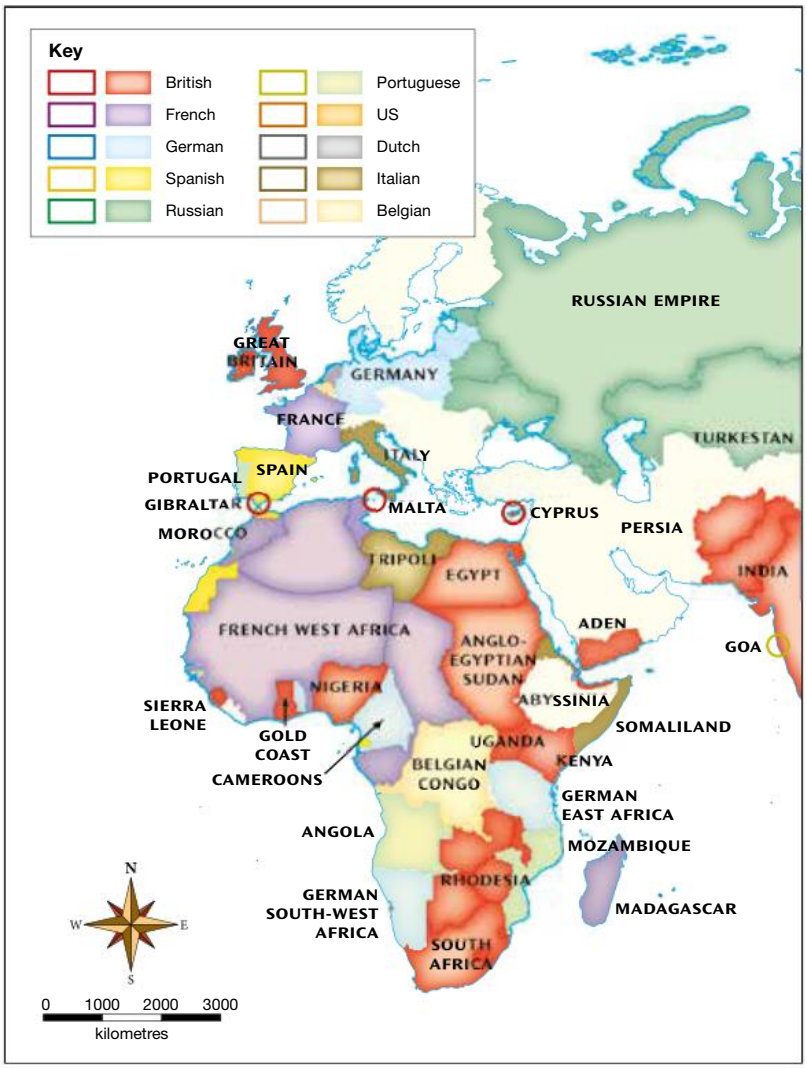
SOURCE 2 Karl Marx and Friedrich Engels, *The Communist Manifesto*, 1848

Society as a whole is more and more splitting up into two great hostile camps, into two great classes directly facing each other – the bourgeoisie and proletariat … The Communists … openly declare that their ends can only be attained by the forcible overthrow of all existing social conditions. Let the ruling classes tremble at a Communist revolution. The proletariat have nothing to lose but their chains. They have the world to win. Working men of all countries unite!

Imperialism

Imperialism was the theory behind the expansion of European empires, particularly during the eighteenth and nineteenth centuries. Instead of simply trading with foreign countries, an empire could be created by conquering those countries and taking control of their resources. Britain had been able to accelerate its industrial growth through the expansion of its empire, which gave it access to a range of raw materials. This served as a model for other European countries during the nineteenth century. In particular, Britain, France, Belgium, Germany and Italy expanded their empires into Africa during the latter half of the nineteenth century, so that by the beginning of the twentieth century, the African continent had been almost completely divided up between the European powers (see Source 3).

SOURCE 3 European imperial territories in Africa, 1914



Source: Spatial Vision

20.9.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. In what way did Adam Smith believe that society as a whole would benefit from the efforts of entrepreneurs?
2. In what ways were the beliefs of socialists completely opposite those of capitalists?
3. What did Karl Marx believe would ultimately happen in industrialised European countries?
4. How did the British Empire provide a model for other European countries to follow as they became industrialised?
5. How did imperialism impact on the African continent in the second half of the nineteenth century?

Using historical sources as evidence

6. Explain Adam Smith's concept of the 'invisible hand' as referred to in Source 1, and give an example of how it might work.
7. Describe what sort of action Marx and Engels were promoting in Source 2.
8. Examine Source 3. Identify two areas in Africa that were not controlled by European powers.
9. Which European countries had the largest areas of Africa under their colonial control?

20.9.2 Political ideas

Traditional European feudal society had been divided into strict social classes. At the top were royalty and the aristocracy, who owned most of the land, and who passed on their land and titles to their offspring. Then there was the middle class: the tradespeople, artisans and business people. At the bottom were the lower class, the vast numbers of peasants who worked the land for the aristocracy. As Britain industrialised, large numbers of these peasants moved to the towns and became industrial workers. The higher up you were in the social classes, the more power and wealth you held. During the Enlightenment of the eighteenth century, this structure and power imbalance came to be challenged by a number of writers. From 1789 onwards in France, this social structure was completely overthrown by the French Revolution.

Egalitarianism

This was the belief that all people are created equal, and should all have equal rights. It was an idea proposed by a number of European writers and philosophers during the eighteenth-century Enlightenment, and was completely at odds with the traditional division of the population into strict social classes with unequal rights and power. Americans such as Benjamin Franklin had visited Europe and been inspired by many of the ideas of the Enlightenment. Principles of egalitarianism were the foundation of the United States *Declaration of Independence* in 1776 (see Source 4), even though equality was not granted to slaves of African descent at that time.

SOURCE 4 United States *Declaration of Independence*, 1776

We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness. That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed …

Egalitarianism was also at the heart of the French Revolution. The delegates to the National Constituent Assembly adopted the *Declaration of the Rights of Man and of the Citizen* in August 1789 (see Source 5). This document enshrined the ideals of egalitarianism for all citizens, including an equal right to elect representatives to make laws. Ideas of egalitarianism strongly influenced reformers like Robert Owen, the Chartists and many socialist writers such as Marx and Engels.

SOURCE 5 National Constituent Assembly of France: *Declaration of the Rights of Man and of the Citizen*, 1789

Article I – Men are born and remain free and equal in rights. Social distinctions can be founded only on the common good.

Article II – The goal of any political association is the conservation of the natural and imprescriptible rights of man. These rights are liberty, property, safety and resistance against oppression.

Article III – The principle of any sovereignty resides essentially in the Nation. No body, no individual can exert authority which does not emanate expressly from it.

Article IV – Liberty consists of doing anything which does not harm others: thus, the exercise of the natural rights of each man has only those borders which assure other members of the society the enjoyment of these same rights. These borders can be determined only by the law.

Article V – The law has the right to forbid only actions harmful to society. Anything which is not forbidden by the law cannot be impeded, and no one can be constrained to do what it does not order.

Article VI – The law is the expression of the general will. All the citizens have the right of contributing personally or through their representatives to its formation. It must be the same for all, either that it protects, or that it punishes. All the citizens, being equal in its eyes, are equally admissible to all public dignities, places and employments, according to their capacity and without distinction other than that of their virtues and of their talents.

Nationalism

Nationalism developed as a doctrine during the French Revolution. Prior to this time, loyalty by inhabitants of a country was directed towards the king or a similar monarch. Soldiers fought for the monarch rather than for the more broad concept of the 'nation'. Article III of the *Declaration of the Rights of Man and of the Citizen* states that: 'The principle of any sovereignty resides essentially in the Nation. No body, no individual can exert authority which does not emanate expressly from it' (see Source 5). This changed the focus of loyalty from the King to that of the 'Nation'. When France found itself at war against other European powers in 1793, it introduced a form of conscription called the *Levee en masse*, in which all French citizens were to devote all their energies to the defence of the nation (see Source 6). Nationalist ideas also spread from France in unintended ways. In lands conquered by French armies during the Revolutionary Wars, other groups discovered a sense of national identity as they resisted French rule. This was even more marked during the wars waged by the French Emperor Napoleon Bonaparte, who seized absolute power in 1804 and ruled France until his defeat in 1815.

SOURCE 6 Declaration of the French National Convention, 23 August 1793

From this moment until such time as its enemies shall have been driven from the soil of the Republic, all Frenchmen are in permanent requisition for the services of the armies. The young men shall fight; the married men shall forge arms and transport provisions; the women shall make tents and clothes and shall serve in the hospitals; the children shall turn old lint into linen; the old men shall betake themselves to the public squares in order to arouse the courage of the warriors and preach hatred of kings and the unity of the Republic.

Following the defeat of Napoleon, the old European empires were restored. One of these was the Austro-Hungarian Empire, even though it contained peoples of many nationalities including the Czech, Slovaks, Poles, Romanians, Croatians, Bosnians and Italians. Nationalism continued to cause unrest in many parts of Europe. Nationalists in the Ottoman and Austro-Hungarian empires wanted the right to form their own nations. Greece won autonomy from the Ottoman Empire in 1829. Belgium became independent from the Netherlands two years later. In 1848, nationalist revolutions broke out in many parts of Europe, although these were not successful and most failed within twelve months. Among Italians and Germans in their many states, there were those who wanted to create one Italy and one Germany. Italy achieved national unity in 1870 and Germany in 1871.

20.9.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What were the key principles of egalitarianism?
2. Identify two examples of the application of the principles of egalitarianism.
3. Explain how the concept of nationalism developed in France during the Revolution.
4. How were nationalist ideas spread to other European countries?
5. Name three countries that were created as a result of nationalist sentiment in Europe during the nineteenth century.

Using historical sources as evidence

6. Explain what is meant by the following sentence in Source 4: 'Governments are instituted among Men, deriving their just powers from the consent of the governed …'.

7. Identify the wording in Source 5 that directly negates the idea of different social classes having different rights and privileges.
8. Prior to 1789, the law in France consisted largely of decisions made exclusively by the king and his advisors. Describe how Article VI in Source 5 directly opposes this idea of royal lawmaking power.
9. Examine Source 6. In what ways was this declaration designed to appeal to the national loyalty sentiments of French citizens at the time?

20.9.3 Scientific ideas

The scientific developments of the seventeenth and eighteenth centuries were seen by many as a challenge to the authority of the Christian religion in Europe. Many people still believed in the literal interpretation of the Bible, that God had created the Earth and all life in seven days, and that all human beings were descended from Adam and Eve. The discoveries and publications of Charles Darwin were to challenge these fundamental beliefs.

Darwinism

Charles Darwin was a **naturalist** who sailed around the world aboard the ship *Beagle* between 1831 and 1836. He took detailed notes of his observations of plants and animals, and began to notice variations and similarities between different animals and birds, suggesting some species may have changed over time. In his journals he suggested that life may have evolved over time to adapt to changing environmental circumstances. Those individuals who adapted best were most likely to survive and continue to breed and produce offspring. This theory was described as the 'survival of the fittest', and suggested that only the fittest would survive because the others would not be able to compete with them.

In 1859, Darwin published his *On the Origin of Species*, in which he laid out his theory of evolution through natural selection. He proposed that genetic variations in all plants and animal species led some to be more successful than others, and that this continuous process had produced the wide variety of different species we see around the world today. His 1871 book, *The Descent of Man, and Selection in Relation to Sex*, set out his view that humans were descended from an ape-like creature. Darwin's theories were very controversial at the time, and became known as 'Darwinism'.

SOURCE 7 Charles Darwin, *On the Origin of Species*, 1859

As many more individuals of each species are born than can possibly survive; and as, consequently, there is a frequently recurring struggle for existence, it follows that any being, if it vary however slightly in any manner profitable to itself, under the complex and sometimes varying conditions of life, will have a better chance of surviving, and thus be *naturally selected*. From the strong principle of inheritance, any selected variety will tend to propagate its new and modified form.

Religious responses to Darwinism

Darwin's theories of evolution directly contradicted the Christian churches' teachings about the creation of the world and life within it. The reaction of religious groups to Darwin's theories varied considerably. Leaders of more conservative churches dismissed his theories completely, and refused to believe anything other than the literal interpretation of the Biblical creation story. Other, liberal church leaders claimed the mechanism of evolution as the means by which God had created life, and saw no inconsistency between Darwin's theory and their own beliefs. While the scientific community accepts the general principles of Darwin's approach, the theory of evolution remains controversial to this day. There are even some Christian groups that still only accept the literal creation story.

SOURCE 8 Many cartoonists made fun of Charles Darwin and his theories. This cartoon was published in *Punch* magazine in 1882.

20.9.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What experience did Charles Darwin have that led him to develop his ideas about the 'survival of the fittest'?
2. Why was Darwin's *The Descent of Man, and Selection in Relation to Sex* so controversial?
3. What was the reaction of the established churches to Darwin's theories?
4. Why were some church leaders able to accept Darwin's theories?

Using historical sources as evidence

5. Explain what Darwin meant by the term 'naturally selected' in Source 7.
6. Identify what is being suggested by the cartoon depicted in Source 8.

20.9 Putting it all together

Analysing cause and effect

1. Identify some of the possible ways in which Adam Smith's ideas might have influenced the attitudes of many factory owners in Britain during the Industrial Revolution.
2. Were the ideas of egalitarianism an underlying cause or an immediate trigger for the American and French revolutions? Give reasons for your answer.
3. How did theories of nationalism affect Europe during the nineteenth century?

Identifying continuity and change

4. Why would the principles of egalitarianism have led to a major change in any European country in which they were introduced?
5. Explain why many religious groups might have trouble accepting the theories of Charles Darwin.

Determining historical significance

6. Why is Charles Darwin regarded as one of the most important and significant scientists of the nineteenth century? Give reasons for your answer.

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Complete this digital doc: Worksheet 20.9 Crossword

20.10 Reformers and progress

20.10.1 Influential reformers

The early years of the Industrial Revolution were marked by appalling working and living conditions for factory and mine workers. But changes and improvements began to be introduced during the nineteenth century. Laws passed to protect workers were often the result of determined campaigning by prominent individuals.

Many prominent citizens became concerned at the working and living conditions of ordinary working people during the Industrial Revolution. A number of them sought to bring about change.

Robert Owen

Robert Owen bought a share in the New Lanark cotton mills in Scotland in 1800 and managed them for the next 25 years. Owen disagreed with the widespread attitude among factory owners that workers had to be paid low wages and treated poorly to ensure the biggest profits. He stopped employing children under 10 in his factories, provided schooling for the younger children and limited the working hours for children over 10 so they could also attend school. He provided clean, comfortable housing as well as a pleasant working environment for his workers. His business was very successful and he travelled all around Britain promoting his ideas.

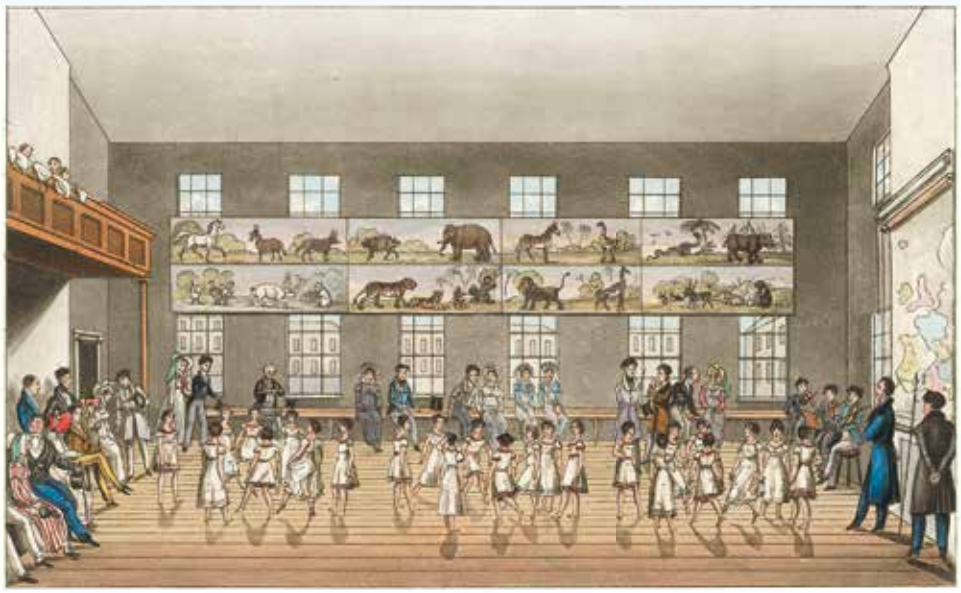
Lord Ashley (later the Earl of Shaftesbury)

As a member of Parliament Lord Ashley promoted the passing of laws to improve the working conditions of ordinary working people. He was responsible for introducing some of the Factory Acts that restricted the use of child labour in textile mills. He supported the Mines Act of 1842 that outlawed the employment of women and young children in coalmines (see subtopic 20.4). Lord Ashley was also responsible for setting up the first free schools for poor children.

Edwin Chadwick

Edwin Chadwick was a lawyer who initially became involved in both Poor Law reform and the issue of child labour in the early 1830s. As a member of the Poor Law Commission he was largely responsible for the provisions of the Poor Law Amendment Act of 1834. He also contributed to a government report that recommended reductions in working hours for children in factories. Many of his ideas were included in the Factory Act of 1833. In 1842 he published a report on the insanitary living conditions of the working classes in the overcrowded towns and cities. He became a strong campaigner for clean water supplies and proper sewerage systems to improve levels of public health.

SOURCE 1 At Robert Owen's New Lanark mill, education, including dancing classes, was provided to children.



20.10.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Outline two of the achievements of Robert Owen in improving the lives of factory workers and their children.
2. In what way did Owen demonstrate that it was not necessary for factory owners to exploit their workers?
3. How did Lord Ashley use his position as a member of parliament to deal with issues of child labour?
4. Describe the contribution made by Edwin Chadwick to the improvements in sanitation in England.

Using historical sources as evidence

5. From Source 1, suggest some of the classes other than dancing that might have been taught at Robert Owen's New Lanark school.
6. Do you think the artist who produced Source 1 was a supporter or opponent of Owen's ideas? Give reasons for your answer.

20.10.2 Factory reform

During the nineteenth century Parliament passed a number of Factory Acts, most of which were designed to restrict the employment of women and children in factories, and to limit the number of hours that could be worked in a day.

SOURCE 2 Factory reform

Factory Act 1819 — Limited the hours worked by children to a maximum of 12 per day
Factory Act 1833 — Banned employment of children under 9 and limited 10–13-year-olds to a 48-hour week in the textiles industry. To enforce this rule, factory inspectors were introduced (although there were initially only four inspectors for all of England).
Factory Act 1844 — Reduced the maximum working hours for women to 12 hours per day
Ten Hour Act 1847 — Reduced maximum working hours for women and children to 10 hours per day
Factory Act 1850 — Prohibited women and children from working in a factory before 6 am or after 6 pm
Factory Act 1874 — Set a maximum of 56.5 hours of work per week for all workers

20.10.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. How did the Factory Acts of 1819 and 1833 and the Ten Hour Act of 1847 affect the working hours of children?
2. Which of the Factory Acts limited the number of hours that could be worked in a week?

Using historical sources as evidence

3. Source 2 indicates that initially only four factory inspectors were appointed to enforce the Factory Act of 1833. Explain how well you think this Act would have been enforced. Give reasons for your answer.

20.10.3 Public health reform

Edwin Chadwick's *Report on the Sanitary Conditions of the Labouring Population of Great Britain* in 1842 highlighted the need to improve the living conditions of the poor in major towns and cities. It took years to achieve real progress. In some parts of Britain, improvements did not occur until well into the twentieth century.

The Public Health Act of 1848

A Central Board of Health was set up, with Chadwick as one of its members, with the power to set up local boards in areas where the death rate from disease was particularly high. These local authorities had the power to manage street cleaning, collection of refuse, supply of clean water and installation of sewerage systems. This system led to improvements in some towns but was not very effective across the whole country.

London sets the standard

As the largest city in Britain, London experienced particularly bad sanitation problems. In 1847 a Commission of Sewers was set up to remove all the cesspits and replace them with underground sewerage. By 1865 a sewerage system had been established for all of London.

DID YOU KNOW?

People living in crowded houses would frequently empty their toilet pot out the window, often from one or two storeys above the street. To warn anybody walking below, they would call out the French, *Gardez l'eau!* ('Beware of the water!'). This came to be expressed as 'Gardey loo!' and is said to be the origin of the word loo as an alternative term for toilet.

The Public Health Acts of 1872 and 1875

These laws divided the whole country into sanitary districts, setting up local health boards to control water supply and sewerage systems. Further laws passed at this time gave local councils the power to purchase whole slum districts, demolish them and replace them with improved housing, including parks and gardens.

SOURCE 3 The construction of sewers in London removed cesspits from the streets and improved sanitation.

20.10.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What was the role of the Central Board of Health, created by the Public Health Act of 1848?
2. In what way did London set a standard for the rest of the country in dealing with sanitation issues?
3. Explain the improvements that occurred as a result of the Public Health Acts of 1872 and 1875.

Using historical sources as evidence

4. Examine Source 3 and explain why the provision of an underground sewerage system can be regarded as a major achievement.
5. What methods can you identify in Source 3 that were used to build the sewers?

20.10 Putting it all together

Identifying continuity and change

1. Draw up a timeline to demonstrate the improvements in urban living standards that occurred in Britain after 1842.
2. Compare the provisions of the various Factory Acts with today's employment standards. Give two instances of these Acts not going far enough to protect workers.

Analysing cause and effect

3. What effect would you expect the improvements in sanitation to have had on population growth in Britain? Explain why you would come to this conclusion.

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Complete this digital doc: Worksheet 20.10 Summing up

20.11 SkillBuilder: Analysing different perspectives

online only

IDENTIFYING AND ANALYSING DIFFERENT PERSPECTIVES OF PEOPLE IN THE INDUSTRIAL REVOLUTION

When examining any historical issue or event, we should try to build up an accurate picture of what actually happened in the past. If we are relying on a primary source in the form of an eyewitness report of an event, we need to be aware of possible bias or prejudice on the part of that eyewitness.

Go online to access:

- An explanation of the skill (Tell me)
- A step-by-step process to develop the skill, with an example (Show me)
- An activity to allow you to practise the skill (Let me do it)
- Questions to test your application of the skill (Applying skills)

learnon RESOURCES — ONLINE ONLY

Complete this digital doc: Worksheet 20.11 Reflection

20.12 Review

online only

20.12.1 Review

This final subtopic provides a range of opportunities for you to review and respond through:
i. revising and checking your historical knowledge
ii. demonstrating your ability to apply historical concepts and skills.

Go online to access:

- A key chronology of events relevant to the topic
- A summary of the key knowledge presented in the topic
- A 'Big Questions' activity
- A multiple choice topic test
- Short answer or extended writing responses

learnon RESOURCES — ONLINE ONLY

Try out this interactivity: Industrial Revolution: Impact on people timeline (int-2963)

20.11 SkillBuilder: Analysing different perspectives

20.11.1 Tell me

What is historical perspective?

A historical perspective is a point of view from which historical events, problems and issues can be analysed. For example, the perspective of a factory owner in the early nineteenth century would be quite different from that of a child working in a factory or coalmine. Also, the way we view events today may be quite different from the way people viewed them in the past. Our expectation today is that all children attend school from the age of five or six until their mid or late teens. Two hundred years ago in Britain and most other European countries only the children of the wealthy were educated. Most children were expected to work to help the family as soon as they were physically able. Our perspective on child labour is completely different from the perspective of those living in the late eighteenth or early nineteenth centuries.

Why is it important to recognise a historical perspective?

When examining any historical issue or event, we should be trying to build up an accurate picture of what actually happened in the past. If we are relying on a primary source in the form of an eyewitness report of an event, we need to be aware of possible bias or prejudice on the part of that eyewitness. If we know the particular perspective or point of view of that eyewitness, we can take any such prejudices into account when assessing the accuracy of their account. Gathering eyewitness reports from a number of people, all with different perspectives of the events in question, will help us form the most accurate picture. In order to do this we need to know the perspective of each eyewitness.

20.11.2 Show me

How to identify or recognise historical perspective

The more we know about the person providing the evidence, the better able we are to identify that person's perspective. We know a good deal about factory reformer Robert Owen from his writings and his actions. If we read a report by Owen in which he praised the management of a particular textile factory, we would expect that the factory was being run in a manner similar to that of Owen's own New Lanark mills. We know enough about Owen to be able to recognise his perspective. If we were to read the opinions of another factory owner, we would want to find out as much as possible about that person to determine their perspective. This would allow us to assess their opinions and identify any bias or prejudice.

Examples of historical perspective

Example 1: William Bell Scott was a nineteenth-century painter, and one of the first to produce paintings celebrating the achievements of the Industrial Revolution. His most famous work, *In the nineteenth century the Northumbrians show the world what can be done with iron and coal* (see Source 1), was painted in 1861, and contains a broad range of activities associated with the industrial changes that had occurred in Britain during the previous hundred years. It was one of a series of paintings produced for a wealthy family in Northumberland. Bell Scott had visited Robert Stephenson's engineering workshop in Newcastle in the county of Northumberland.

When we analyse the painting, a number of features stand out. In the centre are three working men, with large hammers raised ready to hit an object, possibly the wheel of a locomotive. A fourth man is in the background, also busy at work. These men are all powerfully built, and probably represent the ideal of the British worker – powerful and determined. They do not look undernourished or ill, or the victims of exploitation. In the bottom right-hand corner of the painting, a newspaper is draped over a mechanical drawing of a locomotive of the type built by Robert and George Stephenson. In the background, a similar locomotive crosses an iron bridge. This bridge is the same as the high-level iron bridge designed by Robert Stephenson, which crossed the Tyne River in Newcastle.

SOURCE 1 Bell Scott's painting celebrating the achievements of the Industrial Revolution

In the foreground of the painting are a number of products of the Industrial Revolution – the iron anchor, a marine pump, the artillery barrel the little girl is sitting on, and a small pile of artillery shells next to it. All of these illustrate Britain's military and naval power. The little girl herself looks healthy and well-fed, and may be the daughter of one of the workmen. She holds a package that could be her father's lunch, as well as a school book, signifying that she is attending school and being educated. Education for working-class children was considered an ideal in Victorian England, and this painting suggests that ideal was being achieved.

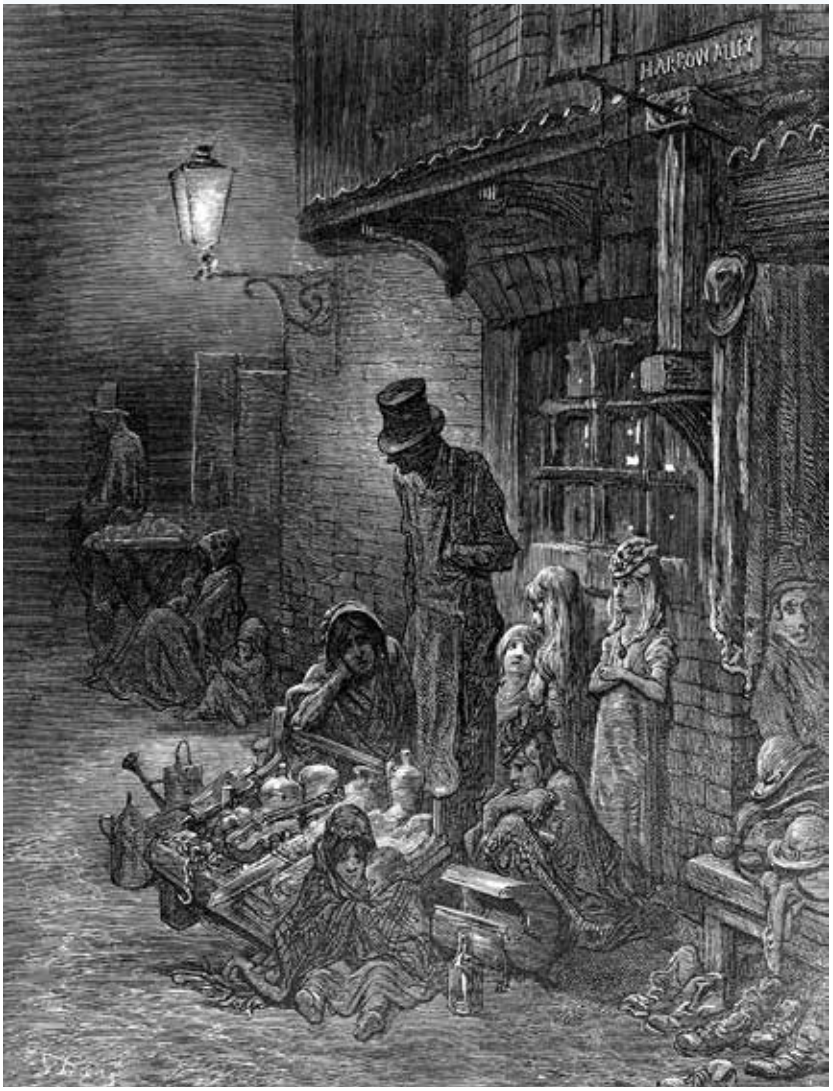
Behind the little girl a young boy stands, looking out over the dockside activities. In his right hand he holds a lamp of the type used in coal mines. This suggests that he works in the mines, and yet he also looks healthy and well-dressed. On the river below we see both steamships and sailing ships, as well as a barge carrying coal. Coal was a very important part of Northumbrian life, as the area was a major source of coal. On the dockside, two businessmen are talking in the lower left-hand corner, a young woman carries a pail on her head, and other people seem actively occupied. Across the top of the painting we see poles carrying telegraph wires, signifying improvements in communication that came with industrialisation. When we take in the painting as a whole, we see a very positive depiction of the effects of the Industrial Revolution.

An example of the use of historical perspective

Example 2: William Blanchard Jerrold was a writer and journalist. In 1869 he collaborated with French artist Gustave Doré to produce a book called *London: A Pilgrimage*. Published in 1872, this book featured descriptions and drawings of many of the poorest parts of London and its most impoverished inhabitants. It included 180 engravings by Doré showing slum areas, extreme poverty and the depressed state of much of the population. Jerrold and Doré were accused by many of showing only the worst aspects of London, but they clearly wanted to make their readers more aware of the conditions suffered by the poor. Examine Source 2 at right.

This illustration from Jerrold and Doré's book shows a poor family trying to sell a few trinkets on the street. All the family look thin and poorly clothed. The street looks dark and dirty. The fact that the whole family is present suggests they may be homeless. The whole scene is designed to show just how distressing poverty could be on the streets of London. When we understand Doré's perspective we realise that he may have deliberately exaggerated the scene to get his message across to the reader.

SOURCE 2 This engraving by Gustave Doré of a scene in the *London* street of Houndsditch appeared in *London: A pilgrimage* in 1872.



20.11.3 Let me do it

Examine each of the sources below. For each quote:

1. Find out as much as you can from the school library or the internet about the author of the quote, and write a brief statement about that person's perspective in relation to child labour in mines and factories. Consider the following questions in your research:
   (a) Who are they?
   (b) When are they writing?
   (c) Why are they writing about it?
   (d) What are they trying to achieve or what point are they trying to make?
2. Explain how each quote demonstrates that perspective.

SOURCE 3 From Michael Sadler, in a speech in the House of Commons, 16 March 1832

The parents rouse them in the morning and receive them tired and exhausted after the day has closed; they see them droop and sicken, and, in many cases, become cripples and die, before they reach their prime; and they do all this, because they must otherwise starve. It is a mockery to contend that these parents have a choice. They choose the lesser evil, and reluctantly resign their offspring to the captivity and pollution of the mill.

SOURCE 4 Henry 'Orator' Hunt, in a speech in the House of Commons, 16 March 1832

The question is, whether the children of the manufacturing poor should work for more hours than human nature can sustain. If the honourable members were to see hundreds of the poor, unfortunate wretches employed in the cotton-mills in Lancashire, they would feel the absolute necessity of adopting an active interference. I say, let the manufacturer keep double the number of workmen, but do not let him destroy the health of the rising generation.

SOURCE 5 Henry Thomas Hope, in a speech in the House of Commons, 16 March 1832

The right honourable member [Michael Sadler] seems to consider that it is desirable for adults to replace children. I cannot concur with that opinion, because I think that the labour of children is a great resource to their parents and of great benefit to themselves. I therefore, on these grounds, oppose this measure . . . I believe that the bill will be productive of great inconvenience, not only to persons who have embarked large capital in the cotton manufactures, but even to workmen and children themselves . . .

20.11 Applying skills

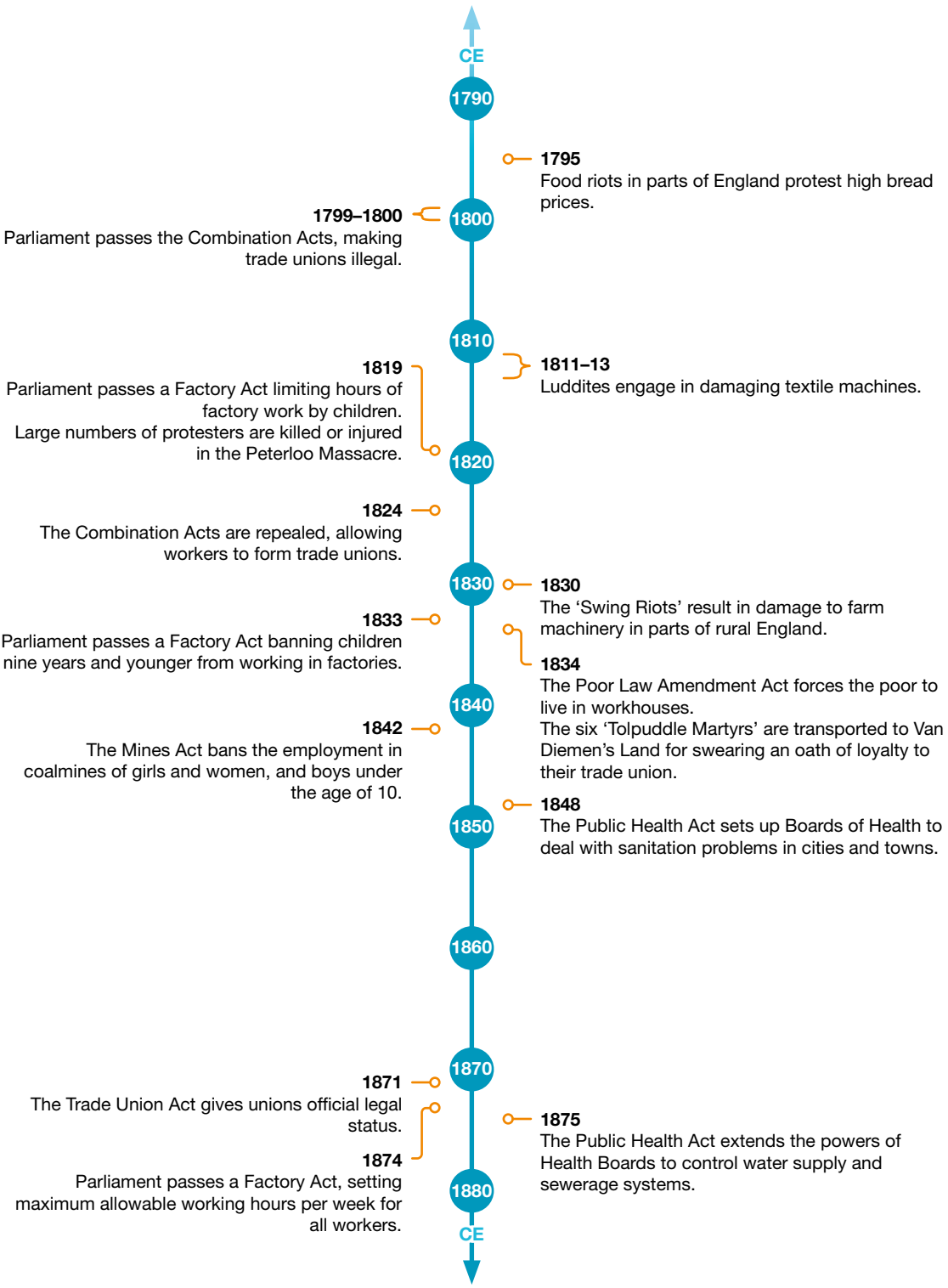
Using historical sources as evidence

1. Which extract do you find most convincing? Why?
2. For each extract, identify the values or beliefs the author is revealing.
3. For each extract, identify what benefit the author stands to gain if his point of view is persuasive.

20.12 Review

20.12.1 Review

Chronology: timeline of the Industrial Revolution's impact on people



Key knowledge: summary

20.2 Examining the evidence

- Contemporary writers and commentators can give us an insight into the changes that took place in Britain during the Industrial Revolution.
- During the eighteenth and nineteenth centuries, the British government began collecting statistics about population, recording information about where people lived and the changes that occurred in society during this time.
- The evidence given at special government inquiries can provide evidence of people's living conditions.
- Painters and other artists are useful sources of information in relation to changes during the Industrial Revolution.

20.3 The impact of enclosure

- Agricultural improvements led to a large increase in the population from the latter part of the eighteenth century onwards.
- The enclosure of farmland was of benefit to landowners, but ordinary farm workers suffered as a result.
- The Speenhamland system was established to provide aid to the poor in rural towns and villages.
- Food riots in 1795 and the Swing Riots of 1830 are examples of unrest in rural areas.

20.4 Conditions in factories and mines

- Working conditions in textile factories were very unpleasant and often dangerous, with factory workers, including women and children, forced to work long hours.
- Men, women and children all worked in coalmines, in dangerous and unhealthy conditions.
- The Mines Commission of 1840–42 heard evidence on the working conditions in mines.
- The Mines Act of 1842 placed restrictions on the employment of women and children in coalmines.

20.5 Child labour

- Young children were employed in textile factories in the dangerous jobs of 'piecers' and 'scavengers'.
- Young girls were employed in mines as 'hurriers', pulling carts of coal along narrow tunnels.
- Children as young as four or five were employed in mines as 'trappers', opening and shutting ventilation doors.
- Young boys were also employed to climb into chimneys and clean them.

20.6 Urban conditions and people's health

- Towns grew into large cities near textile factories with very little planning and with overcrowding and lack of sanitation.
- Buildings were often erected cheaply, so accommodation for factory workers was of very poor quality.

20.7 Poor laws and workhouses

- Following a government inquiry, the Poor Law of 1834 forced the poor into workhouses.
- Life in the workhouse was made as unpleasant as possible, with families split up, and cruel punishment for those breaking the rules.
- Inmates of the workhouse were put to work at menial tasks.

20.8 Social unrest and trade unions

- Rapid changes led to unrest and protests such as those of the Luddites.
- Trade unions had been banned, but were allowed to operate after 1824.
- The Chartist movement developed during the 1830s, calling for democratic reforms in the election of parliament.
- As the nineteenth century progressed, trade unions gradually became established as legitimate organisations.

20.9 The growth in ideas

- Economic theories such as capitalism and socialism presented different ideas as to how business, workers and the economy should operate.
- The development of imperialism saw the expansion of European empires into Asia and Africa.
- The political idea of egalitarianism grew from the eighteenth-century European Enlightenment, and inspired both the American and French revolutions, as well as the aims of groups such as the Chartists.
- Nationalism first developed in France as a response to the wars against other European powers, and became a driving force behind the unification of Italy and Germany in the nineteenth century.
- Charles Darwin proposed a scientific theory of evolution, which became known by many as 'Darwinism'.

20.10 Reformers and progress

- Prominent reformers such as Robert Owen and Lord Ashley campaigned for improved working conditions in mines and factories.
- Reformers such as Edwin Chadwick campaigned for improved sanitation in large cities.
- During the nineteenth century, parliament passed a number of Factory Acts, gradually improving conditions for ordinary workers.
- Large cities such as London were given the power to improve urban living conditions, and gradually worked to deal with public health issues, such as the need for sewerage systems.

Key knowledge: multiple-choice topic test

Choose the letter that best answers the question.

1. Between 1801 and 1861, in what way did the population of Britain change?
   a. Both urban and rural populations increased by a similar percentage.
   b. Urban population grew and rural population decreased.
   c. Rural population grew while urban population decreased.
   d. Both urban and rural populations increased.
2. Agricultural workers were disadvantaged by enclosure because
   a. they had to work for wealthy farmers rather than wealthy landlords.
   b. they no longer had access to common land.
   c. they were subject to many more diseases.
   d. their family members had all moved to the towns to work in factories.
3. Which of the following would not have been considered a danger in an early-nineteenth-century textile mill?
   a. Lack of safety guards around machines
   b. Poor ventilation and small windows
   c. Machines being powered by large steam engines
   d. Breathing in dust and other residues from the cotton
4. A serious danger to the health and safety of workers in an early-nineteenth-century deep-pit coalmine was
   a. flooding in the bell pits.
   b. that miners wore little or no clothing.
   c. the presence of explosive gases.
   d. locomotives taking the coal out of the pit.
5. In a coalmine, 'trappers' had the job of
   a. opening and closing ventilation doors.
   b. trapping rats and other vermin in the mines.
   c. collecting coal that had fallen off a cart.
   d. holding on to ladders while others climbed them carrying coal.

6. ‘Piecers’ and ‘scavengers’ were
   a. people who moved around the streets picking up pieces of rubbish.
   b. children who collected small pieces of coal in the mines.
   c. children who had no parents and had to scavenge for food.
   d. children who worked in textile factories.
7. ‘Climbing boys’ were required to
   a. climb on textile-weaving machinery to carry out repairs.
   b. climb up ladders carrying bags of coal.
   c. climb into chimneys to clean them.
   d. climb under textile machines to join broken threads.
8. One reason why housing for workers during the early years of the Industrial Revolution was of such poor quality was that
   a. workers had to build their own cottages.
   b. there was no planning or supervision by government.
   c. housing was built close to factories, which were noisy and unhealthy.
   d. people were forced to live in slums.
9. The building of workhouses increased rapidly after 1834 because
   a. the Poor Laws abolished outdoor relief.
   b. there were many more poor people living in towns.
   c. workhouses were very unpleasant places to live in.
   d. there was an increase in the need for picking oakum.
10. Workhouse conditions were deliberately made as unpleasant as possible so that
   a. they could punish people by separating children from their parents.
   b. the master of the workhouse could punish people who disobeyed the rules.
   c. men and women could be kept in separate quarters.
   d. nobody capable of working would want to live there.
11. The Combination Acts were designed to
   a. prevent workers from joining unions.
   b. prevent factory owners from joining together to raise prices of textiles.
   c. prevent large groups of people from protesting at events such as the Peterloo Massacre.
   d. prevent Luddites from joining together to destroy factory machinery.
12. A major aim of the Chartists was to achieve
   a. improved conditions in factories and mines.
   b. improved living conditions in towns and cities.
   c. improved parliamentary democracy.
   d. improved membership of trade unions.
13. Adam Smith aimed to promote and encourage the growth of
   a. nationalism.
   b. capitalism.
   c. socialism.
   d. Darwinism.
14. Charles Darwin’s theory of evolution was very controversial because
   a. he proposed that only the fittest should be allowed to survive.
   b. he had noticed that there were many variations between different species.
   c. he declared that he did not believe in God.
   d. he challenged traditional religious beliefs.

15. The various Factory Acts passed by the British Parliament during the nineteenth century had the effect of
    a. making working conditions in the mines much safer.
    b. reducing working hours for women and children.
    c. allowing factory workers to join unions.
    d. banning women from working in dangerous conditions.

20.12.2 Respond

Analysing cause and effect

1. Use the internet or your library to research the locations identified in Source 1.
    a. Which of these locations had large numbers of factories and experienced rapid population growth during the Industrial Revolution?
    b. Which of these locations remained primarily rural during this period?
    c. What is meant by the term 'gentry' in the categories of people included in the table?
    d. Give examples of the types of occupations that would have been included in each of the groups of people included in the table.
2. Examine the statistics provided in Source 1.
    a. To what extent did living in a factory town cause people to have a shorter life than those living in a rural area? Give two examples from the table to support your conclusion.
    b. What does this table tell us about the possible causes of disease and early death in factory towns?
    c. Which place appears to have the worst health outcomes in England at this time? Use figures from the table to support your conclusions.
    d. To what extent was a person's occupation likely to impact on their lifespan? Give examples from the table.
    e. The average age of death for the professional/gentry group in Bolton is the same as that for labourers in Kendal. Explain what you believe may have caused this similarity.

SOURCE 1 Average age of death in selected countries and cities in England, 1842

Place	Average age of death		
	Professional/ gentry	Tradesmen	Labourers
Bethnal Green	45	26	16
Bolton	34	23	18
Derby	49	38	21
Kendal	45	39	34
Leeds	44	27	19
Liverpool	35	22	15
Manchester	38	20	17
Wiltshire	50	48	33

Source: From Edwin Chadwick, *Report on the Sanitary Conditions of the Labouring Population of Great Britain*, 1842, www.spartacus.schoolnet.co.uk/PHchadwick.htm.

Using historical sources as evidence – exploring historical perspectives

SOURCE 2 A negative view of the Industrial Revolution. From J. L. and Barbara Hammond, *The Rise of Modern Industry*, 1925, p. 232

England asked for profits and received profits. Everything turned to profit. The towns had their profitable dirt, their profitable slums, their profitable smoke, their profitable disorder, their profitable ignorance, their profitable despair . . .
For the new town was not a home where man could find beauty, happiness, leisure, learning, religion, the influences that civilise outlook and habit, but a bare and desolate place, without colour, air or laughter, where man, woman and child worked, ate and slept . . .
The new factories and new furnaces were like the Pyramids, telling of man's enslavement rather than of his power, casting their long shadow over the society that took such pride in them.

SOURCE 3 A positive view of the Industrial Revolution. From T. S. Ashton, *The Industrial Revolution (1760–1830)*, 1948, p. 129

An historian has written of 'the disasters of the industrial revolution' . . . [I]f he means that the technical and economic changes were themselves the source of calamity the opinion is surely perverse.
The central problem of the age was how to feed and clothe and employ generations of children outnumbering by far those of any earlier time. [England] . . . was delivered . . . by those who . . . had the wit and resource to devise new instruments of production and new methods of administering industry.
There are today [in the Third World] men and women, plague-ridden and hungry, living lives little better, to outward appearance, than those of the cattle that toil with them by day and share their places of sleep at night. Such . . . horrors are the lot of those who increase their numbers without passing through an industrial revolution.

1. John and Barbara Hammond were a husband and wife who wrote many books about the negative social consequences of the Industrial Revolution. He was born in 1872, and she was born in 1873. Source 2 is from their many writings.
   a. Would you regard Source 2 as a primary source or a secondary source? Give reasons for your answer.
   b. Explain the attitude of the Hammonds towards 'profit'.
   c. What does this attitude tell us about their overall perspective on the Industrial Revolution?
   d. Why did they regard the new industrial towns as 'desolate' places?
   e. What point were they attempting to make by comparing factories to the pyramids?
2. T. S. Ashton was a professor of economic history at the University of London. He was born in 1889 and he wrote a number of books about the benefits of the Industrial Revolution. Source 3 is from his most famous work.
   a. Would you regard Source 3 as a primary source or a secondary source? Give reasons for your answer.
   b. What is Ashton's view of the unnamed historian who wrote of 'the disasters of the industrial revolution'?
   c. What does Ashton believe was the central problem of the age of the Industrial Revolution?
   d. What do you think Ashton means when he says the England was 'delivered . . . by those who . . . had the wit and resource to deliver new instruments of production and new methods of administering industry'?
   e. What does this tell us about his attitudes towards the factory and mine owners of the eighteenth and nineteenth centuries? Give reasons for your answer.

f. What does Ashton mean when he refers to 'the Third World'?
g. What do you think he is suggesting should happen in Third World countries? Use an example from the source to support your opinion.

3. Using what you have learned in this topic and topic 1, work in groups of three or four to draw up two lists. One list should include the positive effects of the Industrial Revolution, and the other the negative effects. Compare your lists with those of the rest of the class. Your teacher can assist in collating complete lists of all the positives and negatives identified.
4. After considering all the positives and negatives, write your own opinion on whether or not the Industrial Revolution was a positive or negative experience for Britain and its people. Remember to justify your opinion with evidence.

Responding to the big questions

At the beginning of this topic several big questions were posed. You can now apply what you have learned to answer them.

1. What was the impact on towns and cities as people moved away from the countryside to find employment in factories?
2. How were men, women and children affected by changes in working conditions in factories, mines and on farms?
3. How did the growth of factories and cities affect the environment and people's living conditions?
4. To what extent did social unrest lead to the growth in the trade union movement and support for movements such as Chartism?
5. How did the changes in economic and social circumstances lead to the development of new ideas and proposals for reform and improvement?

TOPIC 21 Movement of peoples (1750–1914)

21.1 Overview

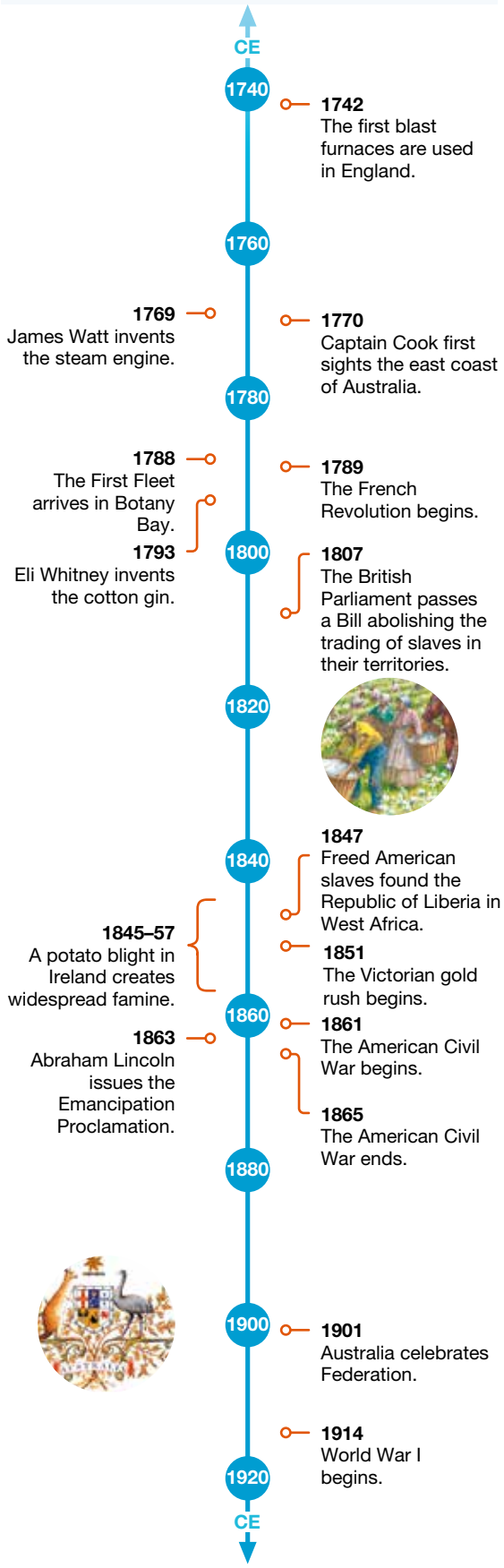
Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

21.1.1 Links with our times

These days it is not unusual for families or groups of people to migrate from one part of the world to another. It is emotionally and physically exhausting to start a new life in a different part of the world, and the situation in the eighteenth and nineteenth centuries was not so very different. Political upheavals in Europe and the social and economic dislocation brought about by the Industrial Revolution changed how people lived and worked. Rapid urbanisation forced many people away from one region and towards another — sometimes voluntarily, sometimes against their will, as slaves or convicts.

Today slavery is outlawed, but it still occurs in some countries. Slavery has existed in many cultures for thousands of years, but it was during the eighteenth and nineteenth centuries that it played a tragic role in the development of the modern world. In Australia, convict transportation and emigration led to many leaving their homeland to make a new life, with few ever seeing their homeland again.

A timeline of key events relating to movement of peoples, 1750–1914



Big questions

1. What factors affected the patterns of migration from Britain to Australia in the nineteenth century?
2. What was the significance of European imperialism to slaves, convicts and migrants?
3. What conditions did slaves and convicts face when they were put to work?

Starter questions

1. Does slavery still exist in the modern world? If so, where?
2. Why do you think slavery continues in some parts of the world?
3. What do you already know about Australia's convict past?
4. Does your family have an immigrant background? If so, do you know why your family decided to migrate to Australia?

INQUIRY SEQUENCE

21.1	Overview		475
21.2	Examining the evidence		477
21.3	Overview of slavery		479
21.4	Slavery and the cotton trade		484
21.5	The end of slavery?		486
21.6	Crime and punishment		489
21.7	Transportation to Australia		491
21.8	Convict life		496
21.9	Emigration to Australia		499
21.10	Migration to the goldfields		503
21.11	**SkillBuilder:** Analysing cause and effect	online only	507
21.12	**Review**	online only	508

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Complete this digital doc: Worksheet 21.1: Slavery

21.2 Examining the evidence

21.2.1 How do we know about the movement of peoples?

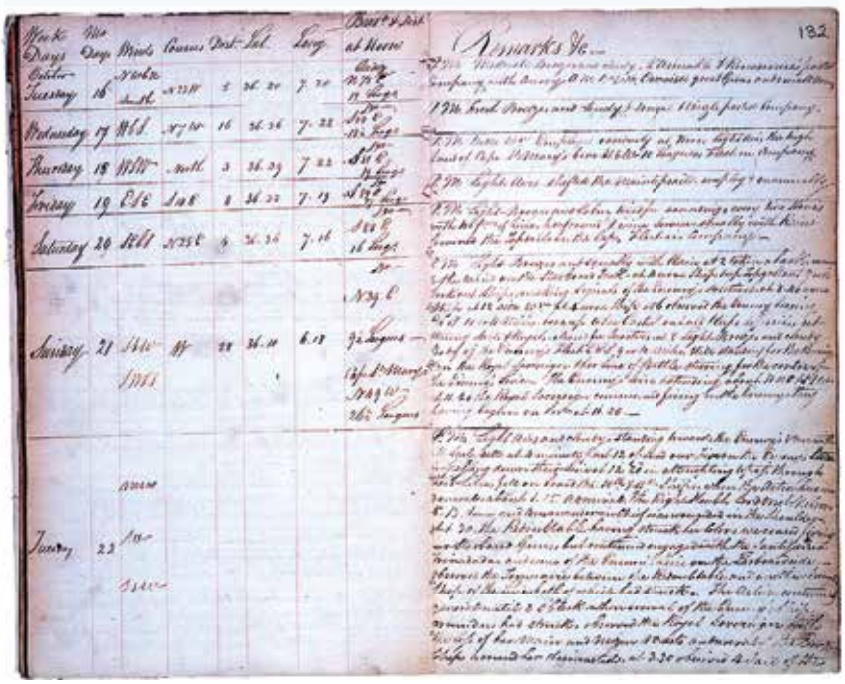
A wide range of historical sources reveal a great deal of useful information about the years between 1750 and 1914. The Industrial Revolution changed the way many people lived and worked. Governments and employers kept records of the people who worked for them. Artists and writers recorded their own impressions of the period.

Historical sources

Historians have learned much about the period between 1750 and 1914 by studying a wide range of historical sources. These include written sources such as personal diaries and memoirs, official government reports and other publications. They also include visual sources such as photographs (from the 1830s onwards) and illustrations.

Information about any historical period comes from two main types of sources — primary sources and secondary sources. As you already know, a primary source is a first-hand source produced by someone who witnessed the event being studied. Secondary sources, usually produced at a later time, interpret primary sources.

SOURCE 1 A page from a ship's log. It indicates the ship's course and the wind strength and direction, and allows room for comments by the captain.



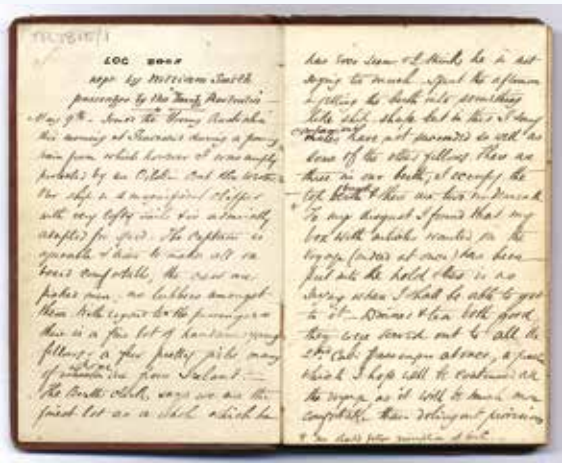
It is important to bear in mind that a primary source is not necessarily more valuable than a secondary source. Both have value and limitations for historians and history students. Every source may be useful in some ways but less useful in others.

Source 1 shows a page from a ship's logbook. The logbook provides useful information on the technical aspects of the voyage, such as wind speed and course (the direction the ship is travelling). However, there is information that it does not tell us. For example, we don't know what the ship is carrying, and we cannot discover what the passengers and crew were thinking.

Source 2 offers very different information from Source 1. It gives an insight into a migrant's life and reveals one individual's personal feelings, rather than technical information.

Source 3 provides another interesting perspective. It is an illustration that shows a slave being punished. Although this sort of punishment was certainly common, it is difficult to know whether the scene portrayed recorded an actual event or depicted an event imagined by the artist. Because of this it has both value and limitations as a historical source.

SOURCE 2 This page from a migrant's diary is a very different type of source from Source 1.



SOURCE 3 This nineteenth-century illustration shows a slave being flogged. We don't know if this specific event actually happened or whether it represents a typical slave punishment.

21.2 Putting it all together

Using historical sources as evidence

1. Identify whether each of the following would be a primary or a secondary source for the period studied in this subtopic.
   (a) A diary of a migrant coming to Australia
   (b) A photograph of slaves at work on an American cotton plantation
   (c) A newspaper report from 1863 notifying people about a shipwreck
   (d) A cartoon from a newspaper portraying life on board a migrant ship
   (e) A poster advertising an upcoming slave auction.
2. In what way is the illustration in Source 3 useful to a historian? What limitations does this image have as a source? Explain what this tells us about the importance of studying other types of sources in addition to this type.

Determining historical significance

3. Explain how the significance of a historical source can change depending on what information a historian is trying to find.
4. How significant would Source 1 be to a historian who is researching personal stories of migrants? Is there another source that you think would be more useful?

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Complete this digital doc: Worksheet 21.2: Steps to stopping slavery

21.3 Overview of slavery

21.3.1 The origins of the slave trade

Slavery has existed for thousands of years. Many different civilisations around the world have used, and sometimes even still use, slavery in one form or another. But it was only after the arrival of Europeans in the Americas in the late fifteenth century that the slave trade became an **intercontinental** industry. Over the next four hundred years, millions of slaves were transported from Africa to support the industry and economies of America and much of Europe. Slavery helped build the wealth of America and England, but the slaves themselves saw none of that wealth.

When Christopher Columbus reached the Caribbean island of Hispaniola in 1492 he immediately saw the prospective wealth that the New World could bring to Europe. After leaving Spain he had sailed along the coast of Africa and he already had Africans working on his ship. As Spanish settlers began to follow Columbus to make their wealth in the Americas they needed workers. In the early years of the New World, when the Spanish were the most numerous Europeans there, many among the local populations of Native Americans were killed or reduced to slavery.

The slaves were used for labour in South America and to help build the empire of **New Spain** as it expanded northwards. Most were put to work in the goldmines. Facing 18-hour days, six days a week, in terrible conditions, thousands were worked to death or died of starvation or beatings. Thousands more died from introduced diseases, brought by the Europeans, against which the native population had little resistance or immunity. Replacements were needed so African slaves, who had already had contact with Europeans and had built some resistance to European diseases, were transported to New Spain.

SOURCE 1 Emanuel Downing, a plantation owner from Massachusetts, 1645

I do not see how we can thrive until we get a stock of slaves sufficient to do all our business.

When the English began to establish plantations in the Caribbean islands and the American mainland to grow sugar, cotton and tobacco, they too imported slaves from Africa. They saw the native population as unsuitable for labour and besides, as in New Spain, they were quickly being used up through disease and overwork. African slaves soon became a vital part of the economy of the Americas.

Source 1 shows the importance placed on slavery by one English plantation owner. Some European labourers and convicts were put to work, but in general European servants were hard to find. Most had come to America to work for themselves, not for someone else. Soon African slaves became household servants as well as manual labourers.

21.3.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why did the English prefer to use slaves from Africa rather than Native American people?
2. Why did slavery become a vital part of the American economy?

Using historical sources as evidence

3. Describe the attitude towards slavery of the plantation owner in Source 1.

21.3.2 Kidnapped and traded

Early European slave traders raided the African coast and kidnapped any able-bodied Africans they could capture. Sometimes they tempted their victims close to the ships with displays of brightly coloured cloth or decorated beads. Later they developed trading arrangements with African tribal chiefs who raided weaker tribes in the interior and brought the slaves they captured to the coastal depots set up by European slavers. Here slaves would be held until there were enough to fill a slave ship. Once sold, slaves were branded with a red-hot iron to indicate who had bought them. Europeans established coastal forts to protect the valuable trade.

SOURCE 2 Gathering of slaves in Africa, before transportation, created in 1845

SOURCE 3 This map shows the route the slave ships took in the Triangular Trade.

21.3.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

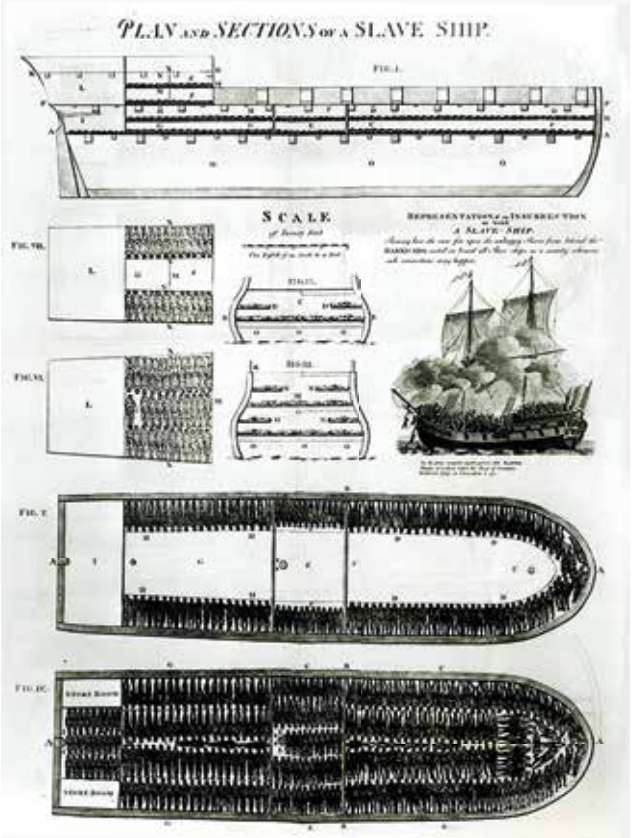
Check your understanding

1. How did slave traders take advantage of rivalry between different African tribes?
2. Why were slaves branded after they were bought?

21.3.3 The Middle Passage

The route taken by slave ships across the Atlantic Ocean forms a rough triangle, hence the Atlantic slave trade is often referred to as the Triangular Trade. Ships left Europe with goods to sell in West Africa. There they sold the goods and filled their ships with slaves. The map in Source 3 shows the main route of the Triangular Trade. This 'cargo' was packed tightly in the ship's holds for the terrible Middle Passage, crossing the Atlantic Ocean to the Americas (see Source 4). Conditions on slave ships were appalling. Those who did not survive the journey, perhaps as many as one quarter of the total, were simply thrown overboard. For the final leg of the triangle the ships were loaded with goods and raw materials such as sugar, rum, cotton and tobacco to be sold on their return to Europe. These raw materials would be processed in Britain and then sold for profit.

SOURCE 4 This plan of a slave ship from 1789 shows how tightly packed the slaves were.



21.3.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why is the African slave trade referred to as the Triangular Trade?

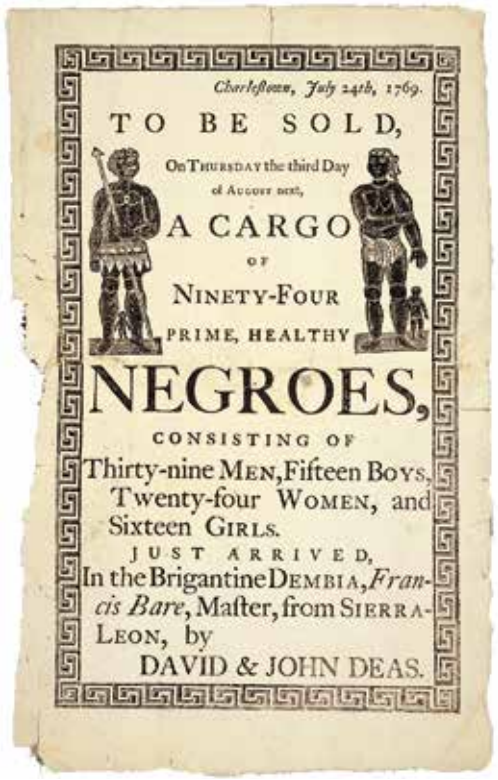
Using historical sources as evidence

2. Sketch the map in Source 3 and then add labels to identify what the ships would be carrying on each leg of the Triangular Trade.
3. Explain what Source 4 suggests about the way slaves were regarded by the slave traders.

21.3.4 Sold

As slave ships arrived at ports in the Caribbean and along the coast of North America, plantation owners would gather to make their purchases. Posters like the one shown in Source 5 advertised upcoming ship arrivals, detailing the number of slaves available and their state of health. There were generally two ways in which a slave sale would take place. The first, referred to as a 'scramble', must have been particularly terrifying for the slaves. Upon arrival in port the slaves were herded together either on the deck of the ship or in a nearby auction yard. Buyers paid a fixed amount before the sale and at a given signal rushed at the slaves, grabbing as many as they could. In the process families would often be separated, husbands from wives, parents from children.

SOURCE 5 A poster advertising an upcoming slave sale



Charleſtown, July 24th, 1769.

TO BE SOLD,

On THURSDAY the third Day of AUGUST next,

A CARGO OF NINETY-FOUR PRIME, HEALTHY

NEGROES,

CONSISTING OF

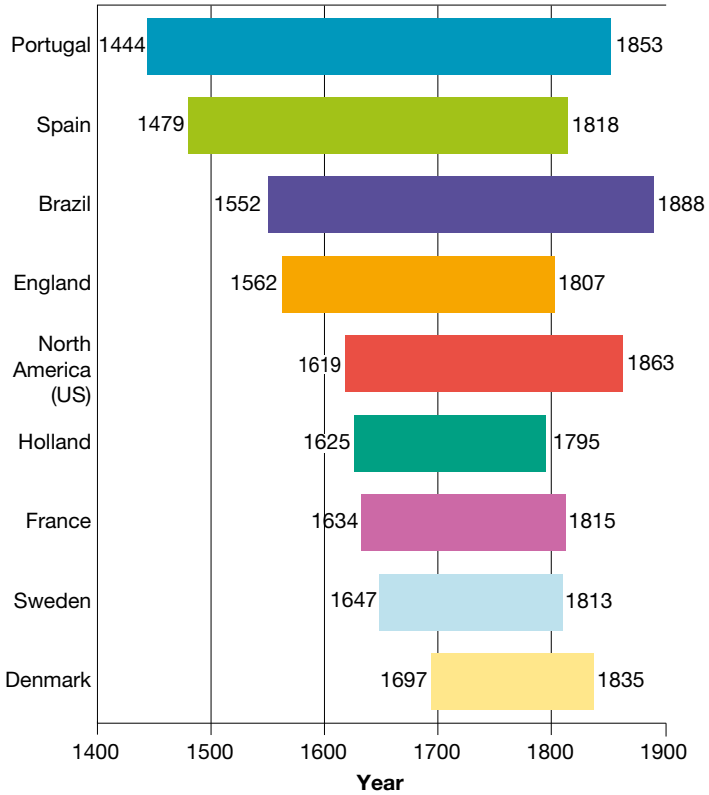
Thirty-nine MEN, Fifteen BOYS, Twenty-four WOMEN, and Sixteen GIRLS.

JUST ARRIVED,

In the Brigantine DEMBIA, *Francis Bare*, Maſter, from SIERRA-LEON, by

DAVID & JOHN DEAS.

SOURCE 6 A chart showing approximately when different countries engaged in the slave trade



The other type of sale took place at an auction at which individual slaves were sold to the highest bidder (see Source 7). Slaves were made to stand on a raised platform so they could be inspected by prospective owners. Their teeth would be examined to check their health. Signs of beatings could lower the price because they suggested a poor worker or potential escapee. In reality, scars were more likely to be a sign of violent abuse than of insolence. Sometimes unscrupulous doctors would buy weak or sick slaves in the hope of strengthening them and selling them on for a profit.

SOURCE 7 This painting by German artist Friedrich Schulz illustrates what a slave auction in the southern states may have looked like.

During the entire ordeal the slaves themselves knew nothing of what was going to happen to them. They did not speak the language of their captors and had no knowledge of their world. They were alone, usually separated from their families. Once sold they were often given a new name and branded a second time by their new owner before being sent to work.

Precise figures are unknown, but it is believed that at least 15 million Africans were forced from their homes and sold into slavery in the Americas, the majority taken by Spanish slavers to Brazil.

SOURCE 8 A slave auction house in Virginia, c. 1860. The sign reads 'Price, Birch & Co., dealers in slaves'.

21.3.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Outline the two types of slave sale that took place.
2. Suggest why slaves were given new names by their owners after they were bought.
3. Explain why it is difficult to gain accurate figures of the numbers of slaves bought and sold in the Triangular Trade.

21.3 Putting it all together

Using historical sources as evidence

1. Use the chart in Source 6 to answer the following questions.
   (a) What was the first country on this chart to engage in the slave trade?
   (b) What country was the last to abolish the slave trade?
   (c) Which country practised the slave trade for the longest time? Suggest a reason for this.
   (d) For how many years did England practise the slave trade?
   (e) What values and limitations does historical information presented in a graph have compared with the other sources in this subtopic?
2. Use Sources 4, 5, 7 and 8 to write a summary paragraph of the experience of a slave from living in freedom to being sold at a slave market. Refer to specific aspects of the sources as you go.

Identifying cause and effect

3. Specify and explain the causes of the Triangular Trade, indicating clearly why people from Africa were transported across the Atlantic Ocean.
4. Outline the unintended effect of using Native American people as labour.

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Complete this digital doc: Worksheet 21.3: Does the punishment fit the crime?

myWorld History Atlas
Deepen and check you understanding of this topic with related case studies and auto-marked questions.
- Movement of peoples
- Slave trade

21.4 Slavery and the cotton trade

21.4.1 'King Cotton'

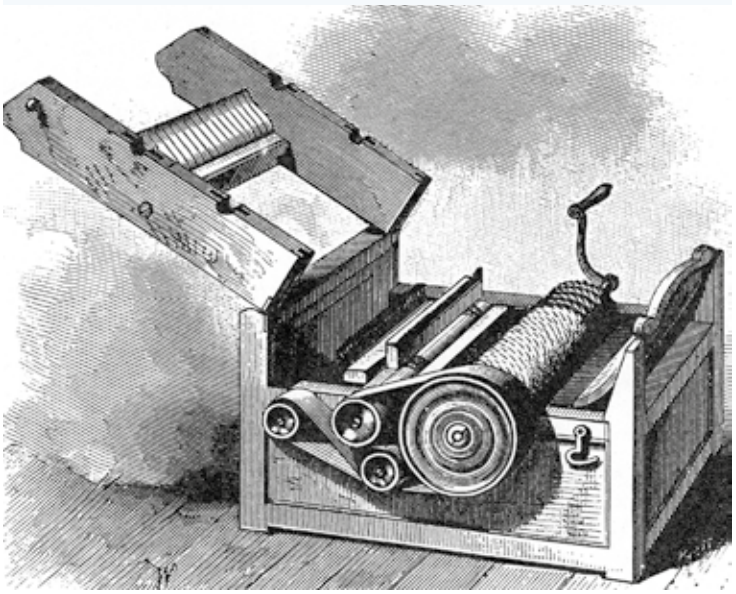
The Industrial Revolution improved the lives of millions of people around the world. Mass-produced goods became more accessible and cheaper to buy. But while life was made easier for some, for many others the changes meant only a life of back-breaking labour.

The Industrial Revolution resulted in a massive boost to the textile industry in Britain. As mechanisation increased, the need for raw materials grew. Textiles became Britain's largest export, and the textile mills demanded more and more cotton. Until the early 1800s Britain's cotton came mainly from India, but India was now unable to keep up with the demand. So Britain turned to the southern states of the United States, where cotton was a growing industry.

The long, hot summers and rich soils of the South were ideal for cotton production, but the work in the cotton fields was brutal. After the cotton was picked, slaves had to separate the seeds from the cotton fibre. This was very labour intensive: a slave working from dawn until dusk would be able to process about half a kilogram of cotton. In 1793 an inventor named Eli Whitney invented a machine that removed the seeds automatically (see Source 1). With the cotton engine, or 'cotton gin' as it was called, a slave could seed more than 20 kilograms of cotton in a day — about forty times as much as before the invention.

Whitney could not have foreseen the consequences of his invention as its use became widespread in the American cotton fields. It certainly made cotton processing easier for the slaves, but this massive increase in production meant the demand for slaves also increased. Cotton quickly became the backbone of the economy in the southern United States, overtaking both tobacco and sugar. The southern states produced 75 per cent of the world's cotton. The expression 'King Cotton' was used by southern politicians to illustrate its economic importance. Between 1820 and 1860 cotton production increased seventeen-fold and the number of slaves increased by 250 per cent, despite the fact that half of all babies born to slaves died in infancy. Interestingly, only around a quarter of southern farmers actually owned slaves, but slavery was so important to the economy of the South that any opposition to it was regarded almost as treason.

SOURCE 1 Eli Whitney's cotton gin



21.4.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why were the southern states of the United States an ideal place to grow cotton?
2. What invention made removing seeds from cotton much faster?
3. What proportion of southern farmers owned slaves?

21.4.2 Life on the plantation

Of every hundred slaves taken captive in Africa, about twenty-five died before being put to work. Another third of those who survived long enough to reach a plantation died within two years. The survivors experienced the process called 'seasoning' during which they learned their roles and grew to fear the slave drivers. Punishment for wrongdoing was harsh. For any sign of resistance to cruel treatment or for working too slowly, slaves might expect to be lashed or made to walk a **treadwheel**. The other slaves were often forced to witness the punishments as a deterrent. Source 2 recalls one instance of a slave being punished.

Slaves' living quarters were very simple. Sometimes the plantation owner would provide basic quarters, but often the slaves would have to build their own. There was little furniture and beds were simply straw or rags on the ground. Slaves who worked as house servants usually had better quarters and food than those who worked in the fields.

SOURCE 2 Description of a flogging from C. Bull, *Slavery in the United States*, 1836

I had often seen black men whipped, and had always, when the lash was applied with great severity, heard the sufferer cry out and beg for mercy — but in this case, the pain inflicted was so intense, that Billy never uttered so much as a groan. The blood flowed from the commencement, and in a few minutes lay in small puddles at the root of the tree. I saw flakes of flesh as long as my finger. When the whole five hundred lashes had been counted the half dead body was unbound and laid in the shade of the tree upon which I sat.

SOURCE 3 A modern artist's reconstruction of a typical cotton plantation

A Slaves often had to build their own small quarters.

B Baled cotton was transported on carts.

C Cotton was also transported on barges.

D Labour on a cotton plantation was back-breaking.

E Slave drivers oversaw work on the plantation.

21.4.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What percentage of slaves taken captive survived the 'seasoning' process?
2. Explain why it was important for slaves to fear the slave drivers.

Using historical sources as evidence

3. What effect would the punishment described in Source 2 have on slaves who witnessed it?
4. Identify elements in Source 3 that illustrate the value of cotton at the time.

21.4 Putting it all together

Identifying continuity and change

1. Identify the changes brought to America by the cotton industry.

Analysing cause and effect

2. Examine the positive and negative effects on the life of a slave after the introduction of the cotton gin.

Determining historical significance

3. How would you respond to the statement 'The invention of the cotton gin was one of the most significant events in history'? To what extent can this statement be justified?

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Complete this digital doc: Worksheet 21.4: Australia — a gaol of hope

21.5 The end of slavery?

21.5.1 Early opposition

Many of the people who supported the institution of slavery argued it was an effective way to introduce Christianity, the values of civilisation and the virtue of hard work to those under its control. This made it difficult for opponents of slavery to have their voices heard. But over time ideas and values began to change. It was through the relentless efforts of a core of committed people that the Atlantic slave trade was eventually outlawed.

Supporters of slavery in the US argued that it was essential to the economy of the southern states. Despite its being banished in most northern states from 1787, the southern states would stubbornly resist **abolition**. Reformers spoke patiently at meeting after meeting about the terrible facts of the slave trade. They presented petitions and lobbied politicians to support their cause.

SOURCE 1 The British Parliament debates slavery.

In 1772 a test case heard in England addressed the fate of a runaway slave named James Somersett. An English reformer, Granville Sharp, argued that under English law all men are free, and the Chief Justice, Lord Mansfield, agreed with him. The Mansfield Judgement declared slavery to be illegal in England and Wales. Although there was still much to be done to eliminate slavery completely, this case is considered to be an important early step on the road to abolition.

21.5.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain the meaning of the word 'abolition'.
2. Why did the southern states resist the abolition of slavery?

21.5.2 The movement gains momentum

Fifteen years after the Mansfield Judgement, the abolitionist Thomas Clarkson formed the Society for the Abolition of the Slave Trade. Its emblem, shown in Source 2, was a kneeling, shackled slave with the question 'Am I not a man and a brother?' around him. Many supporters of slavery, who certainly did not think of slaves as brothers, were incensed by the suggestion. They maintained that ending slavery would bring about economic ruin. This claim was challenged by a young economist, Adam Smith, who argued that it cost more to feed and house a slave than to employ a free man to do the same work.

SOURCE 2 The emblem of the Society for the Abolition of the Slave Trade

At about the same time as the Mansfield Judgement, a young English member of Parliament named William Wilberforce began to campaign against slavery. As a close friend of the prime minister, William Pitt, Wilberforce became a pivotal force in the abolition movement. He knew that many politicians in England still did not care about the fate of African slaves overseas, so instead he focused on the terrible conditions that British sailors endured in maintaining the trade. In 1807 the British Parliament finally passed a bill abolishing the trading of slaves in British territories. This did not make it illegal to own slaves, only to buy new ones. It wasn't until 1833 that all slaves in the British Empire were freed.

21.5.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What was the economic argument for abolishing slavery?
2. What important step towards abolition was made in 1807?

Using historical sources as evidence

3. Outline the meaning of the phrase 'Am I not a man and a brother?' in Source 2.

21.5.3 Abolition in America

Despite abolition in Britain the southern plantation states of the United States still clung to slavery. The plight of slaves was highlighted in 1852 with the publication of Harriet Beecher Stowe's novel *Uncle Tom's Cabin*. The stories of runaway slaves who escaped to the north with the help of the 'Underground Railroad' — a secret network of sympathisers — increased calls for abolition. One such escapee was Frederick Douglass, who became a famous orator and statesman who worked tirelessly for the abolition cause.

On 1 January 1863 President Abraham Lincoln signed the Emancipation Proclamation, declaring that all slaves in the United States were 'henceforth and forever free'. There is no doubt that it was a political as much as a moral decision. Lincoln knew that because the country was in the middle of a bitter civil war between northern and southern states, it would be almost impossible to enforce. However, it was an important step towards ending slavery, and two years later, at war's end, the Thirteenth Amendment to the US Constitution allowed 'neither slavery nor involuntary servitude' in the United States. All slaves were now free. But laws alone cannot change how people think, and life for many freed slaves remained harsh. Even today African Americans face much disadvantage.

DID YOU KNOW?

The American Civil War was fought between 1861 and 1865 over a range of issues. Among them, the issue of slavery has become the most famous. During the war more than one hundred and fifty thousand freed slaves served in the Union army against the southern states that supported slavery. The most famous unit was the 54th Massachusetts Regiment, commanded by Robert Gould Shaw. The volunteer soldiers of the regiment were recruited by white abolitionists. The story of the 54th Massachusetts Regiment was the subject of the 1989 film *Glory*.

SOURCE 3 A quote from Frederick Douglass, 1852

What to the slave is the 4th of July?

21.5.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why would it have been almost impossible to enforce the Emancipation Proclamation?
2. What was the outcome of the Thirteenth Amendment?

Using historical sources as evidence

3. Look at Source 1 and suggest why it took a long time for the British Parliament to make a decision to abolish slavery.
4. Research the significance of 4 July for the United States and explain what Frederick Douglass meant in the quote in Source 3.

21.5 Putting it all together

Identifying cause and effect

1. Summarise the short- and long-term effects of the Mansfield Judgement on the abolition of slavery.

Determining historical significance

2. Choose one of the following people on whom to conduct further research: Frederick Douglass, John Newton, Harriet Beecher Stowe, Nat Turner, John Brown, Harriet Tubman. Evaluate their significance to the abolitionist cause using the criteria of importance, profundity, quantity, durability, relevance.

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Complete this digital doc: Worksheet 21.5: Why emigrate to Australia?

21.6 Crime and punishment

21.6.1 New society, old solutions

Between 1788 and 1868, around 160 000 British and Irish convicts were transported to the Australian colonies as a punishment for crime. Given the nature of many of their crimes, such as pickpocketing, petty theft and forgery, the punishment appears harsh. How had British society come to this? Why were punishments for seemingly minor crimes so severe? The answers lie partly in the nature of society at the time.

The Industrial Revolution transformed the British economic base from agriculture to industry. In a process called enclosure (see topic 19), wealthy landowners bought up small farms and fenced off common land to combine into single, large estates, in order to make production consistent and more efficient with the use of new technologies. Production was often more efficient, but the process of enclosure also resulted in poor farmers being forced from their homes and livelihoods. Similarly, in the eighteenth and nineteenth centuries in Scotland, thousands of country people were forced from their homes during the infamous Highland Clearances by landlords eager to improve the agricultural output of their land.

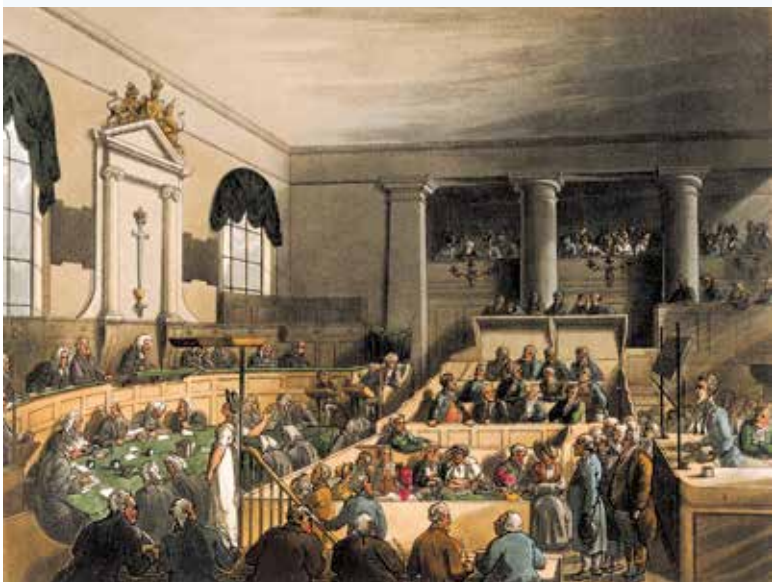
With more efficient and mechanised farming practices, fewer agricultural workers were needed. As employment opportunities in the rural areas of Britain declined, the towns filled with those seeking work. Even with the industrial boom, however, there simply were not enough jobs. Some turned to gambling or alcohol in search of escape. For the desperate, crime became a way to survive.

The government's response to these growing social problems was simply to make criminal punishments harsher. About two hundred different crimes drew the death penalty. Yet the threat of hanging did not have the effect the government desired. Public hangings, intended to serve as a warning, took on a carnival atmosphere (see Source 1). Thousands of people gathered to watch, even bringing their children to the spectacle. A bulletin called *The Newgate Calendar*, subtitled 'The **Malefactors**' Bloody Register', was published each month with the names of all those executed. It soon contained biographies and stories of criminals and became a regular bestseller.

While many crimes were punishable by hanging, others carried a sentence of **transportation**. In some cases, the death penalty might be **commuted** to transportation. This meant being

SOURCE 1 An eighteenth-century artwork showing a public hanging at London's notorious Old Bailey prison

SOURCE 2 This artwork from c. 1809 shows a trial in session at the Old Bailey courthouse in London.



banished from England to serve out the sentence in one of Britain's distant colonies. In the 1700s most convicts were sent to America to work on the cotton or sugar plantations, but this was not popular with plantation owners, who found slaves more manageable. At any rate, the American Revolution of the 1770s brought this option to an end. For a time convicts were dispatched to West Africa on the ships sent out to pick up their human cargo in the Triangular Trade, but disease, starvation, desertion and mutiny took their toll on convicts and military personnel alike. The plan was a disastrous failure.

21.6.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why did so many people turn to crime in the eighteenth and nineteenth centuries?
2. Why were punishments for crimes so harsh in eighteenth-century England?
3. Explain the plantation owners' preference for slaves rather than convicts as workers.
4. What made Africa an unsuitable place to send convicts?

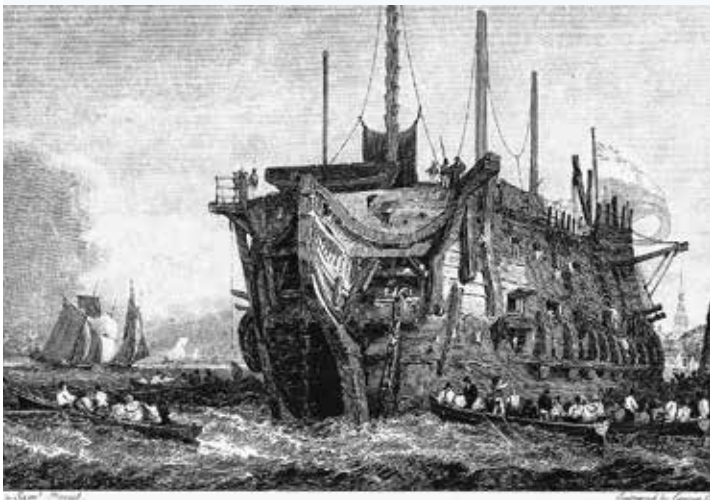
Using historical sources as evidence

5. Describe the scene in Source 1. Evaluate the effectiveness of the intention to make an example of those being hanged.

21.6.2 What to do?

Despite harsh punishments, the numbers of people in Britain's prisons remained a concern for the government. While convicts were not being transported, the hangman was kept busy and prisons were overflowing. In an attempt to address this problem, old decommissioned naval ships, of which there were plenty after the end of the war with America, were turned into floating prisons called **hulks**. As a short-term fix the hulks were a success, but they soon became cramped, stinking and rat-infested, and merely delayed the inevitable. Soon enough they too were impossibly overcrowded. The government urgently needed a long-term solution.

SOURCE 3 A prison hulk moored in the Thames River, London. This artwork dates to c. 1826.



DID YOU KNOW?

In eighteenth-century England about two hundred crimes were punishable by the death penalty. They included:

- murder
- pickpocketing
- poaching
- highway robbery
- stealing horses or sheep
- cutting down young trees.

Children were often among those sentenced to death.

21.6.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What were hulks and why were they necessary?

Using historical sources as evidence

2. Using Source 3 as a reference, make a list of reasons why the conditions on a hulk were so terrible.

21.6 Putting it all together

Using historical sources as evidence

1. Organise the three sources in this spread into an order that could tell the story of an accused criminal passing through the justice system of eighteenth-century England. Annotate each source as if it were a frame in a comic strip.

Identifying continuity and change

2. What were the main changes in the justice system that occurred in England during the eighteenth and nineteenth centuries?

Analysing cause and effect

3. Explain the short-term effects of the American Revolution on the transportation of convicts from England.

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Complete this digital doc: Worksheet 21.6: Analysing an artwork

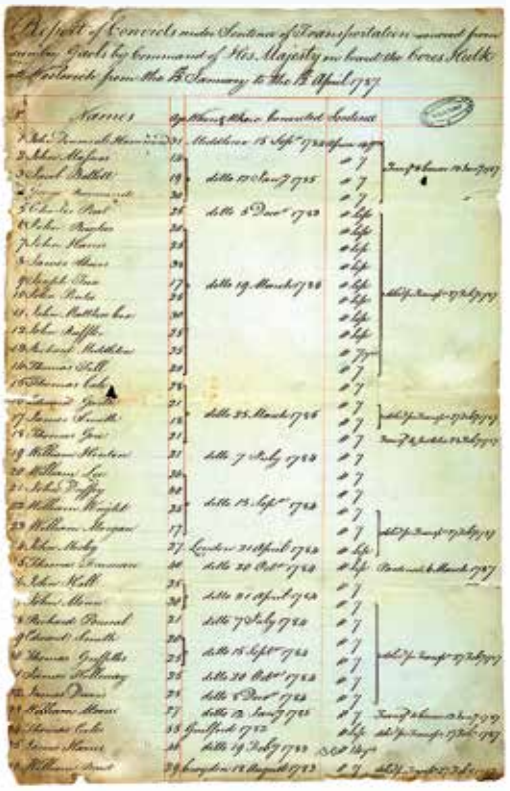
21.7 Transportation to Australia

21.7.1 A solution presents itself

In the 1770s the British government faced a major social problem. The country's prisons were overflowing, and the newly independent United States refused to take any more of Britain's unwanted convicts. The hangman's noose was not proving to be an effective deterrent.

SOURCE 2 A portrait of Captain Arthur Phillip painted in 1786

SOURCE 1 A handwritten 'report of convicts under sentence of transportation'



New prisons were considered too expensive to build, and not many people really cared enough about the problem anyway. As the situation worsened one distant possibility began to emerge as a real option.

In 1770 Captain James Cook had sighted and charted much of the eastern coastline of Australia. But Britain, at war with France and distracted by the increasingly rebellious American colonies, was already under financial strain and did not follow up Cook's expedition. With the loss of the American colonies, however, the possibility of transportation to New South Wales began to gain support. Joseph Banks, a botanist who had sailed with Cook in 1770, enthusiastically agreed and thought that Botany Bay would be an ideal place for a settlement.

It was soon recognised that a British colony in New South Wales would serve several useful purposes. It would go some way towards compensating for the loss of the American colonies. It would provide Britain with an important military and imperial presence in the southern Pacific region. It would also be a dumping ground for convicts, whose labour could be used to help build the colony. In August 1786 the British government made the decision to establish a convict settlement in New South Wales.

Once the decision was made, the fleet had to be assembled. Captain Arthur Phillip, an experienced naval officer, was chosen to lead the fleet. It was his job to prepare the 11 ships for the 20 000-kilometre voyage. It took six months to complete the preparations and, by May 1787, the fleet had assembled at Portsmouth on the south coast of England.

The convicts walked through the town to the docks, to the dismay of many townspeople, and were rowed out to the waiting ships in small boats. The fleet left with little fanfare at three o'clock on the morning of 13 May 1787.

Nearly 1500 men, women and children were on board when the fleet weighed anchor. Among the officials were Captain Phillip, a judge, a doctor, a surveyor and a chaplain. The ships' crews numbered about 450. Just over two hundred marines sailed with the fleet, their purpose to protect the fleet in the event of attack and to control the convicts. Twenty-seven dependants of the marines — wives and children — were also on board. Finally there were the convicts themselves. Numbering 759, they accounted for half the complement of the fleet. There were roughly three male convicts for every female.

21.7.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Identify two reasons why New South Wales was a favourable choice for transportation of convicts.
2. How far was the voyage from Portsmouth to New South Wales?

21.7.2 Bound for Botany Bay

Today's cruise liners can sail around the world without needing to put into port, but in the eighteenth century it was a very different story. The ships of the First Fleet were small and needed to regularly resupply (see Source 4). The fleet made three stops on the voyage to take on food and water and tend to repairs. On their final port of call, the Cape of Good Hope on the southern tip of Africa, they also secured a range of plant seeds for food crops in the new settlement.

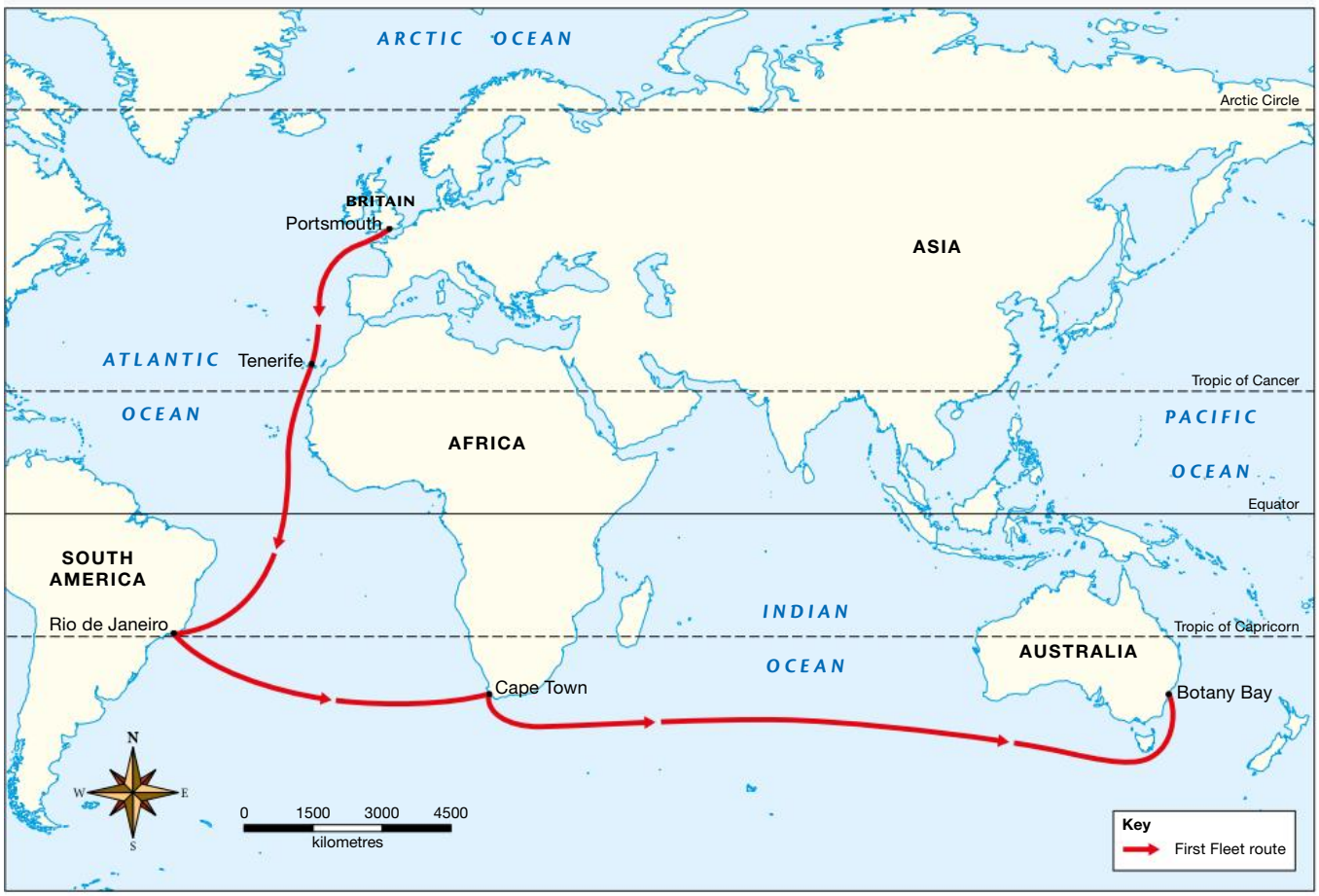
Captain Phillip knew that the long voyage across the Indian Ocean could be the most treacherous of all. It would also be the most frightening for both crew and convicts because they were sailing into largely unknown waters. Phillip decided to split the fleet so the better sailers would not have to wait for the slower ships. For nine weeks the ships were battered by the winds of the **Roaring Forties**. Livestock were thrown about and injured, and even some of the most experienced seamen were seasick. Conditions for the convicts below deck were most likely terrible. Remarkably, none of the eleven ships were lost.

With what must have been great relief the fleet sailed into Botany Bay on 18 January 1788, but neither the bay nor the land surrounding it met their expectations. The bay was shallow and offered little protection from storms; the soil was sandy; and there was no good, easily accessible supply of freshwater. For a moment Captain Phillip must have thought that the entire voyage might end in disaster.

SOURCE 3 Captain Arthur Phillip raising the British Union Jack at Sydney Cove. This artwork was painted in 1937.

All was not lost, however. In 1770 Captain Cook had sailed past another bay a few kilometres to the north and had named it Port Jackson. He did not explore it but recorded that it appeared to be a good harbour. Phillip left the fleet at Botany Bay to survey Port Jackson for himself, finding it 'the finest harbour in the world'. The rest of the fleet soon transferred to Port Jackson, anchoring in the cove within it that Phillip named after Lord Sydney, Britain's Home Secretary and the man who had appointed him. The water at Sydney Cove was deep enough for ships to anchor close to the shore, and there was a good supply of freshwater. The new colony was officially proclaimed on 26 January 1788.

SOURCE 4 A map tracing the First Fleet's voyage



Source: Spatial Vision

21.7.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. How many years after Captain Cook's voyage did the First Fleet arrive in Botany Bay?
2. How long did the voyage of the First Fleet take?
3. Outline the advantages that Port Jackson had over Botany Bay.

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Deepen and check you understanding of this topic with related case studies and auto-marked questions.

- **Movement of peoples**
- **Convict transportation to Australia**

21.7.3 Trials and challenges

It was an uncertain beginning for the settlement, however, for despite its obvious other advantages, the soil around Port Jackson proved as unsuitable for planting as that of Botany Bay, and the first crops withered and died. In the first two years the settlers at Sydney Cove grew desperately short of food. Rations were reduced to stretch food supplies, and a supply ship that was sent from England failed to arrive. For Captain Phillip, now the governor of New South Wales, failure, once again, seemed a real threat. Some measure of relief came in mid 1790 with the arrival of the Second Fleet. With it came fresh supplies, but more than a quarter of the convicts on board had died on the terrible journey and most of the survivors were too weak to work.

SOURCE 5 A painting by an unknown artist depicting the final battle of the uprising at Vinegar Hill

At last fertile soil was found and cultivated at Parramatta on the edge of the settlement, and the crops successfully grown there finally guaranteed the long-term survival of the colony. In 1792 poor health forced Governor Phillip to resign and return to England. He took with him kangaroos, dingoes, native plants and two Aboriginal men to show to the king. Phillip's firm but fair command of the colony had ensured its survival. When food was scarce he made sure that rations were distributed equitably, with no privileges for rank, thereby alleviating resentment and potential convict revolt. By the time he left in December 1792 the colony was securely established and growing. However, this is not to say that there were no challenges. Relations with the Indigenous population became strained at times and as the colony grew and spread the likelihood of conflict with the Aboriginal population increased.

Twelve years later in 1804 the authorities in New South Wales faced the first serious challenge to their rule. Tensions that Governor Phillip had managed to avoid boiled over when a group of convicts, mainly from Ireland, began a large-scale rebellion against the British authorities in Australia. Two convicts, Phillip Cunningham and William Johnston, had an ambitious plan to lead a band of convicts against the British and create their own empire, with Cunningham as its leader. The plan was for the initial two hundred convicts from Castle Hill to meet with others at another convict settlement at Hawkesbury, bringing the group to more than one thousand. From there they would march to Parramatta and finally on to Sydney.

On the evening of 4 March 1804 the rebellion began. With cries of 'Liberty or death!', the rebels overpowered the small garrison that guarded them. They began recruiting more convicts from surrounding farms, eventually gathering a force of around 600.

However, word of the uprising had spread to Parramatta and Sydney, and a force of British soldiers marched through the night to intercept the rebels. Forced into retreat, Cunningham struggled to maintain control over the unruly, and often drunk, convicts. The British force soon caught up with them, and at a place called Vinegar Hill the British attacked. Despite being armed, the rebels offered almost no resistance to the professional soldiers. The battle was over within a matter of minutes. In the aftermath nine rebels were executed and many others flogged or sent to places of secondary punishment.

The whole rebellion had lasted only three days. It was, nonetheless, the largest convict rebellion in Australian history.

DID YOU KNOW?

Of the 759 convicts on board the First Fleet, 23 died during the voyage, which for a fleet of this size would have been an acceptable loss. In addition, six children were born during the voyage, although two of these died before reaching New South Wales. Compared with the Second Fleet, the survival rate of convicts on the First Fleet was very impressive.

21.7.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Identify the challenges facing the early years of the settlement.
2. How long did Arthur Phillip serve as governor of New South Wales?

Using historical sources as evidence

3. Identify the following in Source 5: convict rebels; British soldiers; execution of rebels. Suggest how accurate this source might be in presenting the events of the battle at Vinegar Hill.

21.7 Putting it all together

Using historical sources as evidence

1. Examine Source 1 carefully and answer the following questions.
   (a) What is the approximate average age of the convicts on this page?
   (b) According to the document, where have they been moved from and where are they now being held?
   (c) What is the most common length of their sentence, and where was it to be served?
   (d) Explain why Thomas Freeman's surname might have proven to be appropriate.
   (e) What other sources would be useful to gain a broader understanding of what happened to the convicts listed?
   (f) Identify the limitations of this source that might be revealed by your answer to the previous question.
2. Is it possible to determine if Sources 3 and 5 are primary or secondary sources? If you are unsure, what other information could help you decide?

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Complete this digital doc: Worksheet 21.7: Planning a history essay

21.8 Convict life

21.8.1 Convicts turned good

The penal settlement at Sydney Cove was isolated from other European settlements and, as a result, made a unique open-air prison. Surrounded by a seemingly endless, alien and menacing wilderness, chains and walls were scarcely needed. Nonetheless, the convicts were under no illusions that they were prisoners in this new settlement.

Convicts who had skills such as carpentry were put to use building the new town and others that were growing around it. Many convict-built buildings still stand in Sydney today. Building projects, such as the Great North Road that runs between Sydney and Newcastle, were also built using convict labour. Working conditions for most convicts were brutal, not least because the climate of New South Wales was so much hotter and drier than England.

Few convicts returned to England after their sentence was completed. The government was unlikely to help them financially because the whole point of transportation was to be rid of them in the first place. The cost of the return journey would have been too great so the vast majority of freed convicts remained in Australia. Some convicts made a good life for themselves in New South Wales. Mary Reibey, for example, was transported for seven years for stealing a horse. She worked as a maid in New South Wales and was allowed to marry. After she had served out her sentence she became a respected businesswoman and one of the wealthiest people in Sydney. Today she is featured on the Australian $20 note.

Another example of a successful convict was the architect Francis Greenway. Transported for forgery, in the colony he used his creative talents to design government buildings. Some of these buildings can still be seen today, among them the graceful Hyde Park Barracks (see Source 2).

SOURCE 1 Mary Reibey, an ex-convict, now appears on the Australian $20 note.

SOURCE 2 Hyde Park Barracks in Sydney. This building was designed by the convict architect Francis Greenway.

SOURCE 3 Pinchgut Island in Sydney Harbour was one of the earliest sites of secondary punishment.

21.8.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Make a list of the sort of skills that would have been useful in the new European settlement in New South Wales.
2. Discuss the suggestion that for some convicts, being transported was 'the best thing that could have happened to them'. Use at least one specific example to support or challenge the statement.

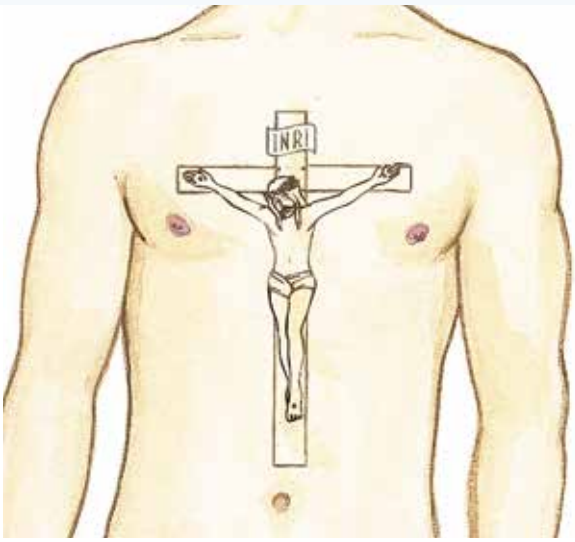
21.8.2 Secondary punishment

Unfortunately, for every Mary Reibey or Francis Greenway there were many others for whom the convict life was a living hell. Those judged to be unmanageable or defiant might be sent to even more isolated places of secondary punishment. The most notorious of these were on Norfolk Island and at Port Arthur in Van Diemen's Land (Tasmania).

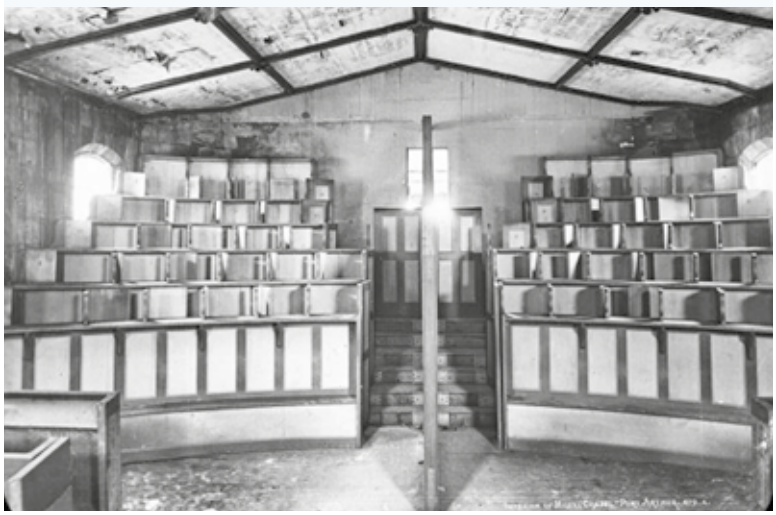
Norfolk Island was characterised by brutal physical punishment. Lying 1700 kilometres off the coast of New South Wales, escape from this small, isolated island was practically impossible. Floggings and beatings were common and convicts were worked beyond the point of exhaustion. There was no effort to reform prisoners sent to Norfolk Island — this was a place of punishment, not rehabilitation. Following a mutiny in 1834 a clergyman was sent to comfort those convicts sentenced to death. In an illustration of how terrible Norfolk Island was, the minister recorded that 'each man who heard his reprieve wept bitterly, and each man who heard of his condemnation to death went down on his knees and thanked God'. Eventually the penal settlement on Norfolk Island was closed down, partly due to the notoriety of the conditions.

Port Arthur, on the other hand, was a new type of prison. Established as a penal settlement in 1833, here psychological punishment took precedence over physical brutality. Like Norfolk Island, this was a place to send convicts who reoffended while serving their sentence. Convicts spent long periods in

SOURCE 4 Many convicts marked themselves with intricate or detailed tattoos, possibly in an effort to regain some degree of individuality after having been reduced to a number. Ironically, one convict who managed to escape was recaptured when a constable recognised him, not by his face, but by his distinctive tattoo.



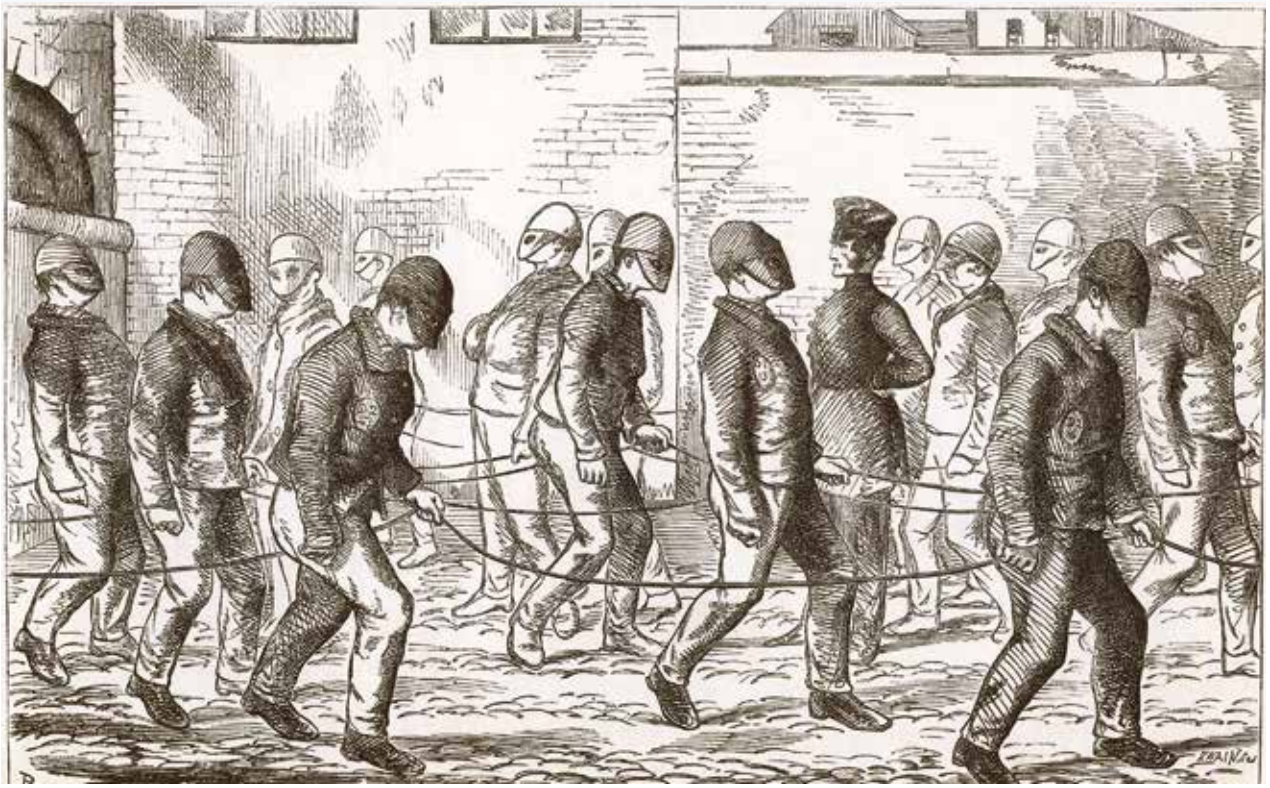
SOURCE 5 The chapel at Port Arthur prison. Even here the convicts would not be able to see each other from their individual booths.



isolation at Port Arthur. When in the company of others they wore hoods so they could not recognise anyone and they in turn could not be recognised. Even the chapel building was designed so that the convicts could not see each other when they removed their hoods for worship (see Source 5). The aim was to enforce anonymity and take away any sense of individuality. At the time this was thought to be a more effective rehabilitation technique than purely physical punishment.

Over the 80 years from 1788 until the last convicts arrived in 1868, approximately 160 000 convicts were transported to the Australian colonies.

SOURCE 6 Prisoners in the exercise yard wearing hoods for anonymity. This was a depiction of Pentonville Prison in London, a prison run with the same philosophy as Port Arthur. The illustration was published in 1862.



DID YOU KNOW?

In 1828 a census was taken in New South Wales to record all inhabitants of the colony, both convict and free (the Aboriginal population was not included). It found that half the population were convicts and that former convicts made up nearly half of the free population. In 1828, then, about 75 per cent of the population of New South Wales either were, or had been, convicts!

21.8.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What was the key difference between the Norfolk Island and Port Arthur prisons?
2. Why was the Norfolk Island prison closed down?

Using historical sources as evidence

3. Describe the scene in Source 6. What do you think is the purpose of the hoods the prisoners are wearing?

21.8 Putting it all together

Using historical sources as evidence

1. Given the image presented in Source 6, how reasonable is it to suggest that tattoos such as the one in Source 4 were worn to maintain some individuality? Explain your thoughts.

Identifying continuity and change

2. Describe the changes in types of secondary punishment in New South Wales over the course of the nineteenth century.

Determining historical significance

3. Evaluate the role and significance of Mary Reibey in the establishment of the settlement in Sydney. Decide for yourself whether her image should appear on the $20 note.

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Complete this digital doc: Worksheet 21.8: Word search

Watch this video: Female convicts in Tasmania (Pro-0038a)

21.9 Emigration to Australia

21.9.1 Push and pull factors

Convicts were unwilling migrants. They were sent to Australia against their will as punishment for criminal convictions. As the colonies grew, they attracted free settlers — people who made a conscious decision to start a new life in Australia. In the eighteenth century these settlers came mainly from Europe, and they came for a range of different reasons.

The decisions of migrants to travel thousands of kilometres from their homelands in Europe to Australia were based on a variety of factors. There were often good reasons for them to leave home (push factors), and there were reasons to choose Australia as a destination (pull factors). Both of these forces tended to operate at the same time.

Europe in the first half of the nineteenth century was an uncertain place. Wars and revolutions had left many people in desperate straits. In Britain the Industrial Revolution had made life unbearable for some. Unemployment, rising rents and taxes, and grim conditions in factories and in overcrowded cities led many to dream of a better life across the sea. In Scotland the notorious Highland Clearances had forced many people from their land, leaving them with few options for feeding their families (see Source 2). In Ireland in the 1840s the failure of the potato crop led to widespread starvation and despair.

Until 1850 most emigrants from Europe still travelled to the United States or Canada. These countries were more settled and the voyage cost only a fraction of a ticket to Australia. For this reason, those who came to Australia often did so with government help. 'Assisted migration' to Australia was encouraged to help the colonies grow because the British government

SOURCE 1 'Here and there; or, emigration a remedy', a cartoon from the English magazine *Punch* in 1848

encouraged those with skills that would be useful in the new colonies to make the journey. Skills such as carpentry and masonry were important to help build the towns and cities. However, assisted migrants would have less say about their place or type of employment. They had to go where they were told. 'Unassisted migrants', who paid their own way, made up about one-third of migrants to Australia in the first half of the nineteenth century. Some of them were tradespeople who were keen to establish a business in one of the new towns. Others were from wealthy families who believed their money would go further in Australia than in Britain. Many were encouraged by the promise of government land grants and convict labour.

SOURCE 2 This painting from 1865 depicts the expulsion of a family during the Highland Clearances in Scotland.

The level of government assistance for migration followed economic cycles. For example, during the 1830s the government decided to sell land rather than give it away to migrants free of charge. The money earned by the government was used to help fund further migration. In contrast, 1841 was a depression year for New South Wales. The price of wool had fallen and unemployment rose. Migrants were not encouraged in the 1840s. In the 1850s, however, the gold rushes resulted in massive immigration. Another depression in the 1890s brought immigration to an abrupt halt.

21.9.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Who were the free settlers?
2. Explain the difference between 'push' and 'pull' factors.
3. What sort of people did the British government encourage to migrate? Suggest why this was the case.
4. Outline why the level of government assistance for migrants varied over the decades of the nineteenth century.
5. Summarise the advantages and disadvantages of assisted migration over unassisted migration.

Using historical sources as evidence

6. Explain how realistic you think the 'here' and 'there' scenes in Source 1 are. You many need to refer back to your work on the Industrial Revolution.
7. Comment on the reliability of Source 1 as a historical source.

21.9.2 The voyage

For migrants travelling from England to Australia, the voyage was faster, if only slightly more comfortable, than those of the convicts. Those who could afford it paid for a private cabin, but 90 per cent of migrants had to endure steerage class. This was the cheapest passenger accommodation, typically at the stern of the ship. It was usually confined, foul-smelling and crowded, offering no privacy. Meals were simple, based around oatmeal, rice and the occasional meat stew, but migrants had to supply their own plates and

cutlery. The tedious voyage could take up to four and a half months — plenty of time for migrants to wonder whether they had made the right decision!

Although steerage lacked privacy and comfort, it did create a new sense of belonging for many migrants. With nothing but time on their hands, people from many different backgrounds mingled. A blacksmith from Liverpool might find himself talking to a businessman from Edinburgh or a small farmer from Kent. For many migrants this was the first time they had travelled more than a few miles from their own village. Of course, the absence of privacy in the long weeks at sea could also leave tempers frayed, and tensions sometimes boiled over.

SOURCE 3 *Emigrants at dinner*, a scene from a migrant ship of the nineteenth century

Safe arrival in Australia did not mean the end of the migrants' worries. If they did not have jobs organised before leaving England they would have to find work, which was more of a challenge if they had arrived with their families. Employers did not want to support children who did not work. As the coastal towns grew and became crowded, migrants were sent inland to work on farms. Others moved from place to place in search of work. The Henty family, for example, emigrated to Australia in 1829 to breed sheep. They arrived first at the Swan River colony, now Perth. Finding the land poor they decided to try Van Diemen's Land, but they missed out on free land grants that the government was offering there, so they moved again to the south coast of the Port Phillip District and established a settlement at Portland. In doing so they became the first permanent European settlers in what would become the state of Victoria in 1851.

SOURCE 4 From a letter written by James Henty, quoted in R. Broome, *The Colonial Experience*, 2009

I have almost come to the conclusion that New South Wales will do more for our family than England ever will. What can we do with ten thousand pounds among all of us? It would be idle to suppose we can live many years longer on less than two hundred pounds a year, unless indeed we chose to descend many steps in the scale of Society, having at the same time an opportunity of doing as well and perhaps considerably better in New South Wales, under British Dominion and a fine climate. Immediately we get there we shall be placed in the first Rank in Society, a circumstance which must not be overlooked.

21.9.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Describe the conditions on board a migrant ship for the average passenger.
2. Annotate a timeline showing the places the Henty family settled and the reasons they left.

Using historical sources as evidence

3. Evaluate the accuracy of the image in Source 3. Does it fit the written description? If so, in what ways? If not, why not?
4. Use Source 4 to identify the push and pull factors for the Henty family.

21.9.3 Tyranny of distance

With family members so far away, those back in England looked forward to any news of how their loved ones were faring in the Australian colonies. Unlike today's world in which emails from around the world are received almost instantly, letters took months to reach the other side of the world. To send a letter and receive a reply could take a whole year.

During the mid-eighteenth century a range of different British publications encouraged, or at times discouraged, migration to Australia. Books promoted emigration, highlighting the potential of the colonies as a migrant destination. Despite periodic negative news of economic depression and the shadow of transportation hanging over the colonies, many in England saw the colonies as sources of opportunity, wealth and power. A less than perfect image of the colonies would certainly not dissuade many of those with family already in Australia from wanting to make the journey themselves.

The vast majority of migrants who came to Australia in the 1800s were from the British Isles. They brought with them what historian Richard Broome calls their 'cultural baggage', including ideas about society, religion, class and gender. As a result, British institutions and clubs were firmly established in colonial Australia. At the same time, this cultural heritage was being influenced and reshaped by the new world. That new world was being populated more and more by people born in Australia, rather than those born overseas and, while they still considered themselves British, many increasingly associated themselves with the land in which they were born.

SOURCE 5 George Baxter's painting from the mid-nineteenth century *News from Australia* depicts a family in England receiving news from a loved one in the colonies.

21.9.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. How long might it have taken to receive a reply to a letter in the Australian colonies?
2. What is your understanding of the term 'cultural baggage'?
3. Outline in what ways the migrants of the 1800s brought the old world into the new.

Using historical sources as evidence

4. Consider the intention of the artist when painting the image in Source 5. It was painted in the mid-nineteenth century by an English artist. Does that affect its reliability?

21.9 Putting it all together

Using historical sources as evidence

1. Choose one of the migrants in Source 3. Write a diary entry for part of your journey describing your interaction with some of the other migrants.

Analysing cause and effect

2. Choose one of either the Highland Clearances or the Irish famine and analyse its causes, as well as its short- and long-term effects on the people of the particular country and on Australia. You may choose to present your answer in a graphic organiser or a short written response.

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Complete this digital doc: Worksheet 21.9: Summing up

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Deepen and check you understanding of this topic with related case studies and auto-marked questions.

- **Movement of peoples**
- **European migration to Australia**

21.10 Migration to the goldfields

21.10.1 The beginnings of a rush

In 1851 English gold prospector Edward Hargraves returned to Australia after searching for gold in California. He noticed that in parts of Australia the land was similar to areas where gold was discovered in California, and he was convinced that gold could be found in those areas too. That same year he was proved right. His discovery marked a turning point in Australia's history.

Hargraves discovered gold in New South Wales in April 1851, but because news then took some months to travel overseas, for the first year or so the diggings were worked exclusively by local diggers or those from other Australian colonies. As news of the discovery spread around the colonies, people seemed to go crazy with excitement. In an attempt to stem the flow of people rushing to New South Wales, the Victorian government offered a reward for the discovery of gold close to Melbourne. Within a few months the reward was claimed and the hysteria only grew. Husbands left their families, shepherds their flocks. Ships were stranded in port when their crews deserted en masse for the diggings. Teachers, labourers, lawyers, even government officials and policemen, made a dash for the goldfields.

From the start, the early goldfields were characterised by a sense of **egalitarianism**. The class system that dominated England had no place there. It was clear from the beginning that on the goldfields luck played a more important role than money or social position. Everyone had an equal chance of success if they worked hard. This levelling effect challenged the traditional social structure from which the diggers had sprung. Some people were alarmed, fearing social collapse with the lower classes challenging the traditional hierarchy. Many historians trace the Australian idea of the 'fair go' back to the goldfields. One miner from Poland, Seweryn Korzelinski, describes the multicultural scene in Source 1.

SOURCE 1 Polish miner Seweryn Korzelinski describes the egalitarianism on the goldfields.

This society comprises men from all parts of the world, all countries and religions — all mixed into one society, all dressed similarly, all forced to forget their previous habits, learnings, customs, manners and occupations. Their outward appearance does not signify their previous importance, worth or mental attainments. A colonel pulls up the earth for a sailor, a lawyer wields not a pen but a spade; a priest lends a match to a Negro's pipe; a doctor rests on the same heap of earth with a Chinaman; a man of letters carries a bag of earth. Many a one would not, a short while before, bother to look at a fellow with whom he now works. Here we are all joined by a common designation: digger. Only various shades of skin colour and speech denote nationality and origin, but it is impossible to guess previous station in life or background.

Yet while the diggers may have abandoned some of their customs and cultures, their prejudices often remained. As one example, Source 2 describes what happened when Korzelinski inquired about a fellow digger's test mineshaft.

SOURCE 2 Korzelinski describes an encounter with an English miner.

The report I received was very encouraging so I went on digging. During a break a compatriot of mine passing by stopped for a chat. My English neighbour was listening in and came up to me later asking in what language I was conversing. 'My native Polish' I replied. My neighbour explained with a great deal of embarrassment that his test hadn't shown any trace of gold and that he had misled me because he thought I was a German.

21.10.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why were goldfields initially only populated by local diggers?

Using historical sources as evidence

2. Using quotes from Source 1, describe the sense of egalitarianism on the goldfields.

21.10.2 Word spreads

Soon after news of the gold rushes reached England, in January 1852, the towns of Ballarat and Bendigo became better known than Melbourne or Adelaide. A new rush of migration followed as Britons of all classes decided to try their luck. The result was a population explosion in Australia that the colonies were unable to cope with. In the two years following the discovery of gold more people arrived in Australia than all the convicts that had been transported in the previous 64 years. In just one week of October 1852 Melbourne received nearly 8000 new arrivals. In four months during 1853, at a time when the population of the city was only 23 000, 50 000 migrants landed at Melbourne's docks.

SOURCE 3 Population growth of New South Wales and Victoria at the height of the gold rushes

Year	New South Wales	Victoria
1840	110 000	10 291
1850	189 341	76 162
1860	348 546	538 234

Source: From R. Broome, *The Colonial Experience*, 2009

Melbourne was unable to absorb the sea of new arrivals and a massive city of tents called 'Canvastown' was set up on the banks of the Yarra River to try to accommodate them. It was a smelly, dirty place where outbreaks of disease were common. The extracts in Source 4 give an impression of Melbourne during the height of the migration rush. As more people arrived in Victoria the crime rate increased, a problem made worse by the fact that 80 per cent of Melbourne's police had themselves taken off to the goldfields.

SOURCE 4 Two extracts from letters written to newspapers in 1852

Extract A
One of the most striking peculiarities here to a new arrival is the immense encampments that surround Melbourne. The vast number of tents that stud the open ground in every direction conveys a clear idea of that enormous emigration to Victoria, which requires the erection of canvas suburbs, where the hordes of adventurers may find a temporary shelter on landing, . . . before starting to the great storehouses of Mount Alexander and Ballarat.

Extract B
People are flocking in from all countries now, and there is not accommodation for a tenth of them. Some have to sleep in sheds who never knew anything but a feather-bed in England. We have had very heavy rains lately; several people have been drowned on their way to and from the diggings in attempting to swim the creeks, as the Government does not think of putting any bridges where required; indeed, the people are beginning to murmura gainst the abominable way in which our government is carried out.

SOURCE 5 *Prospecting*, a sketch by S. T. Gill (England 1818 – Australia 1880) in 1839, lithograph, printed in colour, from multiple stones, from *The Australian Sketchbook*, Melbourne: Hamel & Ferguson, 1865.

21.10.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What was 'Canvastown'?
2. What proportion of Melbourne's police had left for the goldfields?

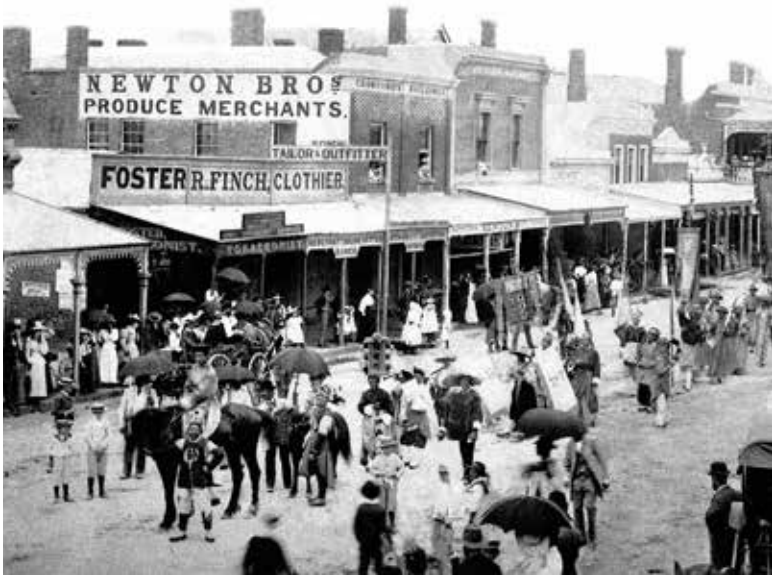
Using historical sources as evidence

3. Plot the information in Source 3 in a graph and describe the population growth in Victoria and New South Wales.
4. Use quotes from the extracts in Source 4 to describe what was happening to the city of Melbourne.
5. To what extent does the image in Source 5 support the idea of the goldfields as egalitarian?

21.10.3 New Gold Mountain

In 1853 large numbers of Chinese men arrived on the goldfields. They would eventually account for one in every five miners. Those who came straight from the Californian gold rushes referred to the Victorian goldfields as 'New Gold Mountain'. Others came directly from China, fleeing war and famine, and seeking a chance to strike it rich, like all the other diggers. Culturally they stood out on the goldfields and as a result were subject to racial violence. The Australian and British diggers resented the Chinese both for their difference and because they generally worked harder than other miners. They worked claims that had been abandoned yet still managed to extract enough gold to make a living. The Chinese on the goldfields were almost exclusively men, and the other miners chose to believe they would 'steal' their women. Tensions boiled over into violence on a number of occasions, firstly in Bendigo in 1854 but most infamously at Lambing Flat in New South Wales, where a series of anti-Chinese riots in 1860–61 saw thousands of miners drive the Chinese from the diggings. To control Chinese immigration, the Victorian government introduced a ten-pound arrival tax to be paid by all Chinese migrants at their Victorian port of entry. To avoid this tax, the Chinese arrived at Adelaide or Sydney and travelled overland to the diggings. In New South Wales, the *Chinese Immigration Restriction and Regulation Act* was passed in 1861 and the numbers of Chinese in the colony were closely controlled.

SOURCE 6 Chinese migrants in Beechworth, Victoria, during the gold rushes



SOURCE 7 'The Mongolian Octopus': a famous propaganda image published in the Sydney-based *The Bulletin Magazine* on 21 August 1886

Both Queensland and Western Australia introduced similar legislation within a decade. What became the White Australia Policy (the immigration policy that restricted the arrival of non-white migrants in the first half of the twentieth century) had its beginnings on the goldfields. It is an interesting contradiction to consider. The goldfields on the one hand saw the origins of Australia's multicultural population. The opportunity that was offered to people from other countries was recognised then as it is now, and people arrived to make a better life. However, also just like today, some of those people struggled in the face of intolerance and racism.

21.10.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why were the Chinese the target of racial abuse?
2. Why did some Chinese migrants disembark at Adelaide and walk from there to the goldfields?

Using historical sources as evidence

3. How reliable is Source 7 as a historical source? When thinking about your response you should consider the following.
   (a) When was the source created, and by whom? This will help give you a sense of the context and think about what was happening at the time.
   (b) Why was the image created? What was its purpose? Was it to inform, persuade, or perhaps intimidate?
   (c) Does it appear accurate as a representation? If not, explain how it could still be useful to a historian.

21.10 Putting it all together

Using historical sources as evidence

1. Using quotes from each source, compare and contrast the sense of egalitarianism in Sources 1 and 2.
2. Sources 1 and 2 both originate from the same person. Given their similarities and differences, analyse if this affects their reliability.
3. Using the sources in this subtopic:
   (a) find evidence that supports the statement that the goldfields were 'a place of egalitarianism'
   (b) find evidence that supports the statement that the goldfields were 'a place of racial intolerance'
   (c) explain how this illustrates the importance of using a variety of sources when looking for evidence to support a claim.

Identifying continuity and change

4. Describe the changes that occurred in the city of Melbourne due to the gold rushes.
5. Conduct research into when the following places were built or founded: the University of Melbourne; Old Treasury Building; Grand Hotel. What impact do you think the gold rushes had on the creation of these buildings and institutions?

21.11 SkillBuilder: Analysing cause and effect

online only

ANALYSING CAUSE AND EFFECT IN EMIGRATION TO AUSTRALIA

Specific events make up only a small part of the study of history. To really begin to understand any event, it is vital to be able to analyse the factors that led to it, and the way in which the event might bring about change afterwards. These are the causes and effects.

Go online to access:

- An explanation of the skill (Tell me)
- A step-by-step process to develop the skill, with an example (Show me)
- An activity to allow you to practise the skill (Let me do it)
- Questions to test your application of the skill (Applying skills)

21.12 Review

21.12.1 Review

This final subtopic provides a range of opportunities for you to review and respond through:
(i) revising and checking your historical knowledge
(ii) demonstrating your ability to apply historical concepts and skills.

Go online to access:

- A key chronology of events relevant to the topic
- A summary of the key knowledge presented in the topic
- A 'Big Questions' activity
- A multiple choice topic test
- Short answer or extended writing responses

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: Movement of peoples timeline (int-2964)

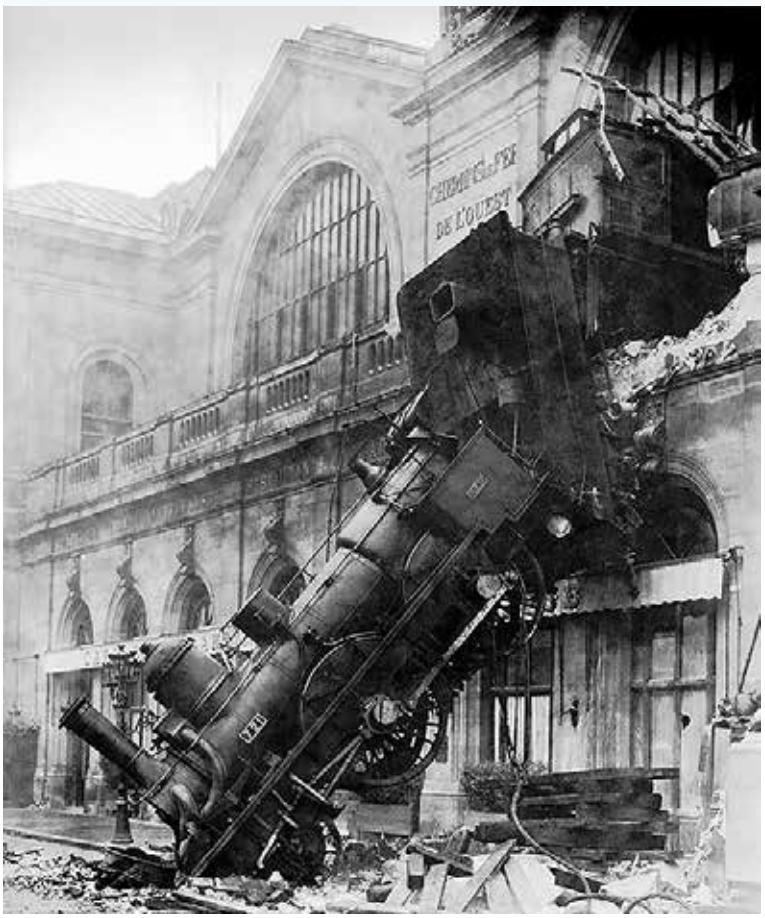
21.11 SkillBuilder: Analysing cause and effect

21.11.1 Tell me

What is 'cause and effect'?

Specific 'events' make up only a small part of the study of history. To really begin to understand any event, it is vital to be able to analyse the factors that led to it, and the way in which the event might bring about change afterwards. These are the causes and effects.

SOURCE 1 Train derailment at Montparnasse station in Paris, 1895. Whilst what happened seems clear, what caused it, and what its effects were, is less obvious.



Why is it important to analyse cause and effect?

Analysing cause and effect helps us evaluate the importance of different events within historical periods and build our understanding of the past. We can then make more confident historical claims in our conclusions.

21.11.2 Show me

There are many ways to go about analysing cause and effect when studying history, but they all share one common factor: they encourage you to think carefully about a topic so that you can reach conclusions that can be supported with historical knowledge and evidence.

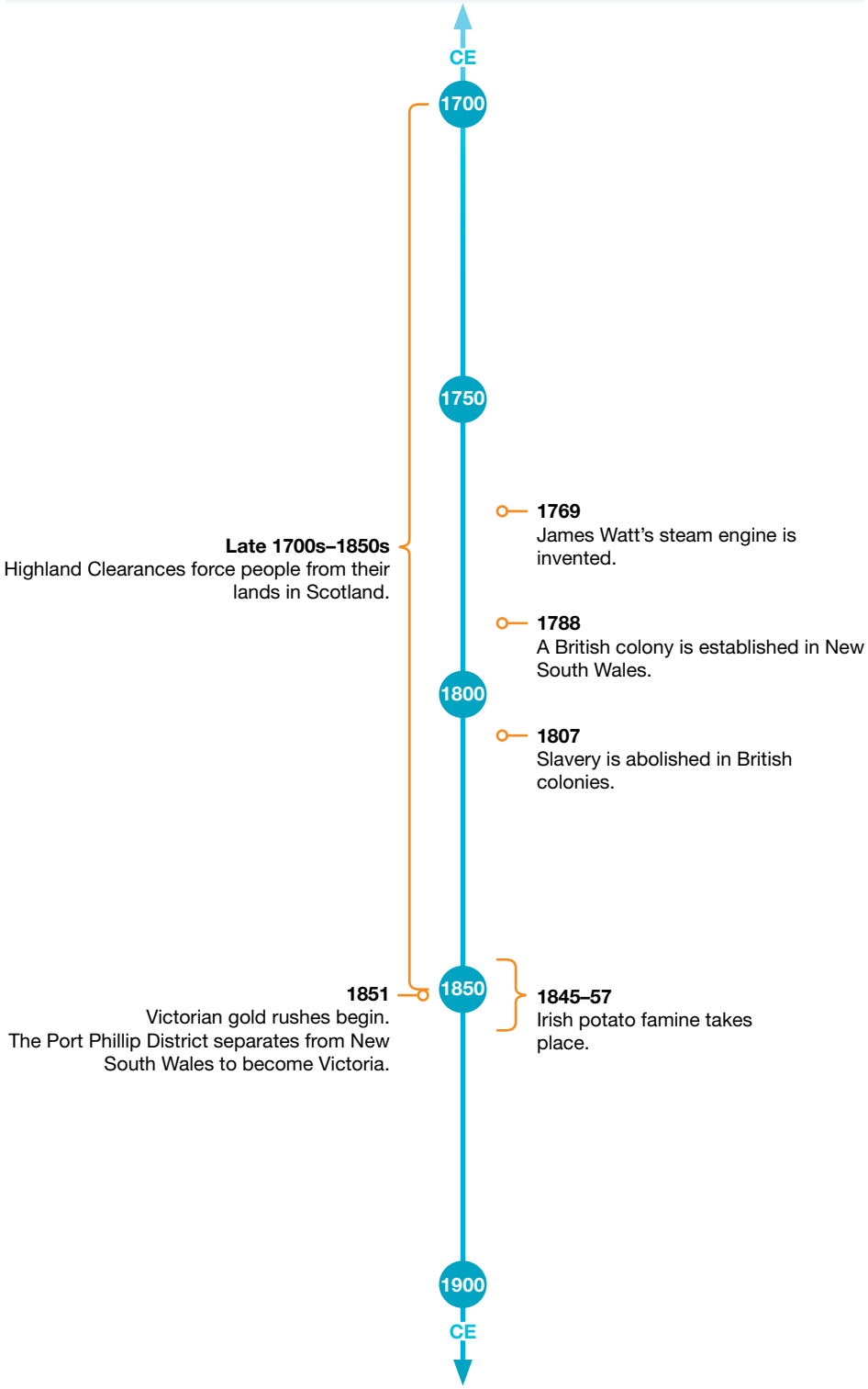
To analyse cause and effect, start by asking the straightforward question: 'Why did this event occur?' You will probably find that such a simple question is actually not that easy to answer. Remember, the causes are not always obvious.

Consider the following topic of migration from Britain to Australia as an example.

Migration to Australia from Britain occurred for a number of reasons including the impact of the Industrial Revolution, losing land in the Highland Clearances, change in employment opportunities, poverty, and famine in Britain.

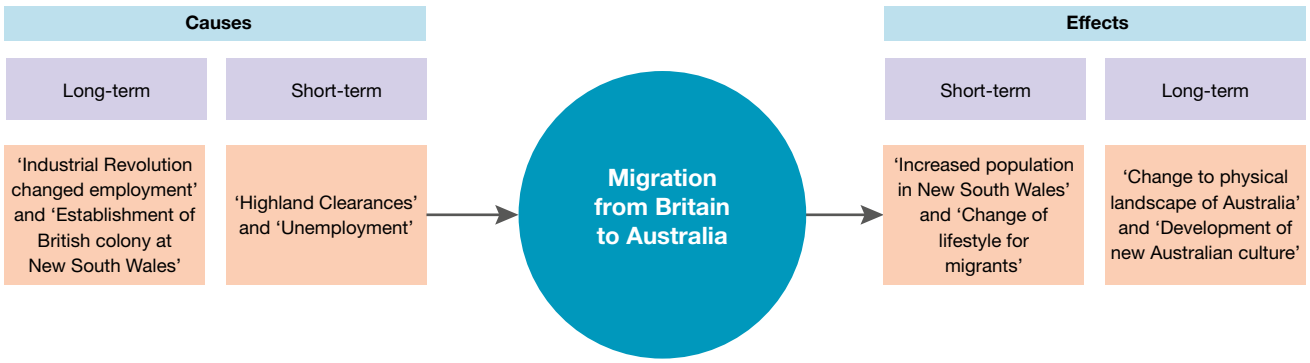
When you have identified some causes, place them in a timeline so that you can identify long-term and short-term causes, as well as the long-term and short-term effects. To assess your own ideas, ask yourself the question, 'If one of the causes on the timeline was removed, would the key event still have occurred the same way?' If removing one item changes the way you think the event would have occurred, then you have probably identified a key cause.

Timeline of migration from Britain to Australia



Then, arrange your ideas in a graphic organiser like the one below.

SOURCE 2 An effective way to identify and analyse cause and consequences



Once you have constructed your timeline and graphic organiser, you should ask yourself these questions about the effects of your key event (sample answers provided):

- What changed because of the key event? Were the changes positive or negative?
  - Change to demographics in Australia — more free settlers rather than only convicts
  - Demographic changes in Britain — large sections of the population left
  - Growth of cities and colonies in Australia
  - Development of Australian identity — influenced by this wave of migration
- How many people were affected by the event?
  - Tens of thousands of people were affected directly — e.g. those who migrated
  - Hundreds of thousands affected indirectly — e.g. family who remained in Britain
  - Tens of thousands of Indigenous people affected
- How long-lasting were the changes? Were they permanent or did the situation return to its original state?
  - The changes were permanent. The British colonies in Australia continued to grow and Australia as it was before European migration would change completely.
- If one of the causes on the timeline was removed, would the key event still have occurred the same way?
  - One example is the Irish potato famine — had it not occurred, the number of Irish migrants coming to Australia could have been much lower — the event would not have occurred in the same way. This would suggest that the potato famine in Ireland was a key factor in the movement of people.

21.11.3 Let me do it

Practise analysing causes and effects by working through the above questions and tasks, using 'abolition of slavery' as your key event.

You could consider the role of individuals as well as specific events when thinking about the causes, but you might need to do some further research to finalise the effects. The questions you ask would be similar but you would need to ask yourself, had that individual been removed, how might the events have been different? Would change have taken longer to occur, or would it have happened more quickly? This will help reveal the importance of the individual in the events you are studying.

21.11 Applying skills

Analysing cause and effect

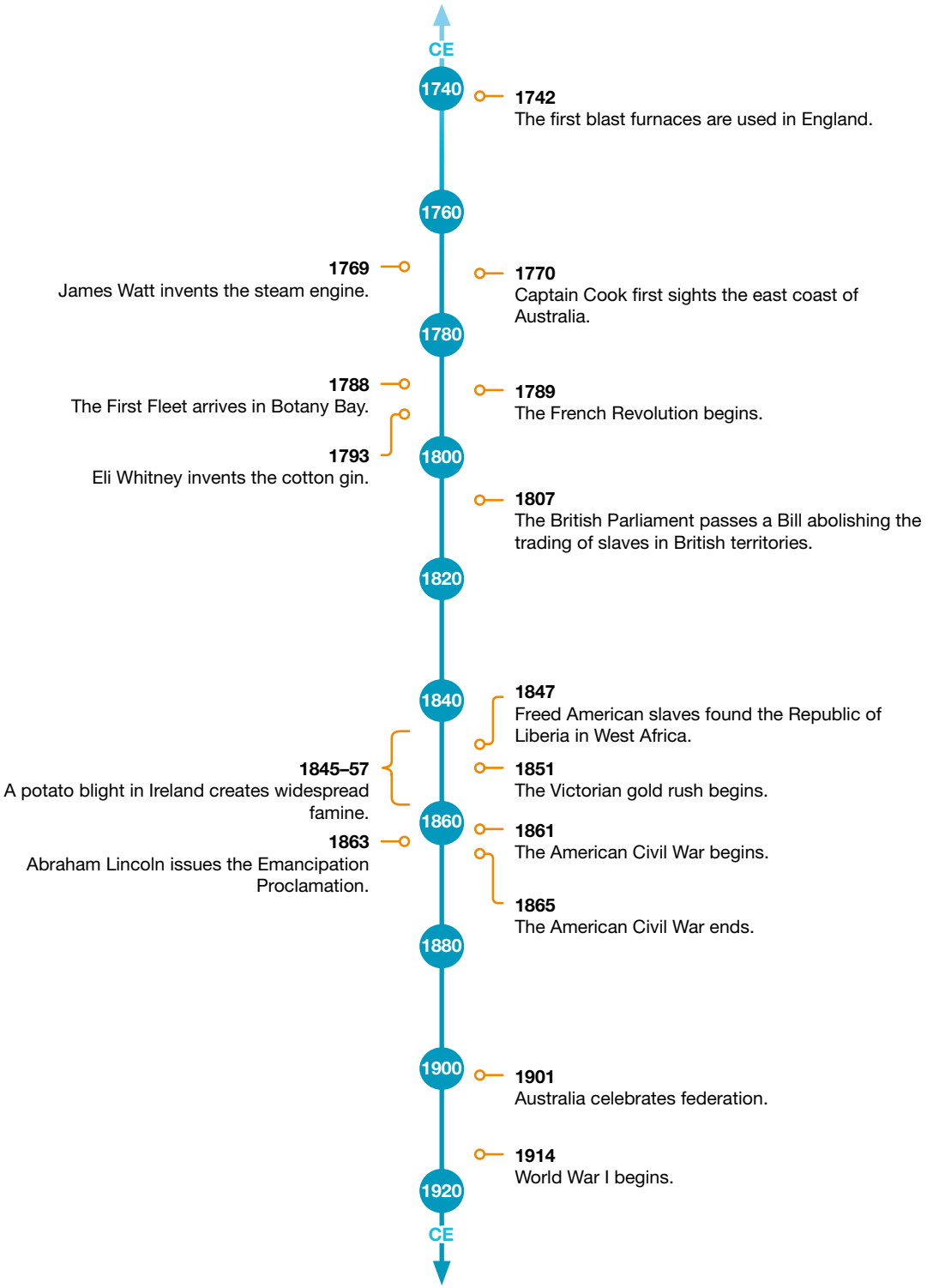
1. Compare your graphic organiser with others in the class. Have you identified the same or similar factors? If not, explain your thoughts to each other and decide if you need to update or adapt your own work.
2. Once you are confident that your work is complete, use it to respond to the following question in an extended response:

   'To what extent did the actions of individual people result in the abolition of slavery?' In answering, you should consider both the actions of individuals as well as other factors that resulted in the abolition of slavery and decide which you feel was the more important factor.

21.12 Review

21.12.1 Review

Chronology: timeline of movement of peoples



Key knowledge: summary

21.2 Examining the evidence

- The period 1750–1900 provides a wide range of sources for historians studying the movement of people at that time.
- The sea lanes were the superhighways of the day.
- Ships had detailed logs of their journeys as well as generally accurate manifestos of all their passengers and crew.
- As rates of literacy increased, more and more people kept journals and diaries recording their experiences.
- The development of photography provided a completely new way of recording events and subsequently a new type of historical source for us to investigate.

21.3 Overview of slavery

- Slavery in one form or another has existed for thousands of years.
- As Europeans established colonies in the Americas, thousands of the Native American population were put to work.
- The slave trade spread in the sixteenth and seventeenth centuries to become an intercontinental trade with the transportation of slaves from Africa.
- Slaves were put to work on the British plantations of sugar, cotton and tobacco.
- For 200 years slavery was seen as an integral part of the North American economy.

21.4 Slavery and the cotton trade

- The slave trade in North America continued long after the United States gained independence from Great Britain in 1776.
- It is particularly associated with the cotton industry in the southern states.
- Only around one quarter of southern farmers actually owned slaves.
- Conditions for slaves on the cotton fields were generally tough, with harsh punishments for any wrongdoing.

21.5 The end of slavery?

- Slavery was seen by some as a way to introduce Christianity and civilisation to otherwise 'backward' people.
- Others saw it as an essential part of a nation's economy.
- Others, known as 'reformers', called passionately for its abolition.
- In England, the Mansfield Judgement of 1772 declared slavery to be illegal in England and Wales.
- Whilst not a complete abolition, the judgement was an important step on the way to abolishing slavery elsewhere.
- In the United States stories like those of Harriet Beecher Stowe's *Uncle Tom's Cabin* highlighted the plight of slaves and drew increased calls for abolition.
- In 1863 President Abraham Lincoln signed the Emancipation Proclamation, officially freeing the slaves in the United States.
- Life for many, if not most, freed slaves remained harsh for many years to come.

21.6 Crime and punishment

- The Industrial Revolution had a significant impact on Great Britain.
- As new industries replaced existing ones, many people could not adapt quickly enough and found themselves without work or land.
- Increased unemployment led to increases in crime.

- Harsher punishments for petty crimes did little to deter would-be criminals.
- During the eighteenth century prisons grew overcrowded.
- After the United States gained independence from Great Britain, transporting criminals to the plantations for labour was no longer an option.
- The British government needed to find a long-term solution.

21.7 Transportation to Australia

- England's overcrowded prisons presented the British government with a serious challenge.
- The United States, now independent, no longer accepted convicts and new prisons were expensive to build.
- The solution was found in the land that Captain James Cook had explored in 1770, now to be called 'New South Wales'.
- A fleet of eleven ships sailed from England in 1787 and after a voyage of nearly nine months established a European colony at Sydney Cove, New South Wales, in January 1788.
- The first years presented challenges to ensure the colony's survival but by the end of the eighteenth century the colony was well established.

21.8 Convict life

- Convicts who were skilled labourers sometimes used those skills in building the new colony.
- Convicts who reoffended while serving their sentence were sent to places of 'secondary punishment'.
- The most famous was Norfolk Island, known for its brutal physical punishment.
- Port Arthur was equally notorious for its psychological cruelty.
- Over the 80-year period in which convicts were sent to the Australian colonies, approximately 160 000 were transported.

21.9 Emigration to Australia

- Push and pull factors are the factors that influence the decision of people to migrate.
- Push factors are the reasons why they would want or need to leave a particular place, for example war, famine, or lack of employment.
- Pull factors are the reasons why a particular destination might be chosen, for example opportunity, climate, or pre-arranged employment.
- To help establish the Australian colonies, the British government often encouraged emigration.
- Those who accepted would be helped financially to make the journey in return for working in pre-arranged employment.
- Others, like the Henty family, funded their own journey, which gave them more freedom to choose their location and employment, but less security in knowing what lay ahead for them in Australia.

21.10 Migration to the goldfields

- After the discovery of gold in New South Wales and Victoria in 1851 migration to Australia increased rapidly.
- Victoria's population grew from a little over 10 000 in 1840 to more than half a million only 20 years later.
- The gold rushes were not limited to people of British or European origin.
- From 1853 a large number of migrants from China arrived on the goldfields.
- The vastly different cultures meant that tension often occurred between the Chinese and European diggers.
- The Victorian government tried to limit Chinese immigration by introducing an 'arrival tax' to be paid before disembarking from a ship in Victoria.

Key knowledge: multiple-choice topic test

1. Which of the following countries practised slavery for the longest time?
   (a) Portugal
   (b) England
   (c) Spain
   (d) The United States
2. Which of the following most accurately describes the Triangular Trade?
   (a) The trade across the Atlantic of slaves, raw materials and manufactured goods
   (b) The trade of slaves from Britain to the Australian colonies
   (c) The trade of convicts from Britain to North America in return for cotton
   (d) None of the above
3. How many Africans is it believed were sold into slavery in the Americas?
   (a) 150 000
   (b) 1.5 million
   (c) 15 million
   (d) 150 million
4. Which of the following shows the correct order of stops made by the First Fleet on its voyage?
   (a) Cape Town, Rio de Janeiro, Tenerife, Botany Bay
   (b) Rio de Janeiro, Cape Town, Tenerife, Botany Bay
   (c) Tenerife, Cape Town, Rio de Janeiro, Botany Bay
   (d) Tenerife, Rio de Janeiro, Cape Town, Botany Bay
5. Which of the following best describes a hulk?
   (a) A ship that carried convicts to the Australian colonies
   (b) A ship used to train the Royal Navy
   (c) A ship used as a floating prison
   (d) A ship used to transport slaves from Africa to North America
6. Which of the following was not a reason why a colony in New South Wales would be useful for Britain?
   (a) It would provide Britain with a military presence in the southern Pacific.
   (b) It would provide an indigenous population that could be transported for slavery.
   (c) It would compensate for the loss of the American colonies.
   (d) It would be a place to transport convicts.
7. What was the main finding of the Mansfield Judgement?
   (a) It made slavery illegal in England and Wales.
   (b) It made slavery illegal in the British Empire.
   (c) It declared any escaped slaves to be free.
   (d) It ended slavery in North America.
8. Which of the following statements is not accurate?
   (a) Migration patterns changed due to variations in local economy.
   (b) Assisted migrants had their transport subsidised by the British government.
   (c) Unassisted migrants paid their own way.
   (d) Migration patterns changed due to variations in weather.
9. What does the term ‘cultural baggage’ refer to?
   (a) Items from home that migrants brought with them to Australia
   (b) Preconceived ideas about society, religion, class and gender that migrants held
   (c) The guiding principle behind the establishment of Australia’s laws
   (d) The policy by which non-European migration was strictly controlled

10. Which of the following is the most accurate statement?
    (a) Secondary punishment was experienced by all convicts at some point.
    (b) Port Arthur and Norfolk Island had similar types of punishment.
    (c) Some convicts were able to make a new and successful life after their sentence was
    (d) served.
    (e) Convicts usually travelled back to England after serving their sentence.
11. A census in 1828 found that what percentage of New South Wales' population was, or had been, a convict?
    (a) 25 per cent
    (b) 50 per cent
    (c) 75 per cent
    (d) 100 per cent

21.12.2 Respond

Using historical sources as evidence

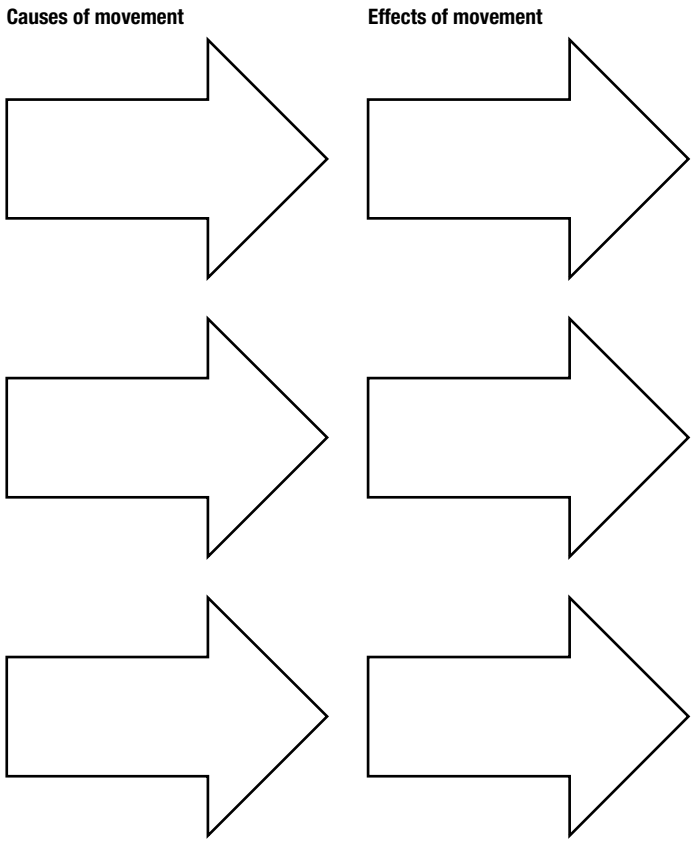
SOURCE 1 *Gin Lane*, an eighteenth-century engraving by William Hogarth, illustrates society falling apart because of the effects of cheap gin.

Source 1 is an image that depicts the horrors that will befall society with the excess consumption of gin by the poor. Called *Gin Lane*, it was created in 1751 by William Hogarth and was intended to portray the effects of cheap gin being accessible to the population.

1. Do you think this is intended to be a literal portrayal of events? Explain why or why not.
2. What message was Hogarth trying to send?
3. Looking back through your investigations of this topic, evaluate the extent to which you feelthis image reflects the difficulties facing society at the time.

Analysing cause and effect

Using your work on this topic, annotate the following flow chart to explain at least three causes of movement of people and three effects of that movement, on the people and on society. You should refer to specific examples that you have encountered in this topic to support your conclusions.



Responding to the big questions

At the beginning of this topic, several big questions were posed. You can now apply what youhave learned to answer them.

1. What was the significance of European imperialism to the movement of slaves, convicts and migrants?
2. What conditions did slaves and convicts face when they were put to work?
3. What factors affected the patterns of migration from Britain to Australia in the nineteenth century?

UNIT 6
THE MAKING OF THE MODERN WORLD

Depth study 2: Investigating World War I (1914–1918)

22 World War I 511

TOPIC 22
World War I

22.1 Overview

Numerous **videos** and **interactivities** are embedded just where you need them, at the point of learning, in your learnON title at www.jacplus.com.au. They will help you to learn the content and concepts covered in this topic.

22.1.1 Links with our times

The years from 2014 to 2018 mark the centenary of World War I. The Australian War Memorial plays a vital role in the remembrance of war. Its Commemorative Courtyard can be seen on the opposite page. Surrounding the courtyard and seen through its arches is the Roll of Honour. Inscribed in bronze are the names of more than 102 000 Australians who have died in wars since 1885. Tragically, 62 000 of those names are from just one war: World War I.

SOURCE 1 The Commemorative Courtyard at the Australian War Memorial, Canberra

Timeline of World War I

CE

1880

1882
Germany, Austria–Hungary and Italy form the Triple Alliance.

1907
Britain, France and Russia form the Triple Entente.

1910

1914
28 July: Austria–Hungary declares war on Serbia.

1–3 August: Germany declares war on Russia and France, and invades Belgium.

4 August: Britain declares war on Germany.

5–10 September: French and British armies halt the Germans in Belgium and France.

15 September: Trench warfare begins in Western Europe.

1916
March–June: The AIF joins the fight against Germany on the Western Front. The Australian Light Horse remains in Egypt to fight Turkish forces.

1 July: The British and French launch a big offensive in the Somme Valley on the Western Front.

28 October: The first referendum on conscription is held in Australia.

1915

1915
25 April: The Anzacs land at Gallipoli.

December: The Allies withdraw from Gallipoli.

1917
6 April: The USA enters the war.

31 July: The third battle of Ypres (Passchendaele) is launched by the Germans in Belgium.

7 November: Revolution in Russia leads to Russian withdrawal from the war.

20 December: The second conscription referendum is lost in Australia.

1918
21 March: The last German offensive on the Western Front is launched.

18 July: Australian forces lead the first successful large Allied attack in France.

The Armistice, signed on 11 November, ends the fighting.

1920

CE

Big questions

1. What were the causes of World War I?
2. Why and how were Australians involved in World War I?
3. Where did Australians fight and what were their experiences?
4. What were the significant events and turning points of the war?
5. How did the war affect the Australian home front and how did it change Australian society?
6. How significant was the war for Australia's international relationships?
7. Why and how do we commemorate World War I?

Starter questions

1. Why are there World War I memorials all over Australia?
2. What do you think and how do you feel when you visit a war memorial and read the names of the fallen?
3. Why do we commemorate Anzac Day each year in Australia?
4. Can we learn from the past and avoid wars in the future?

World War I was a turning point in Australia's history and learning about it helps us to understand much about our country. It was also a turning point for the world, resulting in death and destruction on a massive scale, the rise of communism, and later of fascism, and the fall of empires. Wars have terrible consequences but they do not simply happen. They can be investigated and understood. If we learn from the past, it might help us to put an end to war in the future.

INQUIRY SEQUENCE

22.1	Overview		511
22.2	Examining the evidence		513
22.3	What caused the Great War?		516
22.4	The world at war		522
22.5	Australians in the Great War		525
22.6	Gallipoli		528
22.7	Gallipoli: the historical debate		533
22.8	Trench warfare		535
22.9	The Western Front		538
22.10	The home front		541
22.11	The conscription issue		547
22.12	The Eastern Front: collapse and revolution		550
22.13	Peace and commemoration		554
22.14	The war's impact on Australia's international relations		558
22.15	**SkillBuilder:** Analysing photos	online only	562
22.16	**Review**	online only	563

learnon RESOURCES — ONLINE ONLY

Complete this digital doc: Worksheet 22.1: War: When? Where? Why? Who?

22.2 Examining the evidence

22.2.1 How do we know about World War I?

Because of its global scale and impact, there is an enormous range of sources of evidence for World War I. Australia's population during the war years was under 5 million, yet around 60 000 Australians died in active service. As a result, Australia has among the world's most extensive collections of sources from the war.

DID YOU KNOW?

World War I (the First World War), at the time called 'the Great War', was sometimes described as 'the War to End All Wars'. However, in almost a century since World War I there has hardly been a time when war was not taking place somewhere in the world. Increasingly the main victims have come to be civilians. As many as 231 million people died in wars and other conflicts during the twentieth century. Since the beginning of this century, many more have died.

Written sources

Thousands of books and articles have been written about World War I over the many years since it ended. There are also vast quantities of written primary sources. These include campaign maps, soldiers' military records, letters, diaries, memoirs and propaganda for and against conscription for the war. Many of these sources can now be read on the Australian War Memorial website (see sources 2 and 3).

Visual sources

Several countries, including France, Belgium and Britain, have great museums dedicated to World War I. Yet none of these surpasses the outstanding collections of the Australian War Memorial. Its holdings include many thousands of photographs and artworks, weapons, equipment and dioramas depicting specific battles. Many documentary films and several excellent websites are dedicated to the subject.

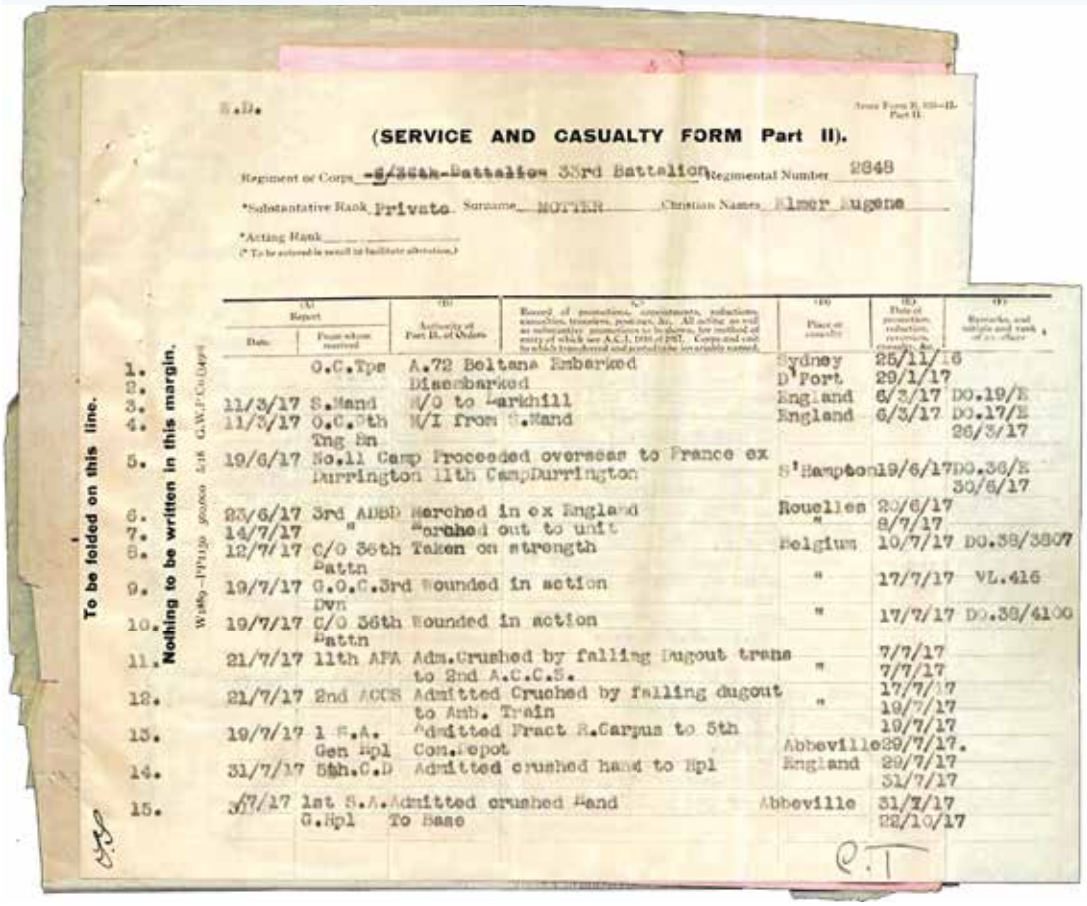
Sources 1–4 will give you an idea of the variety of evidence that we have for this conflict.

SOURCE 1 Australian 2nd Division monument near the town of Peronne in the Somme Valley, northern France

SOURCE 2 Part of Second Lieutenant C. C. D. St Pinnock's account of the aftermath of fatal charges against Turkish lines by soldiers of the Australian Light Horse at Gallipoli, Turkey, on 7 August 1915. Pinnock himself was killed in action just one year later.

… you can imagine what it was like. Really too awful to write about. All your pals that had been with you for months and months blown and shot out of all recognition. There was no chance whatever of us gaining our point, but the roll call after was the saddest, just fancy only 47 answered their names out of close on 550 men. When I heard what the result was I simply cried like a child.

SOURCE 3 Part of the World War I military service record of Private Elmer Motter of the 33rd Australian Battalion



(SERVICE AND CASUALTY FORM Part II).

Regiment or Corps ~~6/36th Battalion~~ 33rd Battalion Regimental Number 2848

*Substantative Rank Private Surname MOTTER Christian Names Elmer Eugene

*Acting Rank

To be folded on this line. Nothing to be written in this margin.

	(a) Report Date	(a) Report From whom received	(b) Authority for Part II. of Order	(c) Record of promotions, appointments, reductions, casualties, transfers, postings, &c. All acting as well as substantive promotions to be shown, but method of entry of which see A.C.I. 1010 of 1917. Corps and unit to which transferred and period (if any) to be clearly stated.	(d) Place of casualty	(e) Date of promotion, reduction, reversion, casualty, &c.	(f) Remarks, and initials and rank of officer
1.		O.C.Tps		A.72 Boltana Embarked	Sydney	25/11/16	
2.				Disembarked	D'Port	29/1/17	
3.	11/3/17	S.Mand		M/O to Larkhill	England	6/3/17	DO.19/E
4.	11/3/17	O.C.5th Tng Bn		M/I from S.Mand	England	6/3/17	DO.17/E 26/3/17
5.	19/6/17	No.11 Camp		Proceeded overseas to France ex Purrington 11th CampDurrington	S'Hampton	19/6/17	DO.36/E 30/6/17
6.	23/6/17	3rd ADBD		Marched in ex England	Rouelles	20/6/17	
7.	14/7/17	"		Marched out to unit	"	8/7/17	
8.	12/7/17	C/O 36th Battn		Taken on strength	Belgium	10/7/17	DO.38/3807
9.	19/7/17	C.O.C.3rd Dvn		Wounded in action	"	17/7/17	VL.416
10.	19/7/17	C/O 36th Battn		Wounded in action	"	17/7/17	DO.38/4100
11.	21/7/17	11th AFA		Adm.Crushed by falling Dugout trans to 2nd A.C.C.S.	"	7/7/17 7/7/17	
12.	21/7/17	2nd ACCS		Admitted Crushed by falling dugout to Amb. Train	"	17/7/17 19/7/17	
13.	19/7/17	1 S.A. Gen Hpl		Admitted Fract R.Carpus to 5th Con.Depot	Abbeville	19/7/17 29/7/17.	
14.	31/7/17	5th.C.D		Admitted crushed hand to Hpl	England	29/7/17 31/7/17	
15.	3?/7/17	1st S.A. G.Hpl		Admitted crushed Hand To Base	Abbeville	31/7/17 22/10/17	

E.T

SOURCE 4 A detail from a diorama in the Australian War Memorial, depicting conditions under which Australians fought on the Western Front during World War I

22.2 Putting it all together

Check your understanding

1. Give five examples of types of primary sources that are available for studies of World War I.
2. Name four countries that have museums dedicated to World War I.

Using historical sources as evidence

3. What can you tell from Source 1 about one place where Australians fought in World War I?
4. Explain how you would account for the renaming of the street in Source 1 as *Avenue des Australiens* ('Avenue of Australians').
5. Study Source 3. Elmer Motter died of wounds in France on 2 September 1918.
   (a) Identify how long he was in action before he was first wounded.
   (b) What conclusions might be drawn about the dangers soldiers faced during World War I?
6. Read Source 2.
   (a) Identify when and where the event described in this source occurred.
   (b) Identify what percentage of the 550 men survived to answer their names after the attack.
7. Analyse Source 4 and explain what you can tell from its details about conditions under which Australians fought during World War I.
8. What kinds of evidence are represented by these four sources?
9. Explain what you could learn about Australia's role in World War I from just these four sources.

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Complete this digital doc: Worksheet 22.2: Britain calls, Australia answers

22.3 What caused the Great War?

22.3.1 Long-term causes of the war

The immediate trigger of World War I was the assassination of the heir to the throne of the Austro-Hungarian Empire on 28 June 1914. Five weeks later the great powers of Europe, along with the countries of their empires and some other small nations, were at war. When the war began, most people thought that it would be over within a few months. Instead it raged for four years, causing great destruction and unimagined suffering. Such conflicts rarely have one simple cause. To understand how and why the Great War happened we need to look well beyond the event that triggered the fighting.

Glorifying war

Today we know that war is always terrible, cruel and destructive, and that it often has unforeseen consequences. However, most people did not understand this in early 1914. At school and in popular books, newspapers and magazines, war was often presented as a heroic adventure. Most people thought of wars as short, exciting, noble and glorious. At the same time, there was an arms race in Europe. Between 1870 and 1914 the great powers increased their military spending by 300 per cent and all the continental European powers adopted **conscription**. Some historians have described Europe in 1914 as a powder keg waiting for a spark to ignite an explosion.

Growing tensions

Imperialism and **nationalism** had caused international tensions and conflicts long before 1914. Fear and suspicion of their rivals drove nations to seek security through alliances with others. Leaders came to believe that their countries would be safer if they could rely on others to come to their aid if ever they were threatened. But such alliances could also drag countries into conflicts.

Germany's alliances

From the early 1870s Germany sought an alliance with Austria–Hungary and Russia. This was because the German states had taken two provinces — Alsace and Lorraine — from France during war in 1870, and Germany feared that France would want revenge. But such an alliance could not last because Austria–Hungary and Russia had competing interests. In 1879 Germany created the Dual Alliance, under which Germany and Austria–Hungary agreed that each would help the other if either was attacked by Russia. This accord became the Triple Alliance when Italy joined in 1882. At the same time, Germany attempted to remain friendly with Britain and to mend relations with Russia.

France finds allies

From 1888 Germany's foreign policy took a new direction. When Germany failed to renew a treaty with Russia in 1890, France found an ally in Russia. In the 1894 Franco-Russian Alliance each agreed to help

SOURCE 1 European alliances at the beginning of 1914

Source: Spatial Vision

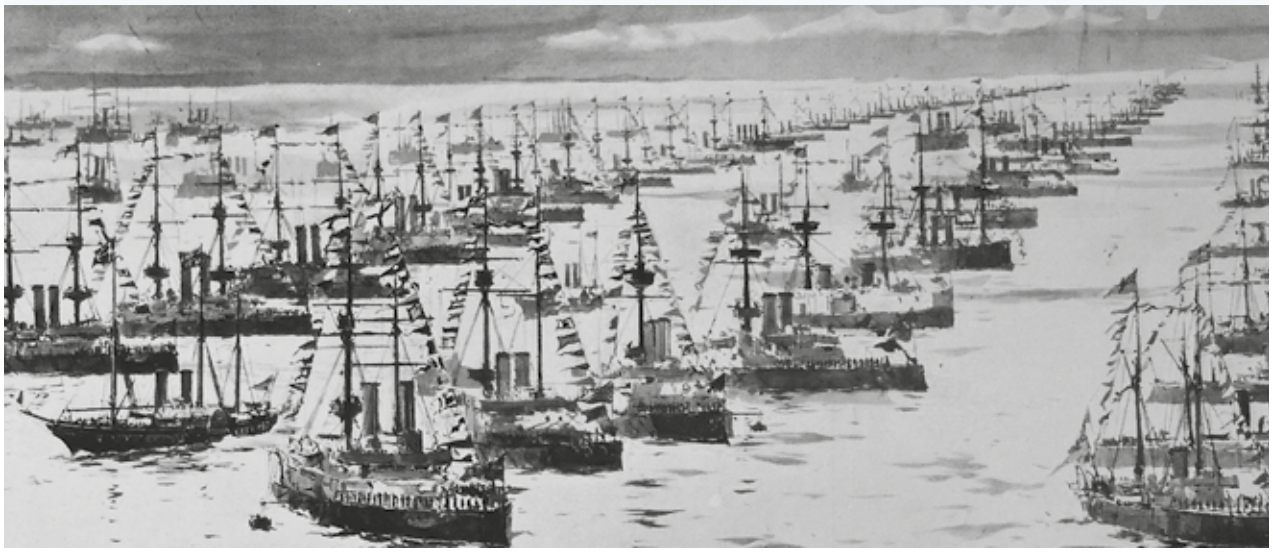
the other if attacked by Germany. The new German ruler, Kaiser Wilhelm II, wanted to create a colonial empire and took steps to build up the German navy. This raised concerns in Britain, whose own empire depended on the Royal Navy's absolute superiority over any rival (see Sources 3 and 4). Alarmed by Germany's move, Britain signed the Entente Cordiale with France in 1904. When Britain and Russia settled their differences in 1907, Britain, France and Russia linked up in the Triple Entente.

Conflicting French and German interests in North Africa and conflicting Russian and Austrian interests in the Balkans led to increased tensions. However, it was in the Balkans that these tensions would erupt into war.

SOURCE 2 From a statement in 1914 by Sir Edward Grey, Britain's foreign minister from 1905 to 1916

The cause of anxiety now in public opinion here as regards Germany arises entirely from the question of the German naval expenditure … if she had a fleet bigger than the British fleet, obviously she could not only defeat us at sea, but could be in London in a very short time with her army.

SOURCE 3 The (British) Royal Navy's 1st and 2nd Battle Squadrons at sea in 1912. It was British policy to maintain a navy that was large enough and strong enough to defeat the navies of any two potential enemies.



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Deepen and check your understanding of the topic with the following resources and auto-marked questions:

- **Europe on the eve of war**

22.3.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Along with the glorification of war, identify three other long-term causes of the war.
2. Explain Germany's motive for wanting alliances.

Using historical sources as evidence

3. Using Source 1, identify the members of the two rival European alliances.
4. Using Sources 2 and 3, explain:
   (a) why Britain was fearful of steps taken by Germany's Kaiser Wilhelm II to expand the German navy
   (b) how this development led Britain into an alliance with France and then with Russia.

22.3.2 The short-term triggers of the war

The Balkans powder keg

Nationalism was an especially strong force in Europe's Balkan peninsula, where several national groups had won their independence from the Turkish Ottoman Empire since the 1820s. This current alarmed the military leaders of Austria–Hungary, who feared that the Austro-Hungarian Empire could also be infected by national minorities seeking independence. The main problem was tension between Austria and Serbia, the most powerful of the independent Balkan nations.

Serbia was a **Slavic** nation. Serbian nationalists wanted other Slavic peoples within the Austro-Hungarian Empire to unite with it in a South Slav kingdom. Many Serbs were furious when, in 1908, Austria annexed two Turkish Balkan provinces, Bosnia and Herzegovina, where Serbs made up much of the population. By 1914 Serbia saw Austria as the main obstacle to its expansion. For its part, Austria viewed Serbia as a danger to its empire's continued existence. Austria–Hungary was much more powerful than Serbia, but Serbia had the backing of Russia, which portrayed itself as the champion of fellow Orthodox Christian Slavs (see Source 4).

SOURCE 4 The Balkans and the Austro-Hungarian Empire at the end of 1913

Source: Spatial Vision

DID YOU KNOW?

The assassins did not know that Archduke Franz Ferdinand was strongly opposed to any war against Serbia and wanted political reform in the Austro-Hungarian Empire with more rights for its subjects.

Countdown to war

On 28 June 1914, during an official visit to the Bosnian town of Sarajevo, the heir to the Austrian throne, Archduke Franz Ferdinand, and his wife, the Duchess Sophie, were fatally shot. Their killer was Gavrilo Princip, a 19-year-old Bosnian Serb. Princip and his fellow assassins belonged to an extreme Serbian nationalist group, Young Bosnia. Its aim was to see Bosnia united with Serbia. They were armed and assisted by Danilo Ilic, a member of the Black Hand, a secret society directed by the head of Serbian military intelligence.

Events soon spiralled out of control. Austria now had an excuse to crush Serbia but needed to be sure of Germany's backing. Germany gave Austria a guarantee of military support and, on 23 July, Austria presented Serbia with an **ultimatum**. Austria knew that Serbia could never accept all the terms of the ultimatum, especially its demand that Austrian troops be allowed to track down Serb terrorists inside Serbia.

SOURCE 5 This illustration appeared in a French magazine shortly after the assassination. The caption read: 'The assassination of the Archduke, Austrian heir, and the Duchess, his wife, in Sarajevo'.

SOURCE 6 From a letter written in 1918 by the youngest of the assassins, 17-year-old Vaso Cubrilovic, to his sisters. Because he was under 20, Cubrilovic was spared the death penalty but sentenced to 16 years' imprisonment.

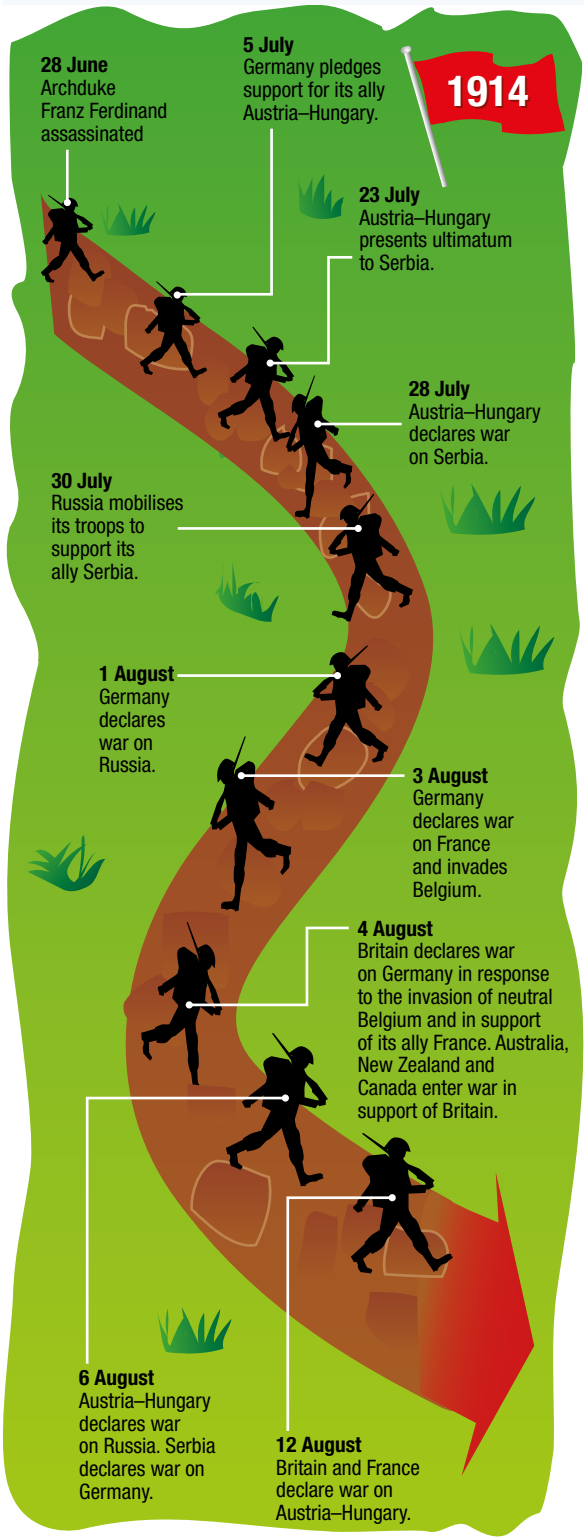
I shall write as much as I remember about the assassination. I first thought about it in October 1913 in Tuzla, incensed by the fights we had with our teachers, the mistreatment of Serbian students, and the general situation in Bosnia. I thought I'd rather kill the one person who'd really harmed our people than fight in another war for Serbia. All I'd achieve in a war is to kill a couple of innocent soldiers, while these gentlemen who were responsible for it never come anywhere near the war itself …

Ilic … told me that there would be three others, apart from us three, and that Serbian officers were supplying the weapons. I asked if the Serbian government knew about it. He said no …

War begins

Serbia accepted many of the demands and offered to discuss others, but Austria proceeded to declare war on 28 July. Russia began to mobilise its forces to support Serbia on 30 July, so Germany declared war on Russia on 1 August. After France declared it would stand by its Russian ally, on 3 August Germany declared war on France. As you can see from the Source 7, Russia, Germany, France, Belgium, Britain and their empires were drawn rapidly into a world war.

SOURCE 7 The steps by which countries were drawn into World War I



22.3.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Identify reasons why nationalism in the Balkans alarmed the leaders of the Austro-Hungarian Empire.
2. What did Serbian nationalists want?
3. Explain why a potential war between Serbia and Austria was likely to involve other nations.

Using historical sources as evidence

4. Explain how Source 4 can assist us in understanding why Austria–Hungary wanted a war with Serbia.
5. Using Source 5 and 6 as your primary source evidence, write a brief account of the assassination of Archduke Franz Ferdinand and the plot leading to it.
6. Analyse the perspective of Vaso Cubrilovic in Source 6.
   (a) Decribe Cubrilovic's motives.
   (b) Explain why he would have thought his actions were justified.
   (c) How was his perspective different from that of the leaders of Austria–Hungary?

22.3 Putting it all together

Analysing cause and effect

1. Using what you have discovered about short- and long-term causes, refer to Source 8 to describe the steps by which a local conflict quickly became a world war.

Determining historical significance

2. Evaluate the significance of the assassination of Archduke Franz Ferdinand as the trigger for World War I using the following questions as a guide.
   (a) Is it likely that Austria–Hungary would have gone to war without German backing?
   (b) What were the terms of the guarantee of military support that Germany gave to Austria–Hungary? (This guarantee is often referred to as the 'blank cheque'. You will need to use the internet to explore this issue.)
   (c) What were Germany's motives for encouraging Austro-Hungarian aggression?
   (d) Does the involvement of Serbian officers in the assassination plot prove that the Serbian government was involved?
   (e) If the Serbian government really was involved, would it have accepted most of the Austrian ultimatum?
   (f) As Serbia did accept most of the terms of the ultimatum, why did Austria still declare war?
   (g) Is it likely that, had the assassination not occurred, other tensions would still have triggered the war?

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Complete this digital doc: Worksheet 22.3: Gallipoli and the Western Front

22.4 The world at war

22.4.1 The main battlefronts

World War I was fought between two groups of countries — the Allies and the Central Powers. At first the Allies consisted of the British, French and Russian empires along with Serbia and Belgium. The Central Powers were Germany, the Austro-Hungarian Empire, Bulgaria and the Turkish Ottoman Empire. Partly because Britain, France, Germany and Turkey had empires outside Europe, what began as a European war became a global war. It was fought on many fronts: on land, on and under the sea and in the air.

In return for promises of territory, Italy withdrew from the Triple Alliance and joined the Allies in May 1915. As the war progressed, other countries joined the Allies. Among them were Greece, Portugal, Romania, Japan, China, Brazil and the small countries of Central America, although many of them expressed their support without joining the fighting. The United States of America joined the Allies in 1917.

The Western Front

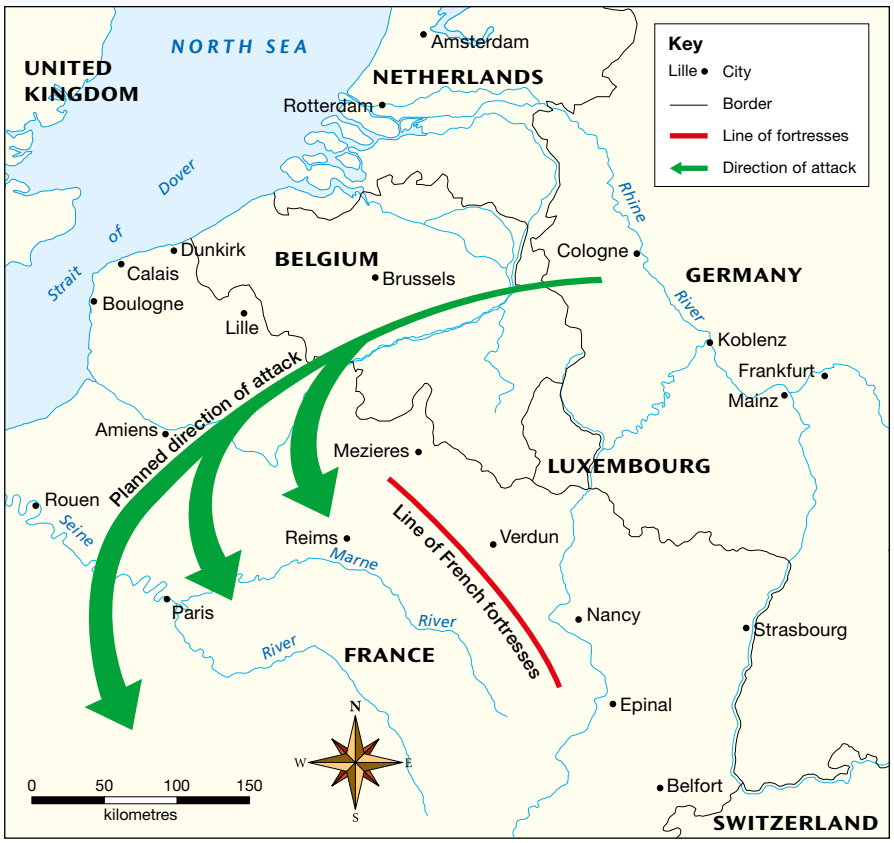
Germany's strategy was based on the fact that it had an enemy to the west (France) and a bigger enemy to the east (Russia), and that it would be impossible to defeat both at the same time. Count Alfred von Schlieffen had developed Germany's basic plan in 1905. Under the Schlieffen Plan, during the six weeks the Germans believed Russia would need to mobilise its army, Germany would launch a quick attack to defeat France. The victorious German forces could then be moved by rail to the east to fight Russia.

Attacking France through neutral Belgium in August 1914 avoided the much slower task of a direct invasion across the heavily fortified French–German border. The plan failed largely because of strong Belgian resistance, something Germany had not expected. Belgian resistance delayed Germany's advance and helped French and British forces to halt the Germans in northern France in September 1914. Both sides dug trenches to reduce their losses from enemy artillery and machine-gun fire. Over the next four years, millions of lives were lost in huge offensives aimed at breaking the **deadlock** that resulted from trench warfare.

The Eastern Front

On the Eastern Front, Russian forces had some early successes but they were poorly led and equipped, and the Germans soon gained the advantage. Around 2 million Russian soldiers were killed, wounded or taken prisoner during the war. Despite some victories against Austro–Hungarian forces, Russia's military was collapsing by early 1917 and the Revolution of November 1917 ended Russia's involvement in the war (see subtopic 22.12).

SOURCE 1 How the Schlieffen Plan was meant to work



Source: Spatial Vision

22.4.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. At the beginning of the war, who were the Allies and who were the Central Powers?
2. Which of these two groups were joined by other countries as the war progressed?
3. How did the Allies arrange for Italy to change sides?
4. Why was Germany able to achieve victories on the Eastern Front?

Using historical sources as evidence

5. Examine Source 1.
   (a) In a paragraph, explain why Germany needed to defeat France quickly, how the Schlieffen Plan was meant to achieve this, and why the attack on France had to be made through neutral Belgium.
   (b) In a second paragraph, explain why Germany's plan failed.

22.4.2 Other theatres of war

The war at sea

Germany's naval build-up had been a major reason for Britain's decision to become an ally of France and Russia. Both Britain and Germany believed that navies could determine the outcome of war. However, in 1914 the German fleet was trapped in its ports, so the British navy's main role was maintaining a **blockade** to prevent Germany from importing war materials. Germany retaliated by sending out **U-boats** to sink allied shipping. In January 1917 U-boats began to attack ships of neutral countries trading with the Allies. This led to the United States joining the Allies in April 1917.

SOURCE 2 Major battlefronts of World War I

Source: Spatial Vision

Other European fronts

When Italy joined the Allies a new front was opened along its mountainous frontier with Austria. Fighting continued there throughout the war. In 1916 Austrian and German troops overran Romania soon after it joined the Allies. After Russian forces captured Armenia from Turkey in 1915, Turkish soldiers rounded up hundreds of thousands of Armenians living within Turkish territory. They were sent on a death march and massacred. In the same year, the Allies failed in their attempt to invade Turkey via the Gallipoli Peninsula (see subtopic 22.6).

War in the colonies

With most of its navy bottled up in port, Germany was unable to defend its colonies. In 1914 South Africa took German South-west Africa, Australia took German New Guinea, and Japan seized Germany's Pacific islands colonies and territory in China. Turkey's Middle Eastern colonies became a theatre of war from 1915, when Britain encouraged Arab leaders to revolt against the Turks with promises of independent kingdoms. These promises were later dishonoured. Germany, in turn, created colonial problems for Britain by shipping arms to Irish rebels, who staged an unsuccessful revolt against British rule in Ireland in 1916.

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Deepen and check your understanding of the topic with the following resources and auto-marked questions:

- **World War One**

22.4.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain the effect of Britain's naval blockade on Germany's ability to import war materials and to defend its colonies.
2. What were the effects of Germany's retaliation against the blockade?

Using historical sources as evidence

3. Examine Source 2. Identify the locations of:
   (a) the Western Front and the Eastern Front
   (b) other theatres of war in Europe and the Middle East.
4. Use the internet to research the massacre of Armenians in 1915 and explain why this issue is still controversial.

22.4 Putting it all together

Analysing cause and effect

1. Identify three developments that could be regarded as turning points in the war during 1914 and 1915.

Determining historical significance

2. Explain the significance of these three turning points in giving advantages to the Allies. Consider what effect each turning point had on the Allies.

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Complete this digital doc: Worksheet 22.4: In the trenches

22.5 Australians in the Great War

22.5.1 Australia's response to the outbreak of war

Why were many Australians willing to fight in World War I, and where did they serve? You have already learned about how World War I began and the main developments that shaped the course of the war. Now we will try to understand why Australians took part and the ways in which they contributed.

When Britain declared war on Germany on 4 August 1914, Australia was part of the British Empire and therefore was also at war. The Australian Labor Party leader, Andrew Fisher, expressed a popular view when he pledged that Australia would back Britain 'to the last man and the last shilling'. Australia was the only combatant that did not impose conscription, so individual Australians still had the choice of whether or not they would fight. But enthusiastic volunteers from all over the country rushed to **enlist**.

Why did they do this? Soldiers' letters and diaries reveal that some went for personal reasons such as to escape unemployment, to travel or to seek adventure. Many imagined war as exciting and thought that this one would be over in weeks. But most joined believing that Britain's cause was right. They had been brought up to believe that men should be willing to die for their country and the empire, and that Australia needed to prove to Britain that Australians were heroic and worthy of being regarded as true Britons.

SOURCE 1 Private A. J. McSparrow, in a letter dated 18 March 1915. Private McSparrow died of wounds in August 1916.

I have [enlisted] … and I don't regret it in the very least. I believe it is every young fellow's duty … besides every paper one lifts it has something to say about young fellows being so slow in coming forward … we are the sort of men who should go.

SOURCE 2 Corporal R. E. Antill, in a letter to his parents dated 23 April 1915. Corporal Antill was killed in action in July 1917. ('4/-' means four shillings.)

… things were so [economically] bad in Melbourne … and they are a jolly site worse now … every day that passes 4/- goes down to me and this war is bound to last a good while yet … if I am killed you will get what is due to me just the same, as it goes to the next of kin.

22.5.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain what Andrew Fisher meant when he said that Australia would back Britain 'to the last man and the last shilling'.
2. What indicates that Fisher's view was a popular one?
3. In what way was enlistment in Australia different to that in other combatant countries?

Using historical sources as evidence

4. Compare and contrast Sources 1 and 2.
   (a) Identify Private McSparrow's motives for enlisting in Sources 1.
   (b) Identify Corporal Antill's motives for enlisting in Sources 2.
   (c) Explain how these sources represent different perspectives.
   (d) Form a hypothesis about motives for enlisting that could be supported by evidence from these two sources.

22.5.2 Where did they fight?

Australia quickly recruited a volunteer army it called the Australian Imperial Force (AIF). By September 1914, 20 000 soldiers had been selected and organised into the 1st Infantry Division and a Light Horse (mounted) Brigade. By December they were training in Egypt. There the AIF was joined by 10 000 New Zealand troops to form the Australian and New Zealand Army Corps (ANZAC).

Australians took part in several theatres of the war on land, at sea and in the air.

SOURCE 3

Where Australians fought in World War I

Gallipoli
In 1915 Australians played a major role in the Allies' failed attempt to invade Turkey through an attack on the Gallipoli Peninsula (see subtopic 22.6).

War at sea
In Australia's first action in the war, the small Royal Australian Navy (RAN) sent its only battle cruiser *Australia* with the Australian Naval and Military Force to capture German New Guinea in September 1914. The RAN also escorted convoys of transport ships carrying troops to the war. It drove the Germans out of the Pacific. It also served in the Atlantic and Indian oceans, the Mediterranean and the North Sea.

The western front
By September 1914 French and British forces had halted the German advance on the fields of northern France and Belgium. Between 1916 and 1918, all five Australian Divisions took part in the terrible fighting on the Western Front (see subtopic 22.9).

The Middle East
The Australian Flying Corps, the Australia Light Horse and Australians in the Imperial Camel Corps played a big role in battles against Turkish forces in Egypt and Palestine between 1916 and 1918.

SOURCE 4 Troops embarking at Port Melbourne in 1915

SOURCE 5 *Emden beached and done for, 9 November 1914,* painted by Arthur Burgess in 1920

Burgess, Arthur
Emden beached and done for, 9 November 1914 (1920)
Oil on canvas, 168.5 × 254.5 cm
Australian War Memorial ART00191

DID YOU KNOW?

The light cruiser *Sydney* sank the German raider *Emden* near the Cocos-Keeling group of islands in the Indian Ocean on 9 November 1914. This was considered a great feat because the *Emden* had already sunk 25 Allied steamers and two warships and raided Allied bases in the Pacific.

22.5.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain the meanings of AIF and ANZAC.
2. Make a list of places where Australians fought during World War I and when they fought there. Refer to Source 3.

Using historical sources as evidence

3. Write an imaginary conversation between two of the men in Source 4 in which they discuss the beliefs and feelings that led them to sign up for the war, and what they expect war to be like.
4. Working in small groups, use the website of the Australian War Memorial to find out more about the incident shown in Source 5. Use this information to create a newspaper headline and the kind of news article that might have told of the incident in 1914.

22.5 Putting it all together

Analysing cause and effect

1. Identify beliefs about the British Empire that encouraged Australians to enlist for World War I.
2. Create a concept map to show how those beliefs and other values contributed to enlistment.

Determining historical significance

3. Australians had fought for the British Empire in previous conflicts, so why was their involvement in World War I of much greater historical significance?

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Complete this digital doc: Worksheet 22.5: Every picture tells a story

22.6 Gallipoli

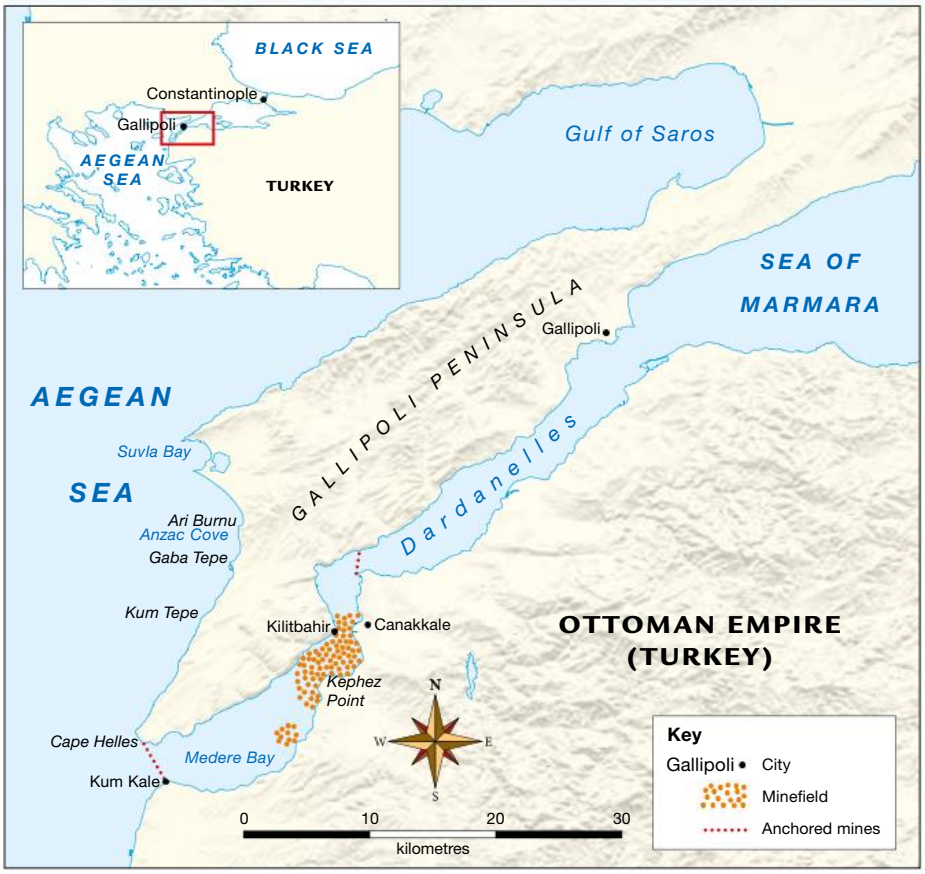
22.6.1 Why Gallipoli?

Between 25 April and 18 December 1915 thousands of young Australian and New Zealand soldiers died on the beaches and cliffs and in the gullies of Turkey's Gallipoli Peninsula during Australia's first land campaign of World War I. Although the expedition was a failure, the courage and endurance of these men created the Anzac legend.

The soldiers of the AIF had expected to sail to England to complete their training and then go to the Western Front in France and Belgium, where most British troops were fighting the Germans. Instead the Anzacs were trained in Egypt to form a crucial part of a campaign against Germany's ally Turkey.

The strategy for an Allied attack on Gallipoli was based on the idea of Winston Churchill, who, as First Lord of the Admiralty, controlled Britain's Royal Navy. Churchill thought that an attack on Turkey would shorten the war because:

SOURCE 1 The Gallipoli Peninsula



Source: Spatial Vision

Turkey could be defeated and Austria–Hungary would be threatened
Greece, Bulgaria and Romania would be persuaded join the Allies
supplies could be shipped through the Dardanelles (a narrow strait between the Aegean Sea and the Black Sea) to Russian troops, who were fighting Germany on the Eastern Front.

The first aim was to capture the Dardanelles (see Source 1), opening the heavily fortified strait to Allied shipping. A landing of British, French, Anzac and other British Empire troops was planned after a failed naval attack. The Allied forces were to land on the Gallipoli Peninsula.

22.6.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Who was Winston Churchill?
2. Identify the strategic advantages that Churchill thought would be gained by capturing the Dardanelles.

Using historical sources as evidence

3. Study Source 1. Note that the Black Sea lies to the north of the Sea of Marmara.
   (a) Identify where Turkish mines were located in the Dardanelles.
   (b) Four Allied ships struck mines on 18 March 1915. Was it ever likely that they would get past such a minefield?
   (c) Explain why it might have been assumed that landing troops on the Gallipoli Peninsula might have more success than ships trying to get through the Dardanelles.

22.6.2 The landing at Gallipoli

The first landing of soldiers on the beaches of Gallipoli took place on the morning of 25 April 1915. British and French troops landed around Cape Helles. Australians and New Zealanders landed before dawn north of Gaba Tepe. The Anzacs had to reach the shore in landing craft and claw their way up steep cliffs under Turkish fire. Throughout the first day there was confusion and ferocious fighting, much of it hand-to-hand. The battle ebbed and flowed and at last the Turks, fighting courageously, won back control of the high ridges that had been reached by scattered groups of Anzacs. As night fell, the Anzacs found themselves holding only a few square kilometres of beach, cliffs and gullies, and they were ordered to dig in.

Through the night the Turks launched waves of fierce counterattacks. Both sides suffered heavy losses but the Anzac lines held. Strategically, the landing had failed, because the Turks still held the high positions. For the Anzacs it was a triumph of courage over inexperience, but they paid a high price. At least 2300 died that day.

SOURCE 2 *Anzac, the landing 1915,* by George Lambert. Completed between 1920 and 1922, the painting shows men of the 3rd Brigade struggling under fire up the slopes of Ari Burnu shortly after 4.30 am on 25 April 1915.

Lambert, George
Anzac, the landing 1915 (1920–1922)
Oil on canvas, 190.5 × 350.5 cm
Australian War Memorial ART02873

SOURCE 3 From the diary of Sergeant W. E. Turnley, who took part in the initial landing at Anzac Cove

There are a couple of lights flashing about — they must have seen us … Crack! Swish! Ping! At last … the suspense is over! … some get ashore safely, some are hit slightly, others are drowned in only a couple of feet of water because in the excitement nobody notices their plight. [One] fellow remains in the boat after all the others have disembarked … he … looks at us dazedly, leaning forward on his rifle … the soldier falls forward into the bottom of the boat, dead.

SOURCE 4 From a description of the landing by British general Sir Ian Hamilton, commander of the 80 000 Allied troops at Gallipoli

Like lightning they leapt ashore … so vigorous was the onslaught that the Turks made no attempt to withstand it and fled from ridge to ridge pursued by Australian infantry.

DID YOU KNOW?

In the days after the landing, Private John Simpson (Kirkpatrick), stretcher-bearer of the 3rd Australian Field Ambulance, calmly led his donkey up and down the gully from the front line to the beach, evacuating many wounded men, until he was killed on 19 May.

22.6.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Identify the locations of the landings on the Gallipoli Peninsula and describe how the Anzacs reached the shore on the morning of 25 April 1915. You can refer back to Source 1 to find these locations.
2. What was the strategic situation by the following day?

Using historical sources as evidence

3. Describe the details visible in Source 2.
4. Source 2 was painted by an official Australian war artist.
   (a) Would that fact guarantee its accuracy?
   (b) What kinds of sources could be used to corroborate it and evaluate its accuracy?

22.6.3 The long and tragic months on Gallipoli

The Gallipoli campaign was not to be the quick, glorious victory Australians had expected. It was a long, agonising ordeal in which the death toll mounted on both sides. During the first week the fighting hardly stopped. By early May most Anzac officers and about half the men in each battalion had been killed or wounded. Despite such casualties, many wounded men who had been evacuated were anxious to return to the front.

The Turkish counterattack

On the night of 18–19 May the Anzacs withstood a massive counterattack as 42 000 Turks were ordered to drive them from their positions and back into the sea. In courageous but suicidal charges, the Turks lost 10 000 men, half of whom lay dead or wounded in **no man's land**. Around midday a truce was arranged so both sides could bury their dead before the battle resumed.

SOURCE 5 The Australian 22nd Battalion, newly arrived from Egypt, going into the line at the southern part of Lone Pine, Gallipoli Peninsula

Life on Gallipoli

These were weeks of tragic waste, terror and extraordinary courage. With the Turks occupying much of the high ground above them, none of the Anzacs were ever free from danger. Yet they were forced to adapt to life on Gallipoli. Soldiers made grenades from jam tins filled with explosives, nails, stones and shrapnel. Some men learned to catch Turkish grenades and throw them back before they detonated. Mass bayonet charges were frequent but were doomed as, once in open ground, the men were cut down by machine-gun fire. Increasingly they turned to the tactic of mining under enemy trenches and blowing them up from below.

The heat of summer and the many rotting corpses in no man's land brought such incessant swarms of flies that soldiers wrote of their mouths filling with flies when they tried to eat a biscuit with jam. With the flies came diseases such as typhoid and dysentery.

Despite the fact that both sides often killed men rather than take prisoners, the Anzacs and the Turks came to respect each other's courage. The Australians affectionately called their adversaries 'Jacko', 'Abdul' or 'Johnnie Turk'. In between the bombs and bullets, gifts, jokes and greetings were exchanged.

Lone Pine

In August, operations aimed at breaking the deadlock and seizing the high ground began. Australian troops had the task of diverting Turkish forces while another force of Anzac, British and Indian troops landed at Suvla Bay and advanced to capture the high ridges. The Lone Pine diversion was among the most savage battles of the Gallipoli campaign. The Australians charged the Turkish positions and lost more than 2300 killed or wounded in four days and nights of hand-to-hand fighting. The Turks lost about 6000 men. New Zealand troops also suffered very heavy casualties in the August operations. As part of the main offensive, they had the task of clearing the foothills to the left of Anzac Cove and taking the high ridges at Chunuk Bair. They succeeded in holding Chunuk Bair for just a few hours on 8–9 August before the Turks won it back.

The Nek

On 7 August, in another attack whose aim was to divert the Turks, troops of the Australian Light Horse were ordered to make bayonet charges up a narrow strip of open ground called the Nek. The attacks proceeded even though the plan to capture the ridges had failed. The naval bombardment of the Turkish trenches stopped several minutes too soon. This allowed the Turks to return to their firing positions. Four successive lines of Light Horsemen, each of about 150 men, charged from their trenches towards the Turkish lines.

Cut down by machine-gun fire, nearly all fell dead or wounded within a few metres of their own trenches. Their bravery was extraordinary but their deaths achieved nothing.

myWorld History Atlas

Deepen and check your understanding of the topic with the following resources and auto-marked questions:

- **Gallipoli Campaign**

22.6.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Describe the scale of Anzac casualties in the first week of the Gallipoli campaign and the scale of Turkish casualties on 18–19 May.
2. Make a list of some of the hardships faced by the Anzacs during the campaign and ways in which the Anzacs adapted and coped with such hardships.
3. Describe the purposes and consequences of the attacks at Lone Pine and the Nek in August.

Using historical sources as evidence

4. Study Source 5 and identify reasons why it would have been very difficult for these men to attack the Turkish trenches at Lone Pine.

22.6.4 Withdrawal from Gallipoli

After seven months, the British command finally accepted that victory would not be possible. Ironically, the best-managed part of the entire campaign proved to be the withdrawal of all Allied soldiers during December. The soldiers and war materials were evacuated secretly at night. Throughout the operation every effort was made to convince the Turks that nothing out of the ordinary was going on. Cricket matches were played on the beach, and empty crates were brought ashore each day. When the Turks charged down from the hills on 20 December they found that the enemy had vanished.

SOURCE 6 During the evacuation, the Allied troops needed to make the Turks think they were still in their trenches. One trick was to rig rifles to fire automatically. Once enough water had dripped from the top tin into the bottom tin, its weight pulled the trigger.

DID YOU KNOW?

When they abandoned Gallipoli, the Anzacs left behind 7591 Australian and 2431 New Zealand dead. Many thousands of other British Empire soldiers and French and Turkish troops also died during the campaign.

22.6.4 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. How long did it take the British command to accept that victory at Gallipoli was impossible?
2. Explain how the Allies kept the withdrawal secret from the Turks and why it is ironic that the withdrawal was the best-managed part of the campaign.

Using historical sources as evidence

3. Look closely at Source 6 and describe how this device worked and why it was used.

22.6 Putting it all together

Using historical sources as evidence

1. Compare and contrast Sources 3 and 4.
   (a) Describe the difference in their perspectives.
   (b) Explain which source you would considerto be more reliable and give reasons for your choice.
2. Find at least three more photographs of the Gallipoli campaign on the Australian War Memorial website. Use them to present a data show on Gallipoli. Explain why each photograph was chosen and what each tells us about soldiers' experiences.

Determining historical significance

3. Evaluate the significance of the Gallipoli campaign for Australia. In your evaluation, consider:
   (a) how important it was to people living at the time
   (b) how many people were affected directly and indirectly
   (c) whose lives were changed and how they were changed
   (d) how long-lasting the consequences were
   (e) what has been the legacy of Gallipoli
   (f) why Gallipoli was considered a triumph as well as a tragedy.

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Complete this digital doc: Worksheet 22.6: The home front

22.7 Gallipoli: the historical debate

22.7.1 What is a historical debate and why has the Anzac landing been debated?

One of the most important concepts in history is contestability. It means that interpretations of the past are open to debate. Sometimes this is because of a lack of evidence or the discovery of new evidence. It can also be because historians bring different perspectives to an investigation. Very often one interpretation of an event comes to be popularly accepted as the truth, and is thought to be the only possible interpretation. But then it is challenged and a new debate begins.

A long accepted interpretation

For much of the twentieth century, most Australians believed that the terrible losses Australian troops suffered during the landing at Gallipoli and, to an extent, the failure of the entire Gallipoli campaign, resulted from the troops being landed at Ari Burnu, north of their intended landing place below Gaba Tepe. Charles Bean, Australia's official war historian during World War I, stated that the Anzacs were put ashore at the

wrong place. He wrote, 'The carefully laid plans had been torn to shreds by the current that had carried the tows [landing craft] too far northward …' Other historians and most people in general accepted this view, believing that the soldiers failed to gain the territory needed for the campaign's success at least partly because of the landing error.

SOURCE 1 *The beach at Anzac*, painted by war artist Frank Crozier in 1919. This source shows the terrain at Ari Burnu, where the Anzacs landed and established their hold on a small piece of the Gallipoli Peninsula.

Crozier, Frank
The beach at Anzac (1919)
Oil on canvas, 123.4 × 184.6 cm
Australian War Memorial ART02161

Challenging the accepted interpretation

More recently, several historians have challenged that view. This is common in historical work, partly because historians writing soon after events do not always have all the evidence they need. For example, Bean could not have used the military intelligence that went into planning the Gallipoli campaign because it was kept secret for fifty years.

How to understand the historical debate

To understand this debate or any historical debate, we need to recognise how a new interpretation challenges an earlier argument. To do this we:
identify the main argument of the earlier interpretation
identify the main argument of the later interpretation and how it differs from the earlier interpretation
analyse the detailed evidence used to support the argument of the later interpretation.

SOURCE 2 From Denis Winter, 'The Anzac landing: the great gamble?' in *Journal of the Australian War Memorial*, April 1984, pp. 15, 18

The problem to be resolved is whether the landing at Anzac was a simple piece of bad luck or whether it was part of Birdwood's plan … An unsuspected sea current provides the strongest point in favour of failure being due to factors beyond human control … But the case against the current is a strong one. Earlier work around the peninsula with submarines meant that the navy was well aware of swift currents around the landing point … the possibility of an unsuspected or unmeasurable current may be discounted …

Colonel W. R. McNicol … gave an address … on the anniversary of the landing, saying that the position attacked was identical with orders …

SOURCE 3 From Chris Roberts, 'The Landing at Anzac: a reassessment', in *Journal of the Australian War Memorial,* April 1993, pp. 27–29

Birdwood's aim of taking the Turkish defenders by surprise was achieved. A landing north of Gaba Tepe had not been expected and the small garrison defending Anzac Cove put up a brief resistance before fleeing inland … By about 5.00 a.m. the high ground overlooking Anzac Cove had been captured …

Therefore, there is little ground for claiming, as Bean concludes, that the misplaced landing was a major reason for the failure of the ANZAC assault to achieve its intended objective.

Indeed, there is strong evidence that the error was fortunate. Birdwood himself believed so. The strongest Turkish defences were at Gaba Tepe and these covered the original landing beach and its seaward approaches … Birdwood and others believed that heavy casualties would have been experienced had the landing gone as planned.

22.7.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Where, according to Charles Bean, were the Anzacs meant to have landed?
2. Why, according to Bean, were they landed in the wrong place?
3. What, according to Bean's long-accepted interpretation of the Gallipoli landing, was the consequence of landing 'too far northward'?

Using historical sources as evidence

4. Using Source 1 as your evidence, what would appear to be the advantages and disadvantages for the Anzacs of landing at Ari Burnu instead of at Gaba Tepe?
5. In Source 2, Denis Winter argues that Bean's interpretation is wrong because the Anzacs were landed where they were intended to be landed, at Ari Burnu. Explain what evidence Winter gives to support his interpretation.
6. Read Source 3. Identify Roberts' main argument and the evidence used to support his interpretation.

22.7 Putting it all together

Using historical sources as evidence

1. Identify the significant differences between the interpretations of Winter and Roberts.

Determining historical significance

2. In small groups, discuss why there will probably be ongoing historical debate on the issue of the Anzac landing at Gallipoli on 25 April 1915.

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Complete this digital doc: Worksheet 22.7: The conscription debate

22.8 Trench warfare

22.8.1 The trenches of the Western Front

The main fighting of World War I took place in and around the trenches of the Western Front. By 1915 these stretched over 500 kilometres, from the Belgian coast through to the Swiss Alps, and were home to millions of troops. Trench warfare produced no winners; rather, it was a defensive tactic that led to continual **'stalemate'**. Over four years the armies of both sides lived and died in them. When the fighting was at its heaviest, tens of thousands of men could be killed or wounded in a single day.

Most battlefield trenches contained many defensive structures. The most commonly used arrangement was the three-line trench system. This allowed front-line trenches for firing at the enemy, support trenches where troops could be rested, and reserve trenches to hold reinforcements and supplies. Communication trenches linked all three trench lines, allowing for easier movement of troops and information. Some German trenches extended up to ten metres underground.

SOURCE 1 Modern artist's interpretation of a typical trench system

A Trenches were generally designed in a zigzag pattern; this helped to protect the trench against enemy attack. Each bend could be defended separately if necessary and explosions could be contained.

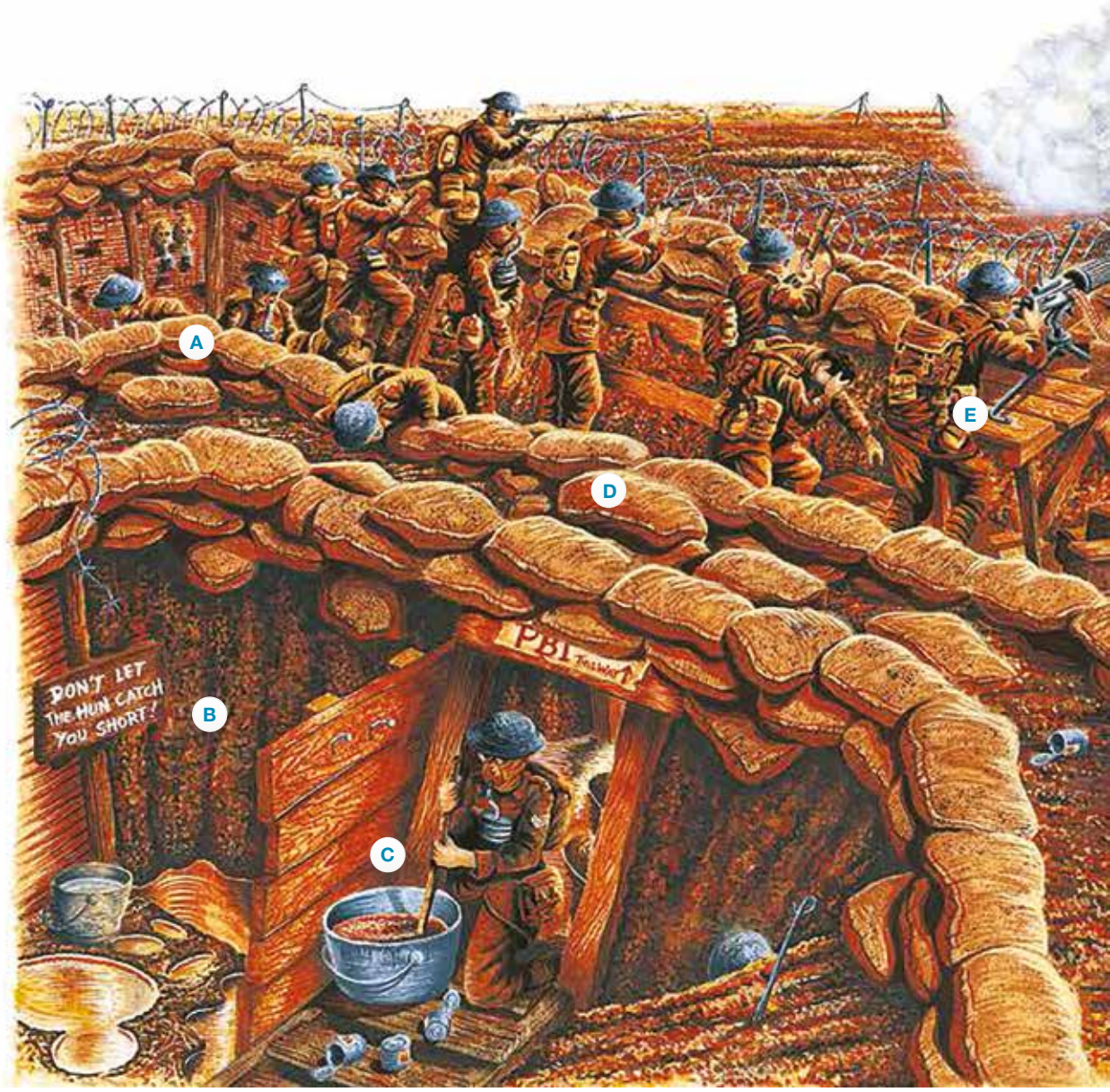
B Trench toilets were called latrines. They were usually pits 1.5 metres deep, dug at the end of a short gangway. Each company had two sanitary personnel whose job it was to keep the latrines in good condition. Officers gave out sanitary duty as a punishment for breaking army regulations.

C The British army employed 300 000 field workers to cook and supply the food for the troops. However, in many instances there was not enough food for the workers to cook. Rations were regularly cut and of a poor standard. The bulk of the diet in the trenches was bully beef (canned corned beef), bread and biscuits.

D Sandbags filled with earth were used to shore up the edges of the trenches; they also helped to absorb bullets and shell fragments. The men packing and then stacking the filled bags worked in pairs and were expected to move 60 bags an hour.

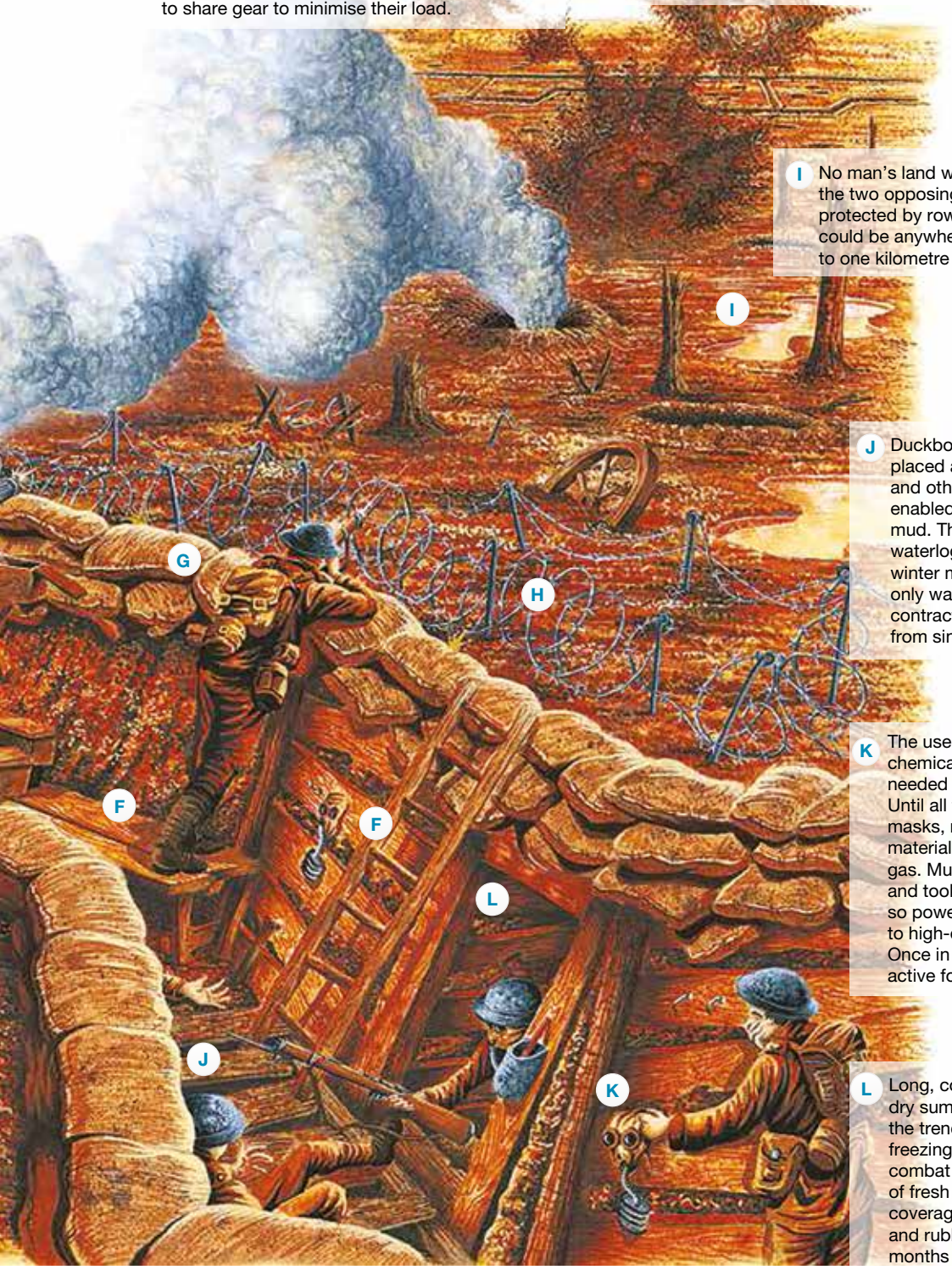
E Machine guns were one of the most deadly weapons. They were able to fire 400–500 bullets every minute.

F Fire steps and scaling ladders were needed to enable the troops to go 'over the top' of the trenches. Going 'over the top' refers to the orders given to troops to leave the trenches and head out into no man's land in an attempt to attack the enemy trenches.



G Each soldier was issued with a kit containing nearly 30 kilograms of equipment. This included a rifle, two grenades, 220 rounds of ammunition, a steel helmet, wire cutters, field dressing, entrenching tool (a spade), a heavy coat, two sandbags, rolled ground sheet, water bottle, haversack, mess tin, towel, shaving kit, extra socks and preserved food rations. The weight made it very difficult to move quickly, and many men chose to share gear to minimise their load.

H Barbed wire was used extensively throughout the trench system. While it helped to protect the trenches, it made it very difficult to attack the opposing trench. In the dark of night, soldiers were sent out to cut sections of wire to make it easier for the attacking soldiers in morning raids. Minor cuts and grazes caused by the barbed wire often became infected in the unsanitary conditions of the trenches.



I No man's land was the space between the two opposing trenches; it was protected by rows of barbed wire. It could be anywhere from 50 metres to one kilometre wide.

J Duckboards were wooden planks placed across the bottom of trenches and other areas of muddy ground. They enabled soldiers to stand out of the mud. The trench system was constantly waterlogged, particularly during the winter months. Duckboards were the only way of protecting the men from contracting the dreaded **trench foot** and from sinking deep into the mud.

K The use of mustard gas and other chemical weapons meant that all soldiers needed to have gas masks near at hand. Until all troops could be issued with masks, many soldiers used urine-soaked material to help keep out the deadly gas. Mustard gas was almost odourless and took 12 hours to take effect. It was so powerful that small amounts, added to high-explosive shells, were effective. Once in the soil, mustard gas remained active for several weeks.

L Long, cold, wet winters and hot, dry summers would have made life in the trenches horrendous. Snow, rain and freezing temperatures drastically slowed combat during the winter months. Lack of fresh water, scorching sun with limited coverage, and the stench of dead bodies and rubbish would have made the hotter months unbearable.

22.8.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why did the armies build a three-line trench system, often in a zigzag pattern?
2. Suggest why the trench system was ultimately unsuccessful as a military tactic.

Using historical sources as evidence

3. Study Source 1. Identify and describe the features of trench systems that made attacks upon them so deadly.
4. Discuss as a class some of the problems you think the soldiers in the trenches would have faced each day.
5. Imagine you are a soldier who has been blinded in the trenches. Describe what you would hear, smell and feel.

22.8 Putting it all together

Using historical sources as evidence

1. Create a concept map to represent the hazards and hardships of trench warfare.
2. Working in small groups, and referring to Source 1 (a secondary source), construct a trench diorama. Elect a group spokesperson to talk to the class about one aspect of your model (e.g. its advantages or disadvantages).

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Complete this digital doc: Worksheet 22.8: Word search

22.9 The Western Front

22.9.1 From Gallipoli to Fromelles and Pozières

After Gallipoli, the Anzacs returned to Egypt to be joined by fresh troops. The Light Horse remained in the Middle East along with Australians serving in the Imperial Camel Corps and the Australian Flying Corps. For the remainder of the war, these soldiers took part in desert warfare against Turkish forces. Most Australian troops left for France in 1916, where for three years they experienced the horrors and savagery of the war on the Western Front.

On 1 July 1916, the First Battle of the Somme began. The British and French attack on the Somme was intended to draw German troops away from their massive attack on French positions at Verdun. On that first day of the Somme offensive, the British army suffered the worst day in its history with 57 470 casualties (troops killed or wounded).

The Australian 5th Division suffered over 5000 casualties on 19 July in a **feint** at Fromelles, north of the Somme, which was meant to divert German reserve troops. On the Somme, the AIF suffered almost 23 000 casualties taking and holding the town of Pozières in a battle that began on 23 July. For seven weeks Australian soldiers were blown apart or buried alive as they fought to hold the captured town under a German **artillery** bombardment that pounded Pozières into a wasteland of rubble.

When the Battle of the Somme ended as the autumn rains filled the trenches, neither side had been able to break the stalemate. Nothing had been gained but Germany had lost 450 000 men, France 200 000 and Britain 420 000.

SOURCE 1 Major W. G. M. Claridge, writing from hospital after the Battle of Pozières, quoted in Bill Gammage, *The Broken Years,* 1975, p. 164

… God knows what we went through, was Hell itself. We just had to grit our teeth and go ahead and do our job. I am not going to tell a lie and say I wasn't afraid because I was and who wouldn't be with Death grinning at you from all round and hellish 5.9 shells shrieking through the air and shrapnel dealing death all round. I don't know how I stood it for so long without breaking.

22.9.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Identify the aim of the First Battle of the Somme.
2. What were the consequences for the British army of their offensive on 1 July 1916?
3. Describe the aim and the result of the Australian attack at Fromelles.
4. How many casualties did the AIF suffer at Pozières and why were they so high?
5. Describe the overall consequences of the Battle of the Somme for both sides.

Using historical sources as evidence

6. Analyse Source 1 using the following questions.
   (a) Who wrote this source, where was he when he wrote it and around when would it have been written?
   (b) Why and for whom might the source have been written?
   (c) How does the writer describe the Battle of Pozières?
   (d) What details does he give to support that description?
   (e) What aspects of this source would enable a historian to assess its reliability?

22.9.2 From Bullecourt to the Armistice

Bullecourt and Ypres

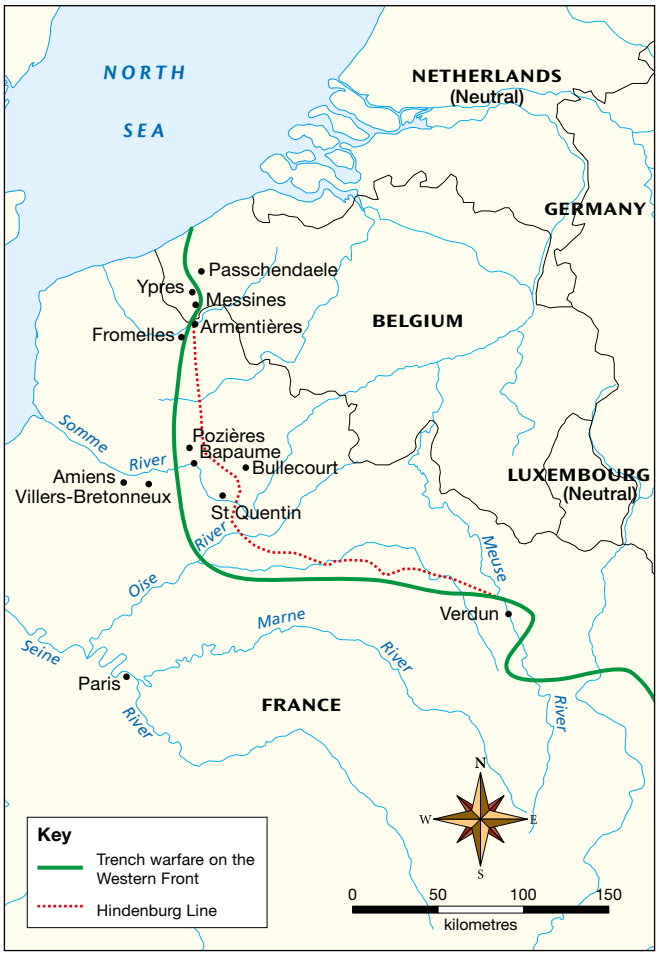
The spring offensive of 1917 followed the coldest winter in forty years. In April the United States of America joined the war on the Allied side, although it would be many months before its troops would be ready to play a role. The Germans had pulled back to the strongly fortified **Hindenburg line** and most soldiers on both sides were war-weary with little enthusiasm left for fighting.

In April, Australians were sent to attack the German trenches near Bullecourt but the tanks that were meant to spearhead the attack broke down, the Australians were struck by a misdirected British artillery barrage as well as German counter-attacks, and the attacking force suffered 80 percent casualties. Despite this, in May the Australians captured and held Bullecourt. In Belgium in September and October, the AIF suffered 38 000 casualties in the terrible Third Battle of Ypres, in which each side lost about half a million men.

Victory in 1918

In 1918 the end of fighting on the Eastern Front (see subtopic 22.12) enabled Germany to move many more troops to the Western Front. In March, the Germans threw everything they had into a last offensive aimed at gaining victory

SOURCE 2 Trench warfare on the Western Front



Source: © Robert Darlington. Map redrawn by Spatial Vision.

before US troops could arrive in sufficient numbers to make a German victory impossible. Australians played a key role in turning back this offensive through their fierce resistance at the French village of Villers-Bretonneux. Then, in July, Australians made the first large Allied attack of 1918. The AIF fought its last battles in October and when the fighting was ended with the Armistice of 11 November 1918 it was recognised that they had achieved more than any other British Empire troops and had suffered more casualties in proportion to their numbers.

SOURCE 3 This painting depicts an attack, during the Third Battle of Ypres, in which Australian troops were trying to capture a German pillbox, a fortified concrete blockhouse with machine guns firing from loopholes. Pillboxes could be taken only by infantry attacking closely behind their own artillery barrage.

Leist, Fred
Australian infantry attack in Polygon Wood (1919)
Oil on canvas, 122.5 × 245 cm
Australian War Memorial ART02927

The human cost

Of the 417 000 men who enlisted in the AIF, about 324 000 served overseas and approximately 295 000 of these served on the Western Front. Nearly 65 per cent became casualties and around 60 000 Australians died on active service. It was a terrible sacrifice for the nation.

22.9.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Describe what went wrong during the Australian attack at Bullecourt.
2. What casualties did Australian troops suffer in the Third Battle of Ypres?
3. Why did the Germans try one last big offensive from March 1918?
4. When was the armistice that ended the fighting?

Using historical sources as evidence

5. Using Source 2, identify the purpose of the Allied offensives at Bullecourt and Ypres.
6. Visit the website of the Australian War Memorial. Use its resources to prepare a brief description of the role of the Australian soldiers who remained in the Middle East from 1916 to 1918.

22.9 Putting it all together

Using historical sources as evidence

1. Look closely at Source 3. Imagine you are one of the survivors of this attack on a German pillbox. Write a letter to your family, describing the conditions, dangers and difficulties of such fighting and your own feelings during the attack.

Analysing cause and effect

2. Using what you have learned about individual battles from 1916 to 1918, explain why Australians suffered such heavy casualties on the Western Front.
3. Drawing on developments you have explored so far in this topic, identify the turning points that led to the Allied victory in 1918.

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Complete this digital doc: Worksheet 22.9: Summing up

22.10 The home front

22.10.1 The war divides Australia

During the first years of fighting most Australians believed that the war was just and was worth the sacrifice that was being made. Australians proudly hailed the achievements of the Anzacs as proof of their country's standing among nations. However, as the conflict dragged on, and demanded ever greater sacrifices, Australian society became increasingly divided.

Growing government controls

The Commonwealth Government gained new powers to manage Australia's war effort. The war was expensive, in both money and lives, and from 1915 a federal income tax and other taxes were introduced to help pay the interest on growing war debts. The government also took away many democratic rights. The War Precautions Act of 1915 and other Acts of Parliament allowed the government to restrict freedom of speech, freedom of association and freedom of the press. It became a crime to say anything that might discourage people from enlisting or to show disloyalty to the British Empire.

According to the government, **censorship** was needed to keep morale high and to keep information from the enemy. However, it was also used to silence people who criticised the war. Tom Barker was sentenced to 12 months in prison for publishing a cartoon that the government considered might harm recruiting. Barker was the editor of *Direct Action*, the newspaper of a revolutionary group called the Industrial Workers of the World (IWW). The IWW argued that the war was wrong because the workers' only real enemies were the wealthy capitalists who profited from the conflict.

SOURCE 1 'The Greater Patriot', by Claude Marquet, in *The Worker*, 1916.

DID YOU KNOW?

In Australia during World War I there were 33 000 people of German descent. Many were interned in prison camps. If they had become Australian citizens they could remain free, but they were often bullied and humiliated. Some were sacked from their jobs. German-owned businesses were boycotted and harassed, and German place names were changed. There are even reports of dachshund dogs being kicked and stoned.

Growing opposition

Most Australians believed wartime **propaganda** that portrayed German soldiers as monsters who raped nuns, murdered civilians and impaled babies on bayonets. Through newspapers and public meetings, people were continually told that the war was a simple struggle between good and evil, between British civilisation and German barbarism.

At first, opponents of the war were a tiny minority. **Pacifists** opposed it, as did some Irish Australians who resented British rule in Ireland. Some socialists saw it as a clash between capitalist empires for the right to exploit the workers of the world. Gradually opposition to the war became more widespread. Increased inequality played a part. While prices rose by almost 50 per cent, wages were frozen. At the same time, big profits were made by owners of woollen mills and others who supplied war materials. Growing inequality caused serious strikes in 1916 and a general strike in 1917 involving waterside workers, seamen, transport workers and miners. The use of strikebreakers to defeat the strikes caused great bitterness and deepened divisions.

Patriotic rallies and funds

Many people, possibly a majority, continued to support the war. At patriotic gatherings such as Empire Day, Allies Day and Anzac Day rallies, speakers encouraged Australians to stay loyal to Britain, to hate Germany and to make still greater sacrifices. Governments, churches and citizens organised and supported patriotic funds to help the war effort. They included the National Belgian Relief Fund, the Travelling Kitchen Fund and the Blind Heroes Fund. Local 'win-the-war' leagues donated food and labour to help soldiers' families.

SOURCE 2 Students at Woy Woy Public School during a patriotic pageant in 1916 gather around a roll of honour erected by residents of the district.

The children's war effort

Schools and community organisations involved children in patriotic activities including raising money and making clothes and equipment for war victims and troops. In particular, schools were used to inspire patriotism in children. At the age of 12, schoolboys became junior cadets. Girls made clothes for the troops and war victims. Children grew vegetables for soldiers' families, read stories of heroes of the British and Australian forces and recited loyalty pledges. School rolls of honour listed the names of former pupils and teachers who had gone to the war. Children were taught that all Allied countries were good while the Central Powers were monsters.

22.10.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. How did most Australians regard the war during the first two years of the conflict?
2. What democratic rights did the Australian government restrict?
3. Describe how Australians of German descent were treated.
4. Outline the reasons for growing opposition to the war.

Using historical sources as evidence

5. Analyse Source 1 using the following questions.
   (a) Who created this cartoon and when was it created?
   (b) *The Worker* was a trade union newspaper. In the context of growing inequality and the 1916 strikes, what position would you expect a trade union newspaper to take?
   (c) Identify the social groups that are represented by the two figures in the cartoon.
   (d) Explain the message of the cartoon.
   (e) Which groups of Australians were most likely to have agreed with that message?
6. Explain how schoolchildren in Source 2 are contributing to the war effort and why governments would have involved children in such activities.
7. Use the internet to locate a World War I propaganda poster portraying German soldiers as monsters.
   (a) Describe the poster.
   (b) Analyse the poster to explain how it achieves that effect.
   (c) Explain the purpose of such posters.

22.10.2 Recruiting campaigns

In 1914 there were many more volunteers than the army could accommodate. But as the casualty lists grew, fewer men volunteered than were needed. As Britain requested ever more Australian troops, recruiting campaigns were used to encourage or shame men into enlisting. In some of these campaigns, people marched long distances, calling on others to join them and to enlist. By mid 1916 the campaigns were failing to attract the numbers the government wanted. In 1918 recruiting officers even visited schools in order to urge children to encourage their family members to enlist.

SOURCE 3 From 'Instructions for the Guidance of Enlisting Officers at Approved Military Recruiting Depots', Brisbane, April 1916

Aboriginals, **half-castes**, or men with Asiatic blood are not to be enlisted. This applies to all coloured men.

SOURCE 4 From 'Instructions to Enlisting and Recruiting Officers', December 1916

Half-castes may be enlisted when, in the opinion of the District Commandant, they are suitable … As a guide in this matter it is to be borne in mind that these men will be required to live with white men and share their accommodation, and their selection is to be judged from this standpoint …

SOURCE 5 *An appeal from the Dardanelles: Will they never come?* Produced by the State Parliamentary Recruiting Committee in Victoria, this was the first recruiting poster used in Australia.

Hannan, Jim
An appeal from the Dardanelles: Will they never come? (1915)
Offset lithograph on paper, 225 × 200 cm
Australian War Memorial ARTV07583

SOURCE 6 Australian artist Norman Lindsay produced this poster for the Australian government in 1918.

Lindsay, Norman
God bless dear Daddy (1918)
Chromolithograph on paper, 46.8 × 38.4 cm
Australian War Memorial ART00040

The racial barrier to recruiting

When World War I broke out, Indigenous Australians were an oppressed minority whose numbers over the previous century had been reduced by possibly 75 per cent through massacres, disease and dispossession. They had no reason to feel any loyalty to Australia or to the British Empire. The Australian government required recruits for the AIF to be 'substantially of European origin or descent'. Despite this, many Indigenous Australians enlisted. Recent estimates put the total at around 1000 but the actual figure may have been higher. We have no evidence for their motives for enlisting because such information was neither sought nor recorded.

22.10.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why were recruiting campaigns needed by 1915?
2. Around how many Indigenous Australians enlisted to fight in World War I?

Using historical sources as evidence

3. Compare and contrast Sources 3 and 4.
   (a) Use evidence from these sources to describe discrimination against Indigenous and Asian men wishing to enlist for World War I.

(b) Explain to what extent this policy was changed between April and December 1916 and the probable reasons for this change.

4. Look carefully at Sources 5 and 6. Analyse each of these posters, identifying:
   (a) the aim of the propaganda
   (b) the beliefs and emotions to which it appeals
   (c) the probable effectiveness of the propaganda at the time.

22.10.3 Women and the war effort

Some 3000 Australian women travelled overseas with the Australian Army Nursing Service. They served in all theatres of the war and on transport and hospital ships. These nurses worked under extreme conditions tending the wounded after battles. Several nurses were wounded and 13 were killed. However, the Australian government refused to allow women to serve in any direct roles in the armed forces. As the men went off to war, many women entered the paid workforce. Thousands more helped with recruiting campaigns, fund-raising and charity work. A few women were able to replace enlisted men in fields such as banking, bookkeeping and typing. For many women, this was not enough. Recognising that the government and military were hostile to the idea of women taking on 'men's roles', women applied for clerical and cooking jobs in the military. However, they were not accepted and this greatly disappointed many who were aware of how different the situation was in Britain. There, women were employed as munitions workers, drivers, and in factories and on farms. Some British women actually gained military roles as drivers and radio operators when the Women's Army Auxiliary Corps was founded in Britain in 1917.

Voluntary work

Thousands of women helped troops by providing extra clothing, tobacco, medicines and other comforts that the army failed to provide. They also made clothes for Allied refugees. Many other women cared for returning invalids through the Red Cross, including in the Australian Red Cross Voluntary Aid Detachment. They met returning hospital ships and provided kitchens and rest homes. The Red Cross raised 12 million pounds during the war to pay for this work.

Four women members of the Australian Red Cross packing comforts to be sent to servicemen overseas

Women for and against the war

Women were among the war's fiercest supporters. They helped in recruiting campaigns, issuing posters and pamphlets and speaking at rallies. Some women shamed men into enlisting by handing out white feathers — a symbol of cowardice — to those who had not volunteered. The Australian Women's National League campaigned for conscription. Women were also among the war's strongest critics. Vida Goldstein was among those who formed peace organisations and campaigned against conscription.

The greatest contribution of women, however, would hardly ever be spoken of. It was the lifelong care thousands gave to their fathers, husbands, sons and brothers who returned with terrible physical, emotional and mental wounds from the horrors of war.

SOURCE 7 The arrival of the first Australian wounded from Gallipoli at the Third London General Hospital, by George Coates, 1915.

22.10.3 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Approximately how many Australian women served overseas as nurses during World War I?
2. Describe other ways in which Australian women contributed to the war effort.

Using historical sources as evidence

3. Look closely at Source 7. The nurses depicted in this artwork were members of the Australian Army Nursing Service. Use the details, your knowledge and imagination to describe what they would have thought about their work and the suffering of their patients.

22.10 Putting it all together

Identifying continuity and change

1. Using the sources and other information in this subtopic, and your answers to activities, identify what appears to have remained the same and what appears to have changed in Australia during World War I in each of the following areas:
   (a) attitudes to the war (b) racial attitudes (c) roles of women.

Analysing cause and effect

2. Explain how the war contributed to social conflict in Australia.

learnON RESOURCES — ONLINE ONLY

Complete this digital doc: Worksheet 22.10: Reflection

22.11 The conscription issue

22.11.1 Support for conscription

Of all the armies fighting in World War I, only the AIF was formed entirely from volunteers. But by mid 1916 recruiting campaigns were no longer convincing enough men to enlist. When Labor prime minister William Morris ('Billy') Hughes decided that Australia should follow Britain's example by introducing conscription, divisions in Australian society became very bitter. The Australian Labor Party (ALP) was against conscription, but Hughes went against party policy and tried to win public support for conscription through two bitterly fought **referendum** campaigns in 1916 and 1917.

A divisive issue

Conscription was among the most divisive issues in Australia's history. Divisions between social classes and between those holding different religious and political beliefs became more intense. Supporters of conscription argued that Britain was in peril and many Australians were already fighting and dying, so others who had not stepped forward should be forced to do their duty. They called those who had not volunteered traitors and cowards or accused them of being supporters of **Sinn Fein** or the IWW, or even of Germany.

SOURCE 1 *The Anti's Creed*, a leaflet supporting conscription in the 1917 referendum

THE ANTI'S CREED

I believe the men at the Front should be sacrificed.
I believe we should turn dog on them.
I believe that our women should betray the men who are fighting for them.
I believe in the sanctity of my own life.
I believe in taking all the benefit and none of the risks.
I believe it was right to sink the *Lusitania*.
I believe in murder on the high seas.
I believe in the I.W.W.
I believe in Sinn Fein.
I believe that Britain should be crushed and humiliated.
I believe in the massacre of Belgian priests.
I believe in the murder of women, and baby-killing.
I believe that Nurse Cavell got her deserts.
I believe that treachery is a virtue.
I believe that disloyalty is true citizenship.
I believe that desertion is ennobling.
I believe in Considine, Fibelly, Ryan, Blackburn, Brookfield, Mannix, and all their works.
I believe in egg power rather than man power.
I believe in holding up transports and hospital ships.
I believe in general strikes.
I believe in burning Australian haystacks.
I believe in mine-laying in Australian waters.
I believe in handing Australia over to Germany.
I believe I'm worm enough to vote No.

Those who DON'T Believe in the above Creed
will VOTE YES

The Anti's Creed, a poster outlining the supposed characteristics of the anti-conscriptionists

SOURCE 2 Conscription — for and against

YES!	NO!
Those supporting conscription: • representatives of every political party except the Labor Party • business organisations • major newspapers such as *The Argus*, *The Age* and *The Bulletin* • Protestant churches • some returned soldiers.	**Those opposing conscription:** • trade unions • most of the Labor Party • the Catholic Church (Melbourne's Archbishop, Daniel Mannix, led the fight against conscription) – Britain had suppressed the Irish uprising of Easter 1916 and executed its leaders; most Australian Catholics were of Irish descent and many resented Britain's treatment of Ireland • the Women's Peace Army • most working-class people • some returned soldiers.
Pro-conscription arguments: • It was Australia's duty to support Great Britain. • Conscription meant 'equality of sacrifice'. • Voluntary recruitment had failed. • Australia had a good reputation that had to be protected. • Other Allied countries, such as Great Britain, New Zealand and Canada, had already introduced conscription.	**Anti-conscription arguments:** • No person had the right to send another to be killed or wounded. • There would not be enough hands to farm if men were conscripted. • The working class would unfairly bear the burden of the fight. • Too many Australian men had already died or been wounded. • Conscription would harm and divide Australia.

22.11.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What was unique about Australia's army in World War I?
2. Why did Australian Prime Minister 'Billy' Hughes decide in mid 1916 that Australia should introduce conscription?

Using historical sources as evidence

3. Using Source 2:
   (a) list the main supporters of conscription
   (b) outline the main arguments for conscription.
4. Read Source 1.
   (a) The IWW was an organisation called the Industrial Workers of the World, which campaigned against war and the exploitation of workers. Sinn Fein was a movement fighting for Irish independence from British rule. Nurse Cavell was shot by the Germans as a British spy. Explain why a pro-conscription leaflet would refer to these people?
   (b) Identify the technique this leaflet uses to influence voters.

22.11.2 Opposing conscription

Opponents argued that there should there be no conscription of working men when there was no conscription of the wealth of the privileged classes. Many feared that conscription would be used by employers to destroy rights won by Australian workers. In May 1916, conscription was used in Germany to destroy German workers' rights when striking munitions workers were conscripted and sent to the battlefront. Australian unions believed that conscription could be used for the same purpose here. They described supporters of conscription as destroyers of democracy, murderers and war profiteers. Most Australian Catholics were of Irish descent, and many became bitterly resentful when Britain executed several Irish rebel leaders after crushing the Irish uprising of Easter 1916. Melbourne's Catholic Archbishop, Daniel Mannix, quickly became the most outspoken leader of the anti-conscription movement.

DID YOU KNOW?

Billy Hughes' supporters, including many AIF soldiers, called him the 'Little Digger'. From November 1916 the labour movement, on the other hand, called him 'the Rat' and 'Judas'.

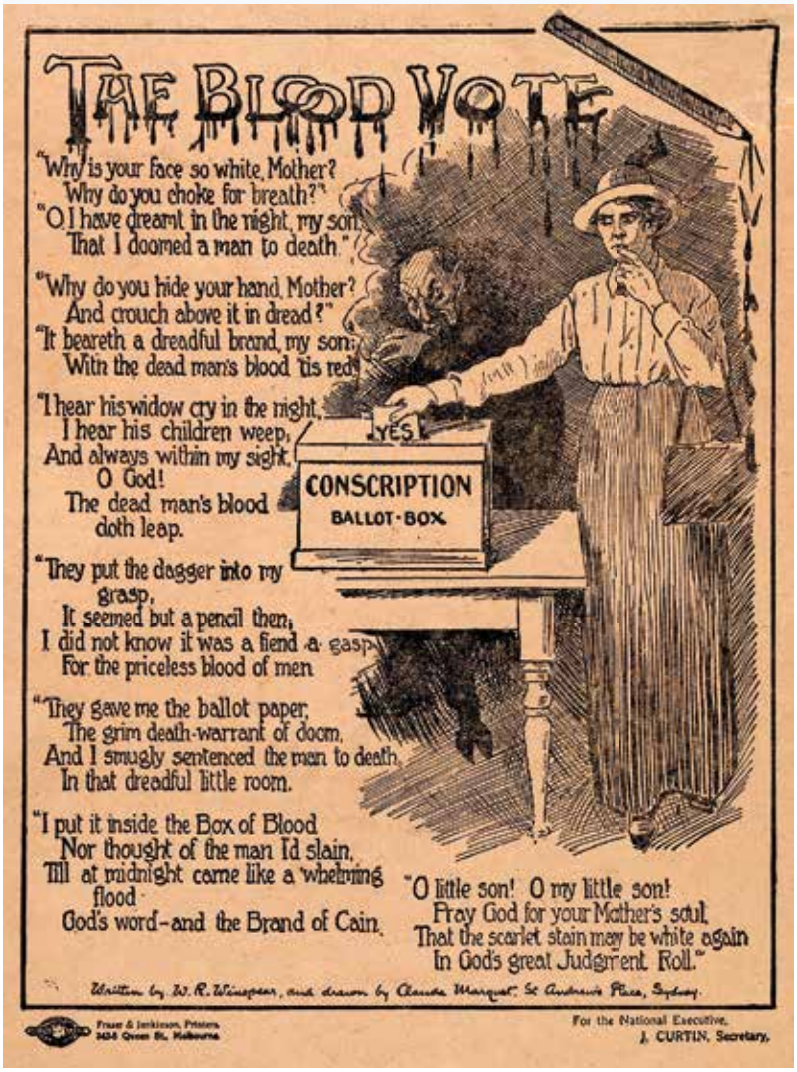
The people decide

Conscription was defeated in the referendum of October 1916 (1 087 557 Australians voted in favour of conscription but 1 160 033 voted against it). 'Patriots' blamed Catholics and Australian Germans and demanded that Mannix be deported. The Labor Party was split. Hughes and his supporters left the party in November 1916, before it could expel them, and merged with the Liberal Party to form the Nationalist Party. Led by Hughes, the Nationalists won the federal election of May 1917. However, at a second referendum of December 1917, conscription was again defeated, this time by 1 181 747 against to 1 015 159 in favour.

SOURCE 3 From speeches by Archbishop Daniel Mannix, reported in the *Advocate*: (1) 3 February 1917 and (2) 8 December 1917

1. The war was like most wars — just an ordinary trade war … Even now, people were arranging how the vanquished nations — when they are vanquished — are to be crippled in their future trade.
2. [In] the daily papers of Australia … there is no opening in their columns for those who want the answer on December 20 to be an emphatic NO … [The] papers give plenty of space to any sort of silly twaddle on the other side … The wealthy classes would be very glad to send the last man, but they have no notion of sending the last shilling, nor even the first … the burden in the end will be borne by the toiling masses in Australia.

SOURCE 4 *The Blood Vote*, an anti-conscription leaflet



22.11.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What reasons did Australian workers have for opposing conscription?
2. Explain why many Australian Irish Catholics would have opposed conscription.
3. What event prompted Melbourne's Archbishop Daniel Mannix to become the most outspoken opponent of conscription?
4. What were the results of the two referenda on conscription in 1916 and 1917?
5. Describe the impact of the conscription referenda on the Labor Party.

Using historical sources as evidence

6. Using Source 2, identify the main groups opposed to conscription.
7. What arguments did Mannix make against conscription in Source 3?
8. Analyse the technique used in Source 4 to argue against conscription.

22.11 Putting it all together

Using historical sources as evidence

1. Working in small groups, use Sources 2 and 4 as models to design a 'Yes' or 'No' poster or leaflet for either of the conscription referenda.
2. Conduct research to investigate the contribution of Vida Goldstein to the anti-war movement (see topic 5 for some introductory information).

Determining historical significance

3. Daniel Mannix was regarded by many Australians as a villain and by many others as a hero for his role in defeating conscription. Conduct research to produce an assessment of his role in the struggle against conscription and evaluate his historical significance, using sources to support your argument.

22.12 The Eastern Front: collapse and revolution

22.12.1 Tsarist Russia collapses

By 1917 the war weariness, social divisions and disillusionment that led to a general strike and bitter opposition to conscription in Australia were also being experienced in other combatant nations.

Between April and June there were mutinies in the French army involving 27 000 men. Forty-nine mutineers were executed. In Germany in 1916 there had been huge strikes. The government broke them by conscripting strikers, but even bigger strikes took place in 1917. In Britain half a million people had joined anti-war organisations by 1917. Nowhere, however, was war weariness more widespread than in Russia. What happened there would change the world.

At the beginning of World War I the Russian Army was referred to as 'the Russian Steamroller', because it was so big that many people thought it could defeat the Germans and Austrians through sheer weight of numbers. However, most Russian soldiers were conscripted peasants who were poorly trained and so poorly equipped that some did not even have boots or guns. Some Russian officers refused to lead their troops into battle, fearing that they would be shot by their own men.

When Russia entered the war it was ruled by Tsar Nicholas II, who held enormous power. Russia was ruled in the interests of its aristocratic landowners and wealthy industrialists, and there was great discontent among the peasants and workers who made up more than 90 per cent of its people. At first many Russians supported the war, but they suffered heavy losses against the Germans in 1914–15. In 1916 they launched attacks to prevent the Germans shifting troops to the Western Front. By 1917, after a series of crippling defeats, Russian soldiers and sailors were becoming mutinous, while at home starving workers were demanding bread and peasants were demanding land.

Revolution

Revolution broke out in March 1917 in the Russian capital, Petrograd (now St Petersburg) after soldiers refused orders to shoot striking workers. When he lost the support of his generals, the Tsar **abdicated** in favour of his brother Michael. But Michael refused to be Tsar and instead handed power to a provisional government, formed by members of the **Duma**. The Provisional Government kept Russia in the war, but its authority was weakened by the rise of an alternative centre of power — the Petrograd **Soviet**. This council was made up of elected delegates from soviets of workers, soldiers, sailors and peasants from throughout Russia.

SOURCE 1 A description of support for the war in Russia in August 1914, from R. H. Bruce Lockhart, *Memoirs of a British Agent*, 1932

I recall the enthusiasm of those early days … those moving scenes at the station; the troops, grey with dust and closely packed in cattle trucks; the vast crowd on the platform to wish them God-speed … Revolution was not even a distant probability.

SOURCE 2 From a letter sent home by a Russian general in 1915

In recent battles a third of the men had no rifles. These poor devils had to wait patiently until their comrades fell before their eyes and they could pick up weapons.

SOURCE 3 From P. I. Lyashchenko, *Economic and Social Consequences of the War*, 1949

… by 1916 the country began to experience a critical food shortage … By directing all industrial production into war channels, the government policy deprived the villages of their supplies of goods …

The Provisional Government lacked support from any part of Russian society. The old ruling classes wanted to restore the rule of the Tsar. Peasants wanted the aristocrats' land to be redistributed to them. Many soldiers, sailors and workers wanted Russia to withdraw from the war. The government could hold power only so long as the Petrograd Soviet gave it support.

SOURCE 4 Looking towards the ceiling from the grand staircase at the Tsar's Winter Palace in St Petersburg

SOURCE 5 The Winter Palace has hundreds of luxurious rooms and is thousands of times bigger than the homes of Russian workers and peasants in 1917. The royal family also had other magnificent palaces.

22.12.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Why was the Russian army weak despite its size?
2. Describe the reasons for widespread discontent among workers, peasants and soldiers.

Using historical sources as evidence

3. Study Sources 1, 2, 3, 4 and 5 and explain how these sources provide evidence for the growing opposition of Russian troops, workers and peasants to the Tsarist regime that led to the Tsar's abdication and the formation of the Provisional Government in March 1917.

22.12.2 The second revolution

Russia's small but disciplined Bolshevik Party was led by Vladimir Ilyich Ulyanov, known as Lenin. The party's ideology was based on Marxism, the revolutionary socialist set of ideas developed by Karl Marx in the nineteenth century. Lenin was a Marxist but he departed from Marx's belief that socialist revolution could take place only in advanced capitalist societies in which industrial workers were the majority. Lenin came to believe that in Russia, an overwhelmingly agricultural country, a socialist revolution could be achieved through an alliance of workers and peasants.

Lenin, and his associate Trotsky, believed that socialist revolution could succeed in backward Russia but only if it received support from socialist revolutions in the more advanced industrial countries. They thought a revolution in Russia would trigger similar revolutions in those countries. In April 1917 Lenin put these views to the other Bolsheviks. At first they totally opposed him. However, he soon won majority support and the Bolsheviks prepared to seize power.

The Bolsheviks seize power

To gain popular support, the Bolsheviks adopted the slogans 'Peace, Bread and Land' and 'All Power to the Soviets' while they worked to build up their influence in the Petrograd Soviet. The Provisional Government tried unsuccessfully to suppress the Bolsheviks. But when the right-wing General Kornilov attempted to seize power in August, it was Bolsheviks who sabotaged Kornilov's transport and persuaded his troops to desert. This earned them widespread support. The Bolsheviks had saved the Provisional Government, but now they set out to destroy it.

SOURCE 6 A Bolshevik painting depicting Lenin organising revolutionary workers, sailors and soldiers. The red armbands show that they are Bolsheviks. Red came to symbolise revolution.

SOURCE 7 This Bolshevik banner of 1918 represents the alliance of workers and peasants. In the right-hand corner, the hammer represents industrial workers while the sickle represents peasants.

DID YOU KNOW?

Many Marxists and other socialists in Russia and in other countries opposed Lenin's views, which came to be called Marxism–Leninism. They predicted, correctly, that such a revolution could not create democracy and socialism but would lead instead to oppressive dictatorship.

Trotsky had been elected Chairman of the Petrograd Soviet's Military Revolutionary Committee. Once the Bolsheviks had a majority of delegates in the Soviet, he planned the seizure of power. In November, on Trotsky's orders, the Red Guards of Petrograd workers, soldiers of the Petrograd garrison and sailors of the Krondstadt naval base stormed the Provisional Government's headquarters in the Tsar's Winter Palace. They seized power in the name of the Soviet. The new communist government promised to create a state ruled by workers and peasants.

Although the Bolsheviks failed to live up to their ideals, they would inspire many discontented workers in other lands. Significantly, their victory ended Russia's involvement in the war. In March 1918 the Bolshevik government signed a separate peace that enabled Germany to direct all its resources to the Western Front.

22.12.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Who was the leader of the Bolsheviks?
2. How did his ideas about socialist revolution differ from the ideas of Karl Marx?
3. Make a timeline of events from 1915 to 1918 to show how Russia's involvement in World War I led to a communist revolution.

Using historical sources as evidence

4. Look closely at Sources 6 and 7. Explain how these sources provide evidence that the Bolsheviks wanted the second revolution to be seen as an uprising of Russia's workers, peasants, soldiers and sailors rather than a seizure of power by a small party of dedicated revolutionaries.

22.12 Putting it all together

Analysing cause and effect

1. Most historians agree that the Bolshevik Revolution could not have succeeded without the conditions created in Russia by World War I. Explain why you agree or disagree with this view.

Determining historical significance

2. For what reasons could the Bolshevik Revolution be regarded as a major turning point in World War I?

22.13 Peace and commemoration

22.13.1 A changed world

War's full consequences are rarely foreseen. The Armistice of 11 November 1918 ended the fighting in World War I, but nothing could ever be quite the same again. The survivors of the great armies that had killed and maimed each other for four years with bullets, bayonets, grenades, artillery and gas emerged from their trenches to a world in ruins. The German, Austro-Hungarian, Turkish and Russian empires had been shattered. Revolutions and civil wars broke out in the defeated empires, and even the victor nations and colonies experienced widespread social unrest. In Australia, as we have seen, the war had brought deep divisions and there was scarcely a family that had not lost a brother, son, father or uncle on the battlefields.

SOURCE 1 Crowds fill Melbourne's streets on Armistice Day, 11 November 1918.

22.13.2 Repatriation and memorials

Repatriation

In 1918, 260 000 Australians had to be repatriated. Some had been fighting for four years and few people at home understood how deeply the experience had affected them. A shortage of shipping meant some soldiers had to wait more than 18 months to get home. The returning troops brought with them the 'Spanish' influenza, a deadly **pandemic** that swept the world in 1918–19. It caused almost 12 000 deaths in Australia, and many men had to be quarantined before being reunited with their families. Australians agreed that the nation should try to repay returned servicemen for their sacrifices. Some were provided with training in skilled trades while others were settled on the land with the help of low-interest loans. However, these measures could not help all ex-servicemen to readjust after four years of the horrors of war.

SOURCE 2 Australian artillery units parade past Buckingham Palace in London on Anzac Day, 25 April 1919.

SOURCE 3 Bronze statue of Simpson and his donkey at the Australian War Memorial, Canberra

Memorials

Australians were determined that their soldiers' sacrifices would not be forgotten. Across the nation, local committees built memorials in towns, cities and suburbs to display the names of the fallen. In the lands in which Australians fell, memorials and vast war cemeteries were established. Most are in northern France and Belgium, where they are maintained with great care by the Commonwealth War Graves Commission.

22.13.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. How long did many Australian troops have to wait after the Armistice before they were repatriated?
2. Describe the effect of the 'Spanish' influenza pandemic on Australia.
3. Why would many World War I soldiers have found it difficult to settle back into civilian life?
4. Describe measures that were adopted in Australia to assist ex-servicemen and to ensure that their sacrifices were not forgotten.

Using historical sources as evidence

5. Describe what you think would have been the mood of the crowd in Source 1 and the emotions that would have been felt by those who had lost close friends and family members.
6. Look at Source 2. Explain why these Australian soldiers were in London so long after the war's end and how they might have felt about their situation.
7. Look back at subtopic 22.6 to explain why Private Simpson (in Source 3) was considered to be worthy of an individual memorial.

22.13.3 Anzac Day and the Anzac legend

In 1914, many Australians had seen World War I as a chance to prove that they deserved a place in Britain's great military tradition. The mateship, bravery and achievements of the Anzacs during the Gallipoli campaign were seen as representing Australian ideals and giving Australia the legendary identity it sought.

SOURCE 4 Message from King George V to the Australian Government, in *The Age*, May 1915

I heartily congratulate you upon the splendid conduct and bravery displayed by the Australian troops in the operations at the Dardanelles, who have indeed proved themselves worthy sons of the Empire.

SOURCE 5 From C. E. W. Bean, *The Story of Anzac*, 1941

What motive sustained them? … It lay in the mettle of the men themselves … life was very dear, but life was not worth living unless they could be true to their idea of Australian Manhood.

Anzac Day was first observed in 1916 to commemorate the landings at Gallipoli and the legend they created. Many people considered that Australia had only really become a nation at Gallipoli on 25 April 1915. Each year, Anzac Day has continued to be commemorated across Australia and New Zealand. For many people, it became Australia's unofficial national day. Traditionally it has been observed through dawn services, marches of veterans and gatherings of wartime comrades. It has also been observed in schools and churches.

At first the message of Anzac Day was similar to that of Empire Day — pride in their British heritage, loyalty to the empire, hatred of Germany, the need for greater sacrifice, and pride that Australia had earned an honourable place in the British military tradition. From 1920 Anzac Day became a public holiday.

What was the meaning of the Anzac legend, and has it changed over time? The legend was based on real characteristics of Anzac troops at Gallipoli and throughout the war. Many risked their lives for their mates. Some were decorated for bravery while others died unrecognised. Qualities like courage and mateship were not uniquely Australian — they were undoubtedly shared by many other soldiers. However, what the Anzacs did was remarkable. They made up less than 10 per cent of British Empire forces but on the Western Front no military force achieved more in proportion to their numbers. Anzac troops believed that they had proven themselves equal to or even better than the British.

Did the Anzac legend change Australian nationalism?

Did the Anzac legend strengthen or weaken the spirit of national independence? In Australia of the late nineteenth and early twentieth century, radical nationalists saw Britain as the home of social inequalities. They wanted a fairer and more equal Australia that was independent of Britain. The military historian Bill Gammage has argued that the Anzac legend weakened the influence of radical nationalism because the Anzacs had fought and died for Britain, proving the strength of Australia's ties with the 'Old Country'.

SOURCE 6 From Bill Gammage, *The Broken Years*, 1975, p. 278

But the Anzac tradition also introduced a deep division into Australian life… roughly half those eligible had joined the AIF during the war … A great rift had opened, a rift between those who had fought in the war and those who had not.

In significant ways, this was disastrous. Before the war radical nationalists had led the drive for a social paradise in Australia, but ultimately they were least at ease with the Imperial and martial implications of the Anzac tradition, and during the war they divided over the proper conduct of Australia's war effort …

For their part the conservatives, who before 1914 had exerted a **tenuous** influence on Australian politics and society, were united and given purpose by the war … Naturally enough that dedication and the motives behind it appealed to the men in the trenches …

In short, that general majority which in 1914 had sought to create a social paradise in Australia was both split and made leaderless by the war, and by 1918 no longer existed, while the conservatives had joined with those who had fought in the war to take firm possession of the spirit of Anzac …

So the Anzac legend fitted in well with the views of Australian conservatives who wanted Australia to stay loyal to the British monarchy and the empire. Conservatives dominated celebrations of Anzac Day in the 1920s and 1930s. To them, it was a celebration of loyalty to the empire as much as an expression of national pride. To many who had fought in the war, Anzac Day was a reminder of their sacrifice and a chance to be reunited with the only people who could really understand what they had suffered. World War II and subsequent conflicts would bring new generations into the Anzac tradition. However, Anzac Day would continue to reflect divisions in Australia as much as it expressed national pride. Some Australians resented what they saw as its use by conservatives to glorify war.

SOURCE 7 French children at Villers-Bretonneux, in the Somme Valley, tend graves of Australians killed on the Western Front.

Perhaps today the meaning we give to Anzac Day can be shared by all Australians — pride in the courage and endurance of the Anzacs, sorrow for the terrible losses suffered by their generation and determination that such tragic waste of human lives should never be repeated.

SOURCE 8 Some of the war graves at the Australian National Memorial at Villers-Bretonneux in France

myWorld History Atlas
Deepen and check your understanding of the topic with the following resources and auto-marked questions:
› **The world after World War One**

22.13.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. What were the Anzacs thought to have given Australia?
2. Describe the message of Anzac Day in its first years.

Using historical sources as evidence

3. Study Sources 4 and 5.
   (a) According to Source 4, what had the Australian troops proved?
   (b) Why might not all Australians have shared the same feelings about this message?
   (c) What motives did Australia's official war historian, C. E. W. Bean, identify to account for Anzac heroism?
4. Read Source 6. According to Gammage:
   (a) Why did the Anzac tradition introduce 'a deep division into Australian life'?
   (b) Who were 'least at ease with the Imperial and martial implications of the Anzac tradition' (that is, with the idea that it was noble to fight for the British monarch and empire)?
   (c) How did the Anzac tradition strengthen the influence of conservatives in Australia?

22.13 Putting it all together

Using historical sources as evidence

1. Explain how Sources 7 and 8 can be used as evidence of an ongoing commitment to commemorate the sacrifices of Australians in World War I.

Identifying continuity and change

2. Based on:
   (a) what you have learned about how the Anzac legend changed Australian nationalism and divided Australians, and
   (b) your own experiences of Anzac Day commemorations
   explain what you believe to be the meaning of Anzac Day in modern Australia.

22.14 The war's impact on Australia's international relations

22.14.1 Australia, Britain and the United States

The Great War was not the first occasion on which Australians had fought for the British Empire. They had also fought in the Sudan Campaign in 1885, the Boer War in 1899–1902 and the suppression of the Boxer Rebellion in China in 1900. Australians had fought for Britain largely because they feared being invaded and felt that fighting for the empire would assure the British that Australia was worth defending. As you have discovered in this topic, most Australians had responded to the outbreak of World War I with unswerving loyalty to the British Empire, believing that Britain's cause was a just one. After Gallipoli, the Anzacs were believed to have given Australia the identity it sought within the British military tradition. So, after the enormous sacrifices made in the Great War, would Australia seek to broaden its international relations?

The chances of lasting peace would be strongly influenced by the terms of treaties negotiated at the Paris Peace Conference in 1919. At this conference, Australia was represented by Prime Minister W. M. 'Billy' Hughes. Australia was a dominion of the British Empire so it did not have an independent foreign policy. Nor did it seek independence. However, after the Armistice ended hostilities on 11 November 1918, Hughes and the other dominion leaders demanded the right to be represented at the conference. This demand was accepted and the representatives of the dominions, as part of the British Empire delegation, became delegates to the conference. There they were recognised as the representatives of separate nations.

What would Australia's position be at the conference? Australia had fought as part of the British Empire but her troops had been kept distinct from the British Army and their performance had been a source of national pride. Over 60 000 Australians had died. Tens of thousands were permanently disabled and many ended their lives in hospitals as a result of mustard gas and other horrors. So, although Hughes had acted during the war as a British imperialist, at the peace conference he also adopted the role of an Australian nationalist, willing to fight for what he saw as Australia's interests even if this brought him into conflict with Britain and the other great powers.

SOURCE 1 From the diary of Corporal D. Morgan, 2nd Bn., on Armistice Day, 11/11/1918

> The very flower of our manhood have paid the greatest price, not willingly, for not one of them but longed to live, return home and forget, yes just forget the horrors of the past. Most of us enlisted for … Patriotism or Love of Adventure but not one … had the slightest conception of the terrible price required … Please God … the sacrifices have not been in vain.

Hughes clashes with the USA

Hughes quickly found himself aligned with those who demanded the harshest terms against the defeated powers. He was concerned with three main issues: reparations, German New Guinea and the White Australia Policy. On the reparations issue Hughes shared the view of the French government that Germany should be made to pay for the full cost of the war, and this brought him into conflict with the US President, Woodrow Wilson.

The peace conference produced the Treaty of Versailles (1919) with Germany, the Treaty of Neuilly (1919) with Bulgaria, the Treaty of St Germain (1920) with Austria, the Treaty of Trianon (1920) with Hungary and the Treaty of Sèvres (1920) with Turkey. Under the treaties, all of the defeated powers lost territory. Germany lost land on its frontiers and all of its colonies. The Austro-Hungarian Empire disappeared, leaving the small states of Austria and Hungary without the nationalities they had ruled over. Bulgaria lost some lands to Greece and Yugoslavia while Turkey lost all its Middle Eastern provinces. Germany, along with its allies, had to accept responsibility for all losses suffered by the Allies. Germany was forced to agree that, over time, it would pay 6.6 billion pounds in reparations (compensation) for these losses. It also had to agree to give up its navy and most of its merchant ships, limit its army to 100 000 men, and provide free coal and livestock to France and Belgium.

The US president wanted a much less vengeful treaty that would strengthen democracy in Germany and create conditions for lasting peace. Kaiser Wilhelm II had abdicated following a revolution in Germany in November 1918, and by the time the treaty was signed Germany had become a democratic republic. But the overwhelming desire of France and, to a lesser extent, Britain was to weaken Germany and make her pay. Australia's leaders shared that desire.

The aggressive independence shown by Hughes at the conference did not mean any move towards independence from the British Empire. From 1923, the dominions gained the right to make their own foreign policies. But while Canada, South Africa and Ireland took up this independence, Australia remained content to continue to follow British foreign policy.

22.14.1 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Explain how Australia was able to represent itself at the Paris Peace Conference even though it was not an independent nation.
2. With regard to the peace conference, on what issue did Australia agree strongly with France and Britain but clash with the United States?
3. What powers did Australia decline that it could have taken up from the 1920s?

Using historical sources as evidence

4. Read Source 1.
   (a) What conclusions can be drawn from this source about the legacies of World War I for Australia?
   (b) How do these legacies help us to understand why Australia's perceived interests were pursued so strongly at the Paris Peace Conference?

22.14.2 Australia and the Asia–Pacific region

Hughes also clashed with the idealistic Woodrow Wilson on the issue of German New Guinea and with Japan on the issue of racial equality. To understand these disagreements, we need to look back at attitudes to Asia and the Pacific that took shape in Australia during the late nineteenth century.

The widely held belief in a white Australia was based on shared ideas of white superiority, fears of being engulfed by Asian nations to Australia's north, and fears that Asian and Pacific migration posed a threat to Australian living standards. The White Australia Policy had been expressed in two of the first laws passed by the new Commonwealth Government in 1901. These were the Immigration Restriction Act, which was used to prevent non-white migrants from coming to Australia, and the Pacific Island Labourers Act, under which most Pacific Islanders in Australia were deported.

Australia clashes with the US president

US President Woodrow Wilson believed that former German colonies should not become simply spoils for the victors of war. Instead they should become **League of Nations** mandates, administered by countries that were on the winning side of the war, but supervised by the League in accordance with humanitarian principles.

In contrast, Hughes' view was that New Guinea and the Pacific Islands should be controlled by Britain or Australia to prevent any foreign power gaining a foothold in the region. Following pressure from Queensland, Britain had made Papua a possession of the British Empire in 1888 and the Australian government administered it from 1910. Hughes wanted the same arrangement for the former German New Guinea. Hughes' concerns were based on fears for Australia's security and were linked to the White Australia Policy. Hughes did not want New Guinea to be at risk of falling into the hands of any power that might permit the entry of Asian immigrants. He wanted the right to annex New Guinea but had to settle for a compromise. The territory became a League of Nations 'class C' mandate. This meant that in theory the League had some overall supervising authority but in practice Australia had virtually complete control of its administration, including the right to prevent Asian immigration.

Australia clashes with Japan

Hughes also successfully opposed Japan's demands for a racial equality clause in the Covenant of the League of Nations. He believed that the principle of racial equality would amount to a threat to Australia's right to maintain the White Australia Policy. The majority of delegates voted for Japan's proposal, but it was overruled on the grounds that a major change to the Covenant required a unanimous vote.

Thus, when Hughes returned to Australia, he could claim success on all three issues. Australia had, for the first time in history, played a significant role in world affairs in her own right. Significantly, Australia's stance on all three issues had been a reactionary one that was quite out of harmony with the idealistic hopes Wilson held for the League of Nations.

SOURCE 2 A cartoon published in *Aussie* magazine in November 1920

22.14.2 Activities

To answer questions online and to receive **immediate feedback** and **sample responses** for every question, go to your learnON title at www.jacplus.com.au. *Note:* Question numbers may vary slightly.

Check your understanding

1. Describe the differences between Hughes and Wilson over the former German New Guinea.
2. On what issue did Australia clash with Japan?

Using historical sources as evidence

3. Analyse Source 2 using the following questions.
   (a) Who or what is represented by the figure in the top left of the cartoon?
   (b) What conflicts within Australian society are represented by the other figures?
   (c) What is the message of the cartoon and how is it related to the White Australia Policy?
   (d) How does the cartoon support the position taken by Hughes on the issues of racial equality and the Asia–Pacific region?

22.14 Putting it all together

Identifying continuity and change

1. Identify ways in which Australia's conduct at the Paris Peace Conference represented a change in its level of independence in international relations; also identify ways in which it represented a continuation of past policies.
2. Explain how Australia's stance at the Peace Conference on racial equality, Asia and the Pacific represented a continuation of policies based on racial discrimination. Use the following structure to organise your answer.
   (a) Explain the ideas behind the White Australia Policy.
   (b) Describe the purposes and effects of the Immigration Restriction Act and the Pacific Island Labourers Act.
   (c) Explain why Australia wanted British or Australian control of the Pacific Islands, especially the former German New Guinea.
   (d) Explain why Australia opposed Japan's demand for a racial equality clause in the Covenant of the League of Nations.
   (e) Conclude with a general statement about continuity in Australia's foreign policy position on racial equality, Asia and the Pacific.

Determining historical significance

3. Explain why Australia's stance on the terms of the Peace Conference was significant for the chances of lasting peace.

22.15 SkillBuilder: Analysing photos

online only

ANALYSING WORLD WAR I PHOTOGRAPHS

Photographs can be very useful primary sources. Analysing a photograph is therefore a very important skill when studying the history of periods in which photography existed. During World War I, many tens of thousands of photographs were taken by official war photographers and ordinary soldiers.

Go online to access:

- An explanation of the skill (Tell me)
- A step-by-step process to develop the skill, with an example (Show me)
- An activity to allow you to practise the skill (Let me do it)
- Questions to test your application of the skill (Applying skills)

SOURCE 1 Australian soldiers pass along the Menin Road beyond Ypres, Belgium, on 14 September 1917 during the Ypres battles.

22.16 Review

22.16.1 Review

This final subtopic provides a range of opportunities for you to review and respond through:

i. revising and checking your historical knowledge
ii. demonstrating your ability to apply historical concepts and skills.

Go online to access:

- A key chronology of events relevant to the topic
- A summary of the key knowledge presented in the topic
- A 'Big Questions' activity
- A multiple choice topic test
- Short answer or extended writing responses

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: World War 1 timeline (int-2968)

22.15 SkillBuilder: Analysing photos

22.15.1 Tell me

What are our main World War I photographs?

Many tens of thousands of photographs were taken during World War I, even though soldiers could be court-martialled for taking photographs in battlefront areas. A large number of photographs was taken for military reasons or to create a visual record of the war. Many of the best photographs were taken by official war photographers like Australia's Frank Hurley. The Australian government wanted to have official war photographers so that Australia's role in the war could be fully recorded. Hurley became the first official photographer to the AIF in 1917 and was given the rank of honorary captain.

Why is it important to analyse and corroborate photographic sources?

Photographs can be very useful primary sources. Analysing a photograph is therefore a very important skill when studying the history of periods in which photography existed. You might think that a photograph is always an accurate record of what happened, rather than somebody's impression of it. But that is not necessarily true. Often when you take a photograph, you compose a picture, choosing the angle from which you want to shoot, what you will have in it, what part of a scene you will leave out and whether it will be taken close up or from a distance. Later you might edit it on your computer, altering such aspects as light, contrast and colour saturation, and cropping the photo to cut unwanted parts.

Modern digital photography had not been invented until long after World War I, but even with the cameras that existed at the time, skilful photographers could edit pictures in ways that changed their meaning. During World War I, to avoid blurring, cameras needed people to stay still for much longer times than are required with modern cameras. For that reason, action photos were sometimes posed. For dramatic effects and to show more than one kind of action in one image, Hurley and other skilled photographers also made composite pictures by combining two or more negatives. For such reasons we sometimes have to be careful with their photographs to recognise features that have been altered to make them useful for propaganda or to simply make them more exciting.

22.15.2 Show me

When you study a historical photograph you need to think carefully about the clues it provides and try to evaluate its accuracy, usefulness and reliability. You need to ask questions such as:

1. **The photographer.** Who took the photograph (if known) and what is the source (if stated)?
2. **Location.** Where is the location and when was the photograph taken?
3. **Editing.** Has the photograph been posed or has the photographer simply recorded a scene? Can you tell whether the photograph has been cropped and, if so, has this changed its meaning at all? Has the photograph been changed by adding or removing any details or by combining negatives to make composite images?
4. **Composition.** Is the photograph taken from close up or from a distance, or from a particular angle, and does this affect the viewer's reaction to it?
5. **Subject.** What is the main subject of the image? What background and minor details are shown? What extra information do the minor details add?
6. **Motive.** Why was the photograph taken (if known)?
7. **Usefulness.** For what aspect of the topic does the photograph provide useful evidence?
8. **Accuracy and reliability.** Is the evidence it provides accurate and reliable and how can you tell?

Source 1 is an example of a World War I photograph to which the above questions are applicable. To evaluate the photograph's accuracy and reliability, you could compare it with many other images. A good image for comparison is Source 2, which may well be a posed photograph.

SOURCE 1 Australian soldiers pass along the Menin Road beyond Ypres, Belgium, on 14 September 1917 during the Ypres battles. The photograph was taken by Frank Hurley, an official Australian war photographer. It is held in the collections of the Australian War Memorial.

SOURCE 2 An Australian soldier runs across the road through Chateau Wood in the Menin Road area, in the Ypres sector, Belgium, on 5 November 1917. The photograph was taken by Frank Hurley, an official Australian war photographer. It is held in the collections of the Australian War Memorial.

Questions about Source 1	Answers
1. Who took the photograph (if known)? What is the source (if stated)?	The photographer was Frank Hurley, an official Australian war photographer. The photograph belongs to the Australian War Memorial.
2. Where is the location? When was the photograph taken?	The photograph was taken near Ypres. It was taken on 14 September 1917, which places it at the time of the Third Battle of Ypres.
3. Has the photograph been posed or has the photographer simply recorded a scene? Has the photograph been cropped and, if so, has this changed its meaning at all? Has the photograph been changed by adding or removing any details or by combining negatives to make composite images?	There is no evidence that the photograph has been posed, although it is possible that Hurley might have asked the soldiers to stand still for a moment to avoid blurring. In contrast, Source 2 is very likely to have been posed, as it is improbable that a lone soldier would have been crossing the road just when Hurley was ready to take a photograph. There is no evidence that Source 1 has been cropped, although it is equally possible that it could have been cropped. Nor is there evidence of any other tampering with the image, although there could easily have been tampering.
4. Is the photograph taken from close up or from a distance, and does this affect the viewer's reaction to it?	The photograph has been taken close up to the dead horses, so that we react first to the scene in the foreground, and that our eyes then move to the soldiers on the road moving into the distance. This photographer has a good sense of composition.
5. What is the main subject? What background and minor details are shown? What extra information do the minor details add?	The subject is the destructive power of the war and the experiences of Australian soldiers at the time of the Third Battle of Ypres. The bloated bodies of dead horses in the foreground are no more important than the soldiers marching away from them in the background, possibly to share their fate. The flatness of the land on both sides of the road provides evidence of the type of landscape in which many battles were fought on the Western Front. The bare trees and debris along the road contribute to an image of devastation.
6. Why was the photograph taken (if known)?	As the photograph was taken by an official war photographer, it was undoubtedly taken for historical reasons, to document the conditions experienced during the fighting around Ypres.
7. For what aspect of World War I does the photograph provide useful evidence?	It provides useful evidence for the effect of the war on the landscape, animals and men.
8. Is the evidence it provides accurate and reliable and how can you tell?	The evidence in this photograph is accurate and reliable. We could tell this by comparing similar photographs and written records of the fighting at Ypres in 1917. Source 2, which was taken almost two months later in the same general area, can be used to support its accuracy and reliability as it shows similar devastation and provides evidence of the added effects of rain.

22.15.3 Let me do it

Use the questions in section 22.15.2 and repeated below to analyse Source 3. You can use Source 4 as evidence for the accuracy and reliability of Source 3.

1. Who took the photograph? What is the source?
2. Where is the location? When was the photograph taken?
3. Has the photograph been posed or has the photographer simply recorded a scene? Has the photograph been cropped and, if so, has this changed its meaning at all? Has the photograph been changed by adding or removing any details or by combining negatives to make composite images?
4. Is the photograph taken from close up or from a distance, and does this affect the viewer's reaction to it?
5. What is the main subject? What background and minor details are shown? What extra information do the minor details add?
6. Why was the photograph taken?
7. For what aspect of World War I does the photograph provide useful evidence?
8. Is the evidence it provides accurate and reliable and how can you tell?

SOURCE 3 Two soldiers of the Australian 5th Division crossing a frozen trench by a duckboard bridge at Bernafay Terminus on the Western Front in January 1917. The image was taken by an unknown official war photographer. It is held in the collections of the Australian War Memorial.

SOURCE 4 An Australian officer plodding through the frozen mud in a trench near Gueudecourt, in France, during the winter of 1916–1917. The image was taken by an unknown official war photographer. It is held in the collections of the Australian War Memorial.

22.15 APPLYING SKILLS

Historical sources as evidence

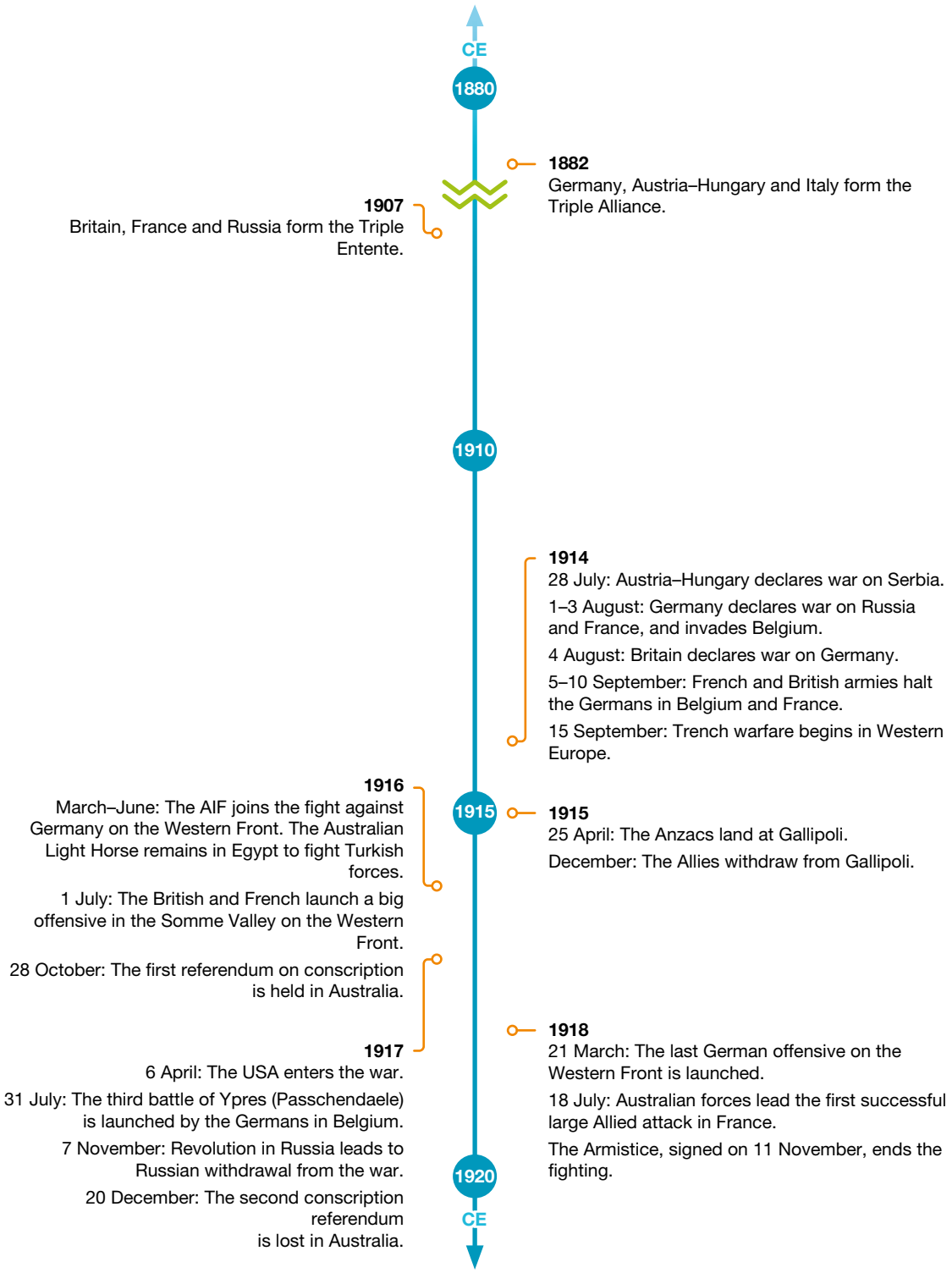
Based on what you have learned in this SkillBuilder, answer the following questions.

1 Give two reasons why photographs were taken on the battlefronts during World War I.
2 In what ways could photographs be altered to change their meaning?
3 Who was Frank Hurley and what was his role as Australia's first official war photographer?
4 Why would Hurley's photographs be more questionable for reliability than photographs taken by ordinary soldiers?
5 What general conclusions about conditions on the Western Front can you draw from the four photographs used in this SkillBuilder?

22.16 Review

22.16.1 Review

Chronology: Timeline of World War I



Key knowledge: summary

22.2 Examining the evidence

- Australia has the world's most extensive collection of sources for the war.
- These include a vast number of written sources and visual sources.
- Britain, France and Belgium also have extensive collections.

22.3 What caused the Great War?

- Long-term causes include imperialism, nationalism, the glorification of war and development of rival alliances.
- The short-term trigger was conflict between Austria–Hungary and Serbia, especially following the assassination of the Austrian Archduke Franz Ferdinand.

22.4 The world at war

- The war was fought between the Allies and the Central Powers, but the Allies quickly gained support from several other countries.
- The Germans failed in their plan to quickly defeat France in the west in order to then move east and defeat Russia.
- The war was fought on several fronts but the main fighting was in Europe on the Western and Eastern fronts.

22.5 Australians in the Great War

- Most Australians greeted the outbreak of war with enthusiasm.
- Volunteers rushed to enlist in the AIF. Loyalty to Britain was a motive for many of them.
- The AIF was combined with New Zealand troops to form the Australian and New Zealand Army Corps (ANZAC).
- The main theatres of war for Australian troops were Gallipoli, the Western Front and the Middle East.

22.6 Gallipoli

- The attack at Gallipoli was intended to defeat Turkey.
- The Anzacs landed successfully on 25 April 1915 but were unable to hold the high ridges, which were essential for success.
- Both sides suffered heavy losses.
- In August, operations to break the deadlock were unsuccessful.
- A successful withdrawal ended the Gallipoli campaign in December.

22.7 Gallipoli: the historical debate

- The long-accepted interpretation of the reason for high casualties suffered by the Anzacs during the landing and, to an extent, the failure of the entire campaign was that the troops were landed in the wrong place.
- This interpretation has been challenged in more recent times.

22.8 Trench warfare

- Trench warfare led to an almost continual stalemate.
- Trenches were complex systems in which soldiers on both sides lived and died.
- Attempts to attack enemy trenches produced enormous casualties.

22.9 The Western Front

- Anzac troops joined the fighting on the Western Front in 1916.
- They suffered high casualties in battles, including Fromelles and Pozières during the Somme offensive.
- Australian soldiers played a prominent role at Bullecourt and Ypres in 1917.
- They also played a key role in stopping the German offensive in March–April 1918 and in the first big Allied attack in July 1918.

22.10 The home front

- The war increasingly divided Australians on the home front, especially as it caused increased inequality.
- Patriotic rallies encouraged continued support for the war, patriotic funds were organised to aid the war effort and schools were used to instil patriotism.
- Except for nurses, women were denied any direct role in the armed services. Many other women contributed through voluntary work.
- Women were also among the war's leading critics.
- Recruiting campaigns failed to raise the numbers of new recruits that the government wanted. Despite this the government discriminated against Indigenous Australians in recruiting.

22.11 The conscription issue

- Australia was the only combatant nation that had a fully volunteer military.
- Prime Minister Hughes split the Labor Party when he tried to introduce conscription.
- The conscription issue was bitterly divisive.
- Referenda in 1916 and 1917 failed to win majority support for conscription.

22.12 The Eastern Front: collapse and revolution

- War weariness in Russia led to the revolution of March 1917 and the abdication of Tsar Nicholas II.
- A second revolution in November 1917 saw the Bolsheviks seize power.
- The Bolshevik Revolution ended Russia's involvement in the war, leading to a separate peace treaty in March 1918 that freed German forces for a last offensive on the Western Front.

22.13 Peace and commemoration

- After the Armistice ended fighting on 11 November 1918, lack of shipping caused long delays in repatriating Anzac troops.
- Australians were determined that their soldiers' sacrifices would be remembered, so memorials were built across the nation.
- Anzac Day became a national day of remembrance.
- The Anzac legend changed Australian nationalism and the meaning of the legend has changed over time.

22.14 The war's impact on Australia's international relations

- Australia attended the Paris Peace Conference in its own right, not just as part of the British Empire delegation.
- Prime Minister Hughes was concerned with three issues at the conference. He wanted harsh reparations imposed on the defeated powers, Australian or British control of the former German New Guinea and the right to maintain the racist White Australia Policy.
- Hughes gained all of his objectives at the conference but he clashed with both the United States and Japan on these issues.
- Despite the independence shown at the peace conference, Australia did not seek independence from Britain in foreign relations.

Key knowledge: multiple-choice topic test

1. Which of these were members of the Triple Entente?
   (a) Australia, New Zealand and Britain
   (b) Japan, German and Italy
   (c) Britain, France and Russia
   (d) Austria–Hungary, Turkey and Bulgaria
2. Who was the Archduke Franz Ferdinand?
   (a) Heir to the throne of Austria
   (b) President of France
   (c) Heir to the throne of Germany
   (d) Heir to the throne of Serbia
3. Approximately when did trench warfare begin on the Western Front?
   (a) August 1914
   (b) September 1914
   (c) April 1915
   (d) July 1916
4. Reasons for the Gallipoli campaign included which of the following?
   (a) To make Germany send all of its troops to help Turkey
   (b) To force Turkey to change sides
   (c) To lure Austria–Hungary away from the Eastern Front
   (d) To defeat Turkey and threaten Austria–Hungary
5. It is generally agreed that the best-managed part of the Gallipoli campaign was which of these?
   (a) The landing at Anzac Cove
   (b) The landing at Cape Helles
   (c) The withdrawal from Gallipoli
   (d) The Battle of Lone Pine
6. What name was given to the exposed land between opposing lines of trenches on the Western Front?
   (a) Duckboards
   (b) Fire steps
   (c) Communication trenches
   (d) No man's land
7. Villers-Bretonneux was the village where which of these events took place?
   (a) The Armistice was signed in November 1918.
   (b) Australians fought during the Battle of the Somme.
   (c) Australians played a key role in stopping the German offensive of March–April 1918.
   (d) The first large Allied offensive of 1918 began.
8. In Australia, groups opposed to the war from the beginning included which of these?
   (a) Some socialists, Irish Catholics and pacifists
   (b) All socialists, Irish Catholics and pacifists
   (c) Protestants, politicians and war profiteers
   (d) Farmers and factory workers
9. The only Australian women who were allowed to serve overseas were in which of these organisations?
   (a) The Red Cross
   (b) The Australian Army Nursing Service
   (c) The Australian Women's National League
   (d) The Industrial Workers of the World

10. Approximately what percentage of Australian troops serving overseas became casualties?
    (a) 15 per cent
    (b) 90 per cent
    (c) 35 per cent
    (d) 65 per cent
11. Which political party did Prime Minister 'Billy' Hughes form when he left the Labor Party 1916?
    (a) The Country Party
    (b) The Liberal Party
    (c) The Billy Hughes United Party
    (d) The Nationalist Party
12. With which countries did Australia have major differences at the 1919 Paris Peace Conference?
    (a) The United States and Japan
    (b) Russia and Austria
    (c) Britain and France
    (d) Canada and South Africa

22.16.2 Respond

Using historical sources as evidence

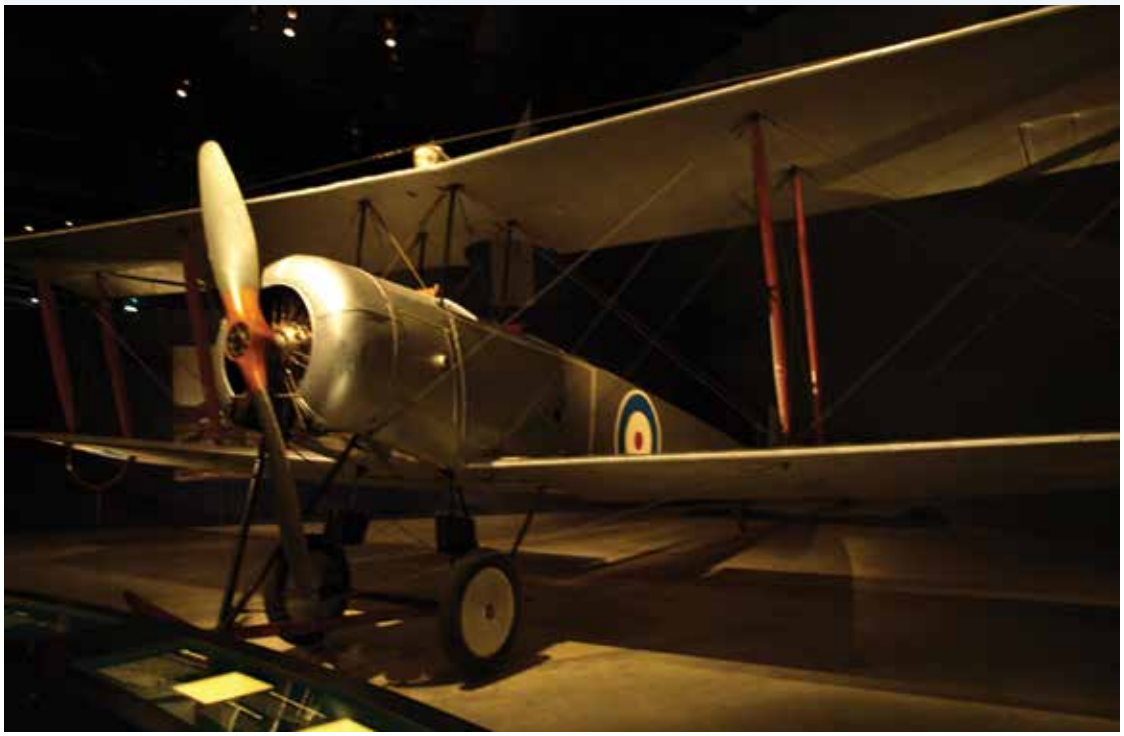
1. Study Source 1.
    (a) Describe the landscape.
    (b) What does the landscape tell you about the war?
    (c) What aspects of this scene tell us that armies in World War I used both old and new technologies?

SOURCE 1 *Bringing up the ammunition, Flanders, Autumn 1917*, by H. Septimus Power. This painting, which was completed in 1920, shows Australian soldiers with teams of horses struggling through mud as they pull carts loaded with machine-gun ammunition.

Identifying continuity and change

1. Look closely at Source 2.
   (a) Explain why flying such aircraft was considered a job for daredevils.
   (b) Compare and contrast this aircraft with a modern military aircraft.
   (c) Identify ways in which such aircraft would have made World War I different from previous wars.
   (d) d. Identify reasons why such changes would have been very limited.

SOURCE 2 A World War I military aircraft at the Australian War Memorial. The Australian Flying Corps (AFC) was part of the AIF. World War I aircraft were slow and unreliable. They were used for reconnaissance flights and for bombing and machine-gunning enemy positions in Europe and the Middle East. Flying them was described as a job for daredevils.



Responding to the big questions

At the beginning of this topic several big questions were posed. You can now use what you have learned to answer them.

1. What were the causes of World War I?
2. Why and how were Australians involved in World War I?
3. Where did Australians fight and what were their experiences?
4. What were the significant events and turning points of the war?
5. How did the war affect the Australian home front and how did it change Australian society?
6. How significant was the war for Australia's international relationships?
7. Why and how do we commemorate World War I?

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Try out this interactivity: World War One timeline (int-2968)

GLOSSARY

abdicate: to step down from the throne or from other high office
abolition: the end of legal acceptance of slavery
active consumerism: a movement that is opposed to the endless purchase of material possessions and the pursuit of economic goals at the expense of society or the environment
adversary system: a system of trial in which the two sides argue their case and the judge or magistrate acts as an independent umpire
age pension: regular payments made to elderly people to support them in retirement
agent: a person acting for another in a business transaction
agribusiness: business set up to support, process and distribute agricultural products
animal husbandry: breeding and caring for livestock, usually in a farm environment
appeal: the request to a higher court to review a decision made by a lower court
appellant: the person appealing a court decision
appellate jurisdiction: the power to hear a case on appeal from a lower court
appellate jurisdiction: the power of a court to review a lower court's decision
Aquaculture: the farming of aquatic plants and aquatic animals such as fish, crustaceans and molluscs
aquaponics: a sustainable food production system in which waste produced by fish or other aquatic animals supplies the nutrients for plants, which in turn purify the water
aquifer: a body of permeable rock below the Earth's surface, which contains water, known as groundwater
arable: describes land that can be used for growing crops
arbitration: the process of resolving a dispute by an independent third party, such as a court or tribunal, where the decision is legally binding on the parties
artillery: large-calibre guns
Australian Electoral Commission: an independent body that was set up to organise and run elections in Australia
bail: an agreement to release an accused person into the community while awaiting trial
balance of trade: the difference between the value of a country's exports and the value of its imports over a specific period of time
bankruptcy: a legal process that declares that a person cannot pay their debts and allows them to make a fresh start
barter: to trade goods in return for other goods or services rather than money
bell pit: a traditional form of coal-mining in which a shaft is dug down to a seam of coal and then excavated outwards, with the coal raised to the surface using a winch and buckets
biased account: narrative or description in which a writer presents only one side of an issue in an attempt to convince the reader
biodiesel: a vegetable oil or animal fat-based diesel fuel
biodiversity: the variety of plant and animal life within an area
biofuel: fuel that comes from renewable sources
biofuels: fuel produced from renewable resources, such as plants and vegetable oils, and treated municipal and industrial wastes
biophysical environment: the natural environment, made up of the Earth's four spheres — the atmosphere, biosphere, lithosphere and hydrosphere
biosphere: the living part of the Earth
Black Death: a deadly disease that ravaged Europe, killing between a quarter and a half of the population in the second half of the fourteenth century. It continued to occur periodically over the next 300 years.

black market: any illegal trade in officially controlled or scarce goods
blast furnace: a type of furnace into which air is forced to raise the temperature sufficiently to carry out the smelting of iron ore
Blended marketing: a mix of internet and traditional marketing methods
blockade: sealing off an area so that nothing can get in or out
bourgeoisie: capitalist middle classes; the owners of the means of production, distribution and exchange – factories, shipping, banks and other businesses
bribery: the act of giving money, a gift or any other item of value to a recipient in the expectation that it will alter the recipient's behaviour
canal housing estate: a housing estate built upon a system of waterways, often as the result of draining wetland areas. All properties have water access.
capital growth: an increase in the value of an asset
capital: physical resources owned by a business and used in production, including factories, machinery and equipment
cash crop: a crop grown to be sold so that a profit can be made, as opposed to a subsistence crop, which is for the farmer's own consumption
censorship: restriction or control of what people can say, hear, see or read
cesspits: pits into which householders with no toilets could empty their waste, which was later collected by workers known as nightmen
cesspits: a pit into which householders with no toilets could empty their waste, which was later collected by workers known as nightmen
cholera: a bacterial disease of the intestines, causing vomiting and diarrhoea. It is transmitted through contaminated water and can lead to death through dehydration.
clearfelling: the removal of all trees in an area
coalition: an alliance between two or more political parties, formed to improve their chances of winning an election and forming government
coercion: the practice of forcing someone to act in an involuntary manner by using intimidation or threats, or some other form of pressure
coke: a type of fuel produced by using heat to remove impurities such as coal gas and tar from coal
colony: an area of land settled by people from another country. This can involve military conquest if the original inhabitants resist that settlement.
common law: judge-made law, or law developed by judges through the decisions in actual cases brought before the courts
commute: to change a penalty to one less severe
competitive advantage: occurs when a business is able to produce and sell goods or services better than its competitors
competitive market: a market where a large number of businesses compete with each other to satisfy the demands of a large number of customers
conciliation: a process of settling disputes in which a neutral third party (a conciliator) assists the parties to reach agreement. It differs from mediation in that the conciliator can suggest solutions to the parties.
conscription: compulsory enlistment of citizens to serve in the armed forces
consent order: a written agreement reached by the parties to a dispute and approved by the court
consumers: a person or group that is the final user of goods and services produced in an economy
coral polyps: a tube-shaped marine animal that lives in a colony and produces a stony skeleton. Polyps are the living part of a coral reef
corporate social responsibility: a duty for management to take into consideration the broader social welfare of the community, including its people and the environment, when making business decisions

cottage industry: small-scale manufacturing in which raw materials are processed in workers' homes
court delay: a setback in the legal system that prevents justice from occurring in a timely fashion
crop rotation: a procedure that involves the rotation of crops, so that no bed or plot sees the same crop in successive seasons
deadlock: a stalemate in which neither side can gain an advantage
debt: a financial obligation to repay money owed
defendant: a person against whom a legal action has been brought
deforestation: clearing forests to make way for housing or agricultural development
degradation: deterioration in the quality of land and water resources caused by excessive exploitation
demand: the amount of a particular good or service that a customer will want to purchase at a given price
deregulation: the process of removing or reducing government regulatory controls
desertification: the transformation of arable land into desert, which can result from climate change or from human practices such as deforestation and overgrazing
developed: describes countries with a highly developed industrial sector, a high standard of living, and a large proportion of people living in urban areas
developing countries: nations with a low living standard, undeveloped industrial base and low human development index relative to other countries
differentiation: making a product stand out by providing unique or superior value to customers in comparison with competitors' products
disability: a functional limitation in an individual, caused by physical, mental or sensory impairment
discretionary item: an item that is bought out of choice, according to one's judgement
discrimination: the treatment of an individual in an unfavourable manner based on an actual or perceived personal characteristic protected by the law
dividends: company profits paid to shareholders, in cash or in additional shares, in proportion to the number of shares they already own
Duma: the Russian parliament
duty of care: a responsibility to ensure the safety of any persons whom we can reasonably foresee might be affected by our actions
duty of care: the legal obligation of employers for the health and wellbeing of their employees
economic entities: any person or organisation engaged in economic activity. It could be an individual, a household, a business, a government or a country.
economic system: the system that coordinates the production and distribution of goods and services
economy: all activities undertaken for the purpose of producing, distributing and consuming goods and services in a region or country
ecotourism: tourism that interprets the natural and cultural environment for visitors, and manages the environment in a way that is ecologically sustainable
edible: fit to be eaten as food; eatable
egalitarianism: equality of all people
eligible voters: Australian citizens who are over 18 years old and are on the electoral roll, which is an official register of voters
empire: a number of different countries or colonies controlled by the government of one country
enclosure: consolidation of open fields and common land into single farms owned by one farmer, and fenced off from neighbouring farms
endemic: describes species that occur naturally in only one region
enlist: to join voluntarily, usually the military
entrepreneur: a person who organises a business venture, and assumes the financial risks associated with it, in the hope of making a profit
entrepreneurship: the act of being an entrepreneur

environmental refugees: people who are forced to flee their home region due to environmental changes (such as drought, desertification, sea-level rise or monsoons) that affect their wellbeing or livelihood

erosion: the wearing down of rocks and soils on the Earth's surface by the action of water, ice, wind, waves, glaciers and other processes

ethnicity: cultural factors such as nationality, culture, ancestry, language and beliefs

exports: goods and services sold by local businesses to overseas consumers

extensive farm: farm that extends over a large area and requires only small inputs of labour, capital, fertiliser and pesticide

extremism: extreme political or religious views or extreme actions taken on the basis of those views

factory farming: the raising of livestock in confinement, in large numbers, for profit

Fair trade: a consumer-driven movement to promote fair prices and reasonable conditions for producers in developing regions. Fairtrade International is a group of 25 organisations trying to ensure a better deal for producers.

fallow: land left unplanted

famine: a drastic, widespread food shortage

famine: a severe shortage of food, leading to starvation, usually due to crop failures over a sustained period of time

feint: a dummy attack meant to deceive the enemy into moving troops from where the main attack will take place

financial intermediaries: any organisation that takes deposits from those with surplus funds and makes those funds available to borrowers

financial risk: the chance that a financial decision may result in a loss or inadequate return

formal vote: a ballot paper that has been filled out correctly

fraud: a criminal offence where one person deliberately tricks another to gain personal advantage

genetically modified: describes seeds, crops or foods whose DNA has been altered by genetic engineering techniques

globalisation: the process that enables markets and companies to operate internationally, and world views, products and ideas to be freely exchanged

goldsmith: a craftsman who works with gold and other precious metals

graffiti: the marking of another person's property without permission; it can include tags, stencils and murals

Green Revolution: a significant increase in agricultural productivity resulting from the introduction of high-yield varieties of grains, the use of pesticides and improved management

greenhouse gases: any of the gases that absorb solar radiation and are responsible for the greenhouse effect. The three main gases are water vapour, carbon dioxide and methane

gross domestic product (GDP): a measurement of the annual value of all the goods and services bought and sold within a country's borders. We normally discuss GDP per capita (total GDP divided by the population of the country)

gross domestic product (GDP): the total value of all goods and services produced in a country in a given period of time (usually a year)

gross wage: a person's wage or salary before it is taxed by the government

groundwater: water that exists in pores and spaces in the Earth's rock layers, usually from rainfall slowly filtering through over a long period of time

halal: describes food that is prepared under Islamic dietary guidelines

half-caste: a term that is now considered offensive but was widely used in the mid-1900s to refer to people of mixed race

hard sport tourism: tourism in which someone travels to either actively participate in or watch a competitive sport as the main reason for their travel

Hindenburg line: a heavily fortified position to which the Germans withdrew before the Allied offensive of spring 1917
horticulture: the practice of growing fruit and vegetables
household final consumption per person: the value of each person's goods and services expenditure in a country
hulk: the body of an old ship that serves as a prison rather than a sailing vessel
human rights: the basic rights that are considered to be the entitlement of all humans
humanitarian aid: assistance provided in response to human crises caused by natural or man-made disasters, in order to save lives, relieve suffering and maintain human dignity
humanitarian principles: the principles governing our response to natural disasters, such as tsunamis and earthquakes, or human-induced disasters, such as armed conflicts — the main aim being to save lives and alleviate suffering
humus: an organic substance in the soil that is formed by the decomposition of leaves and other plant and animal material
hybrid: plant or animal bred from two or more different species, sub-species, breeds or varieties, usually to attain the best features of the different stocks
hydroponic: describes a method of growing plants using mineral nutrients, in water, without soil
impartial observations: comments that recognise all sides and opinions relating to an issue or event, leaving it to the reader to form his or her own judgment
imperialism: the policy of an empire by which it gains land by conquest and rules other countries, or dominates them as colonies
imports: goods and services purchased by local consumers from overseas businesses
indicator: something that provides a pointer, especially to a trend
indoor relief: the provision of assistance to the inmates of the workhouse
industrial action: official protest activities (such as strikes and go-slows) undertaken by members of trade unions, usually with the aim of improving or protecting the working conditions of their members
industrial relations: refers to the laws and processes that govern the relationships between employers and employees
industrialisation: the process by which a country transforms itself from mainly agricultural production to the manufacturing of goods in factories and similar premises
infant mortality rate: a means of measuring the percentage of babies who fail to survive their first birthday
inflation: a general rise in prices across all sectors of the economy
informal vote: a ballot paper that has not been filled out correctly and therefore will not be counted
infrastructure: the facilities, services and installations needed for a society to function, such as transportation and communications systems, water pipes and power lines
infrastructure: the features that are built by humans to allow other activities to occur; for example, roads, electricity networks and water supply
innovation: adding a new product (which can be a good or a service) to an existing product line, or significantly improving an existing product or process
innovation: new and original improvement to something, such as a piece of technology or a variety of plant or seed
input: the resources — including materials, equipment and labour — used in the process of production
insurance: an arrangement where an insurer promises to compensate the insured person for specific potential losses in the future in exchange for a periodic payment called a premium
intensive farm: farm that requires a lot of inputs, such as labour, capital, fertiliser and pesticides
intercontinental: involving or occurring between two or more continents

interest: an amount that is paid regularly for the use of borrowed money, usually expressed as an annual percentage of the sum of money lent (the interest rate)
Invention: the development of something new
inventory: the goods and materials held as stock by a business
investment: the use of money to purchase equipment or premises for the establishment of a new business or the expansion of an existing business
irrigation: the supply of water by artificial means to agricultural areas where there is a shortage
jatropha: any plant of the genus *Jatropha*, but especially *Jatropha curcas*, that is used as a biofuel
judge: a court official who presides over cases in courts higher than a magistrates court or Local Court
judiciary: the collective name given to the judges who preside over law courts
jurisdiction: the power or authority of a court to hear specific types of disputes and cases
jury: in criminal cases, the 12 people who are randomly selected to decide the guilt or innocence of an accused based on the evidence presented in court
just-in-time: an inventory system that ensures the correct materials arrive just as they are needed in the operations process
kenaf: a plant in the hibiscus family that has long fibres; useful for making paper, rope and coarse cloth
labour: the human skills and effort required to produce goods and services
land degradation: a decline in the quality of land, which makes it less able to support agriculture or native vegetation
latitude: the angular distance north or south from the equator of a point on the Earth's surface
leaches: the process by which water runs through soil, dissolving minerals and carrying them into the subsoil
League of Nations: the world body set up at the Paris Peace Conference to solve disputes between nations peacefully
leave to appeal: permission from the court to appeal a decision
leeward: describes the area behind a mountain range, away from the moist prevailing winds
lithium ion battery: type of rechargeable battery that is 'energy dense' and does not lose much charge when not in use
logging: large-scale cutting down, processing and removal of trees from an area
Luddites: a group of protesters who expressed their opposition to industrialisation by smashing factory machines
magistrate: a court official who hears cases in the lowest court in the legal system
malefactor: a person who does bad or illegal things
mallee: vegetation areas characterised by small, multi-trunked eucalypts found in the semi-arid areas of southern Australia
malnourished: describes someone who is not getting the right amount of the vitamins, minerals and other nutrients to maintain healthy tissues and organ function
manslaughter: the accidental or unintentional killing of one person by another person
marginal land: describes agricultural land that is on the margin of cultivated zones and is at the lower limits of being arable
market: any organised exchange of goods, services or resources between buyers and sellers
marketing: the process of planning and executing the development of the product as well as its pricing, promotion and distribution
marketing: the process of planning and executing the development, pricing, promotion and distribution of products to create exchanges that satisfy individual and organisational objectives
Masai: an ethnic group of semi-nomadic people living in Kenya and Tanzania
Materials management: an operations strategy that manages the use, storage and delivery of materials to ensure the correct number of inputs is available to the operations system when required
mature-aged: describes individuals aged over 55

median age: the age that is in the middle of a population's age range, dividing a population into two numerically equal groups
mediation: a process of settling disputes in which a neutral third party (a mediator) assists the parties to reach agreement. Mediators do not offer solutions; they help the parties to reach agreement through their own suggestions.
mobility: the ability to move or be moved freely and easily
monoculture: the cultivation of a single crop on a farm or in a region or country
mortgage loan: money advanced to a person for the purchase of a house or other property, where the property itself is used as security for the loan. This means the bank or other lender can take possession of the property if the borrower fails to make the regular repayments.
mortgages: money advanced by a bank, credit union or building society to a person for the purchase of a house or other property. The property itself is used as security for the loan, allowing the lender to seize the property if the borrower fails to make the regular repayments.
multinational company: an organisation with interests and offices in several countries
Napoleonic Wars: a series of wars between the French Empire, led by Napoleon Bonaparte, and a number of other European nations between 1803 and 1815
national park: a park or reserve set aside for conservation purposes
national security: the protection of a nation's citizens, natural resources, economy, money, energy, environment, military, government and energy
nationalism: feeling of loyalty to a nation
naturalist: a term once used to describe a scientist who studies plants and animals. Today such a person would be called a biologist
negligence or recklessness: failure to take reasonable care when a person or organisation is legally required to do so
new moon: the phase of the moon when it is closest to the sun and is not normally visible
New Spain: Spanish territories in the New World, including much of North America
no man's land: unoccupied ground between the front lines of opposing armies
nomadic: describes a group of people who have no fixed home and move from place to place according to the seasons, in search of food, water and grazing land
non-government organisations: non-profit group run by people (often volunteers) who have a common interest and perform a variety of humanitarian tasks at a local, national or international level
offshored: to relocate part of a company's processes or services overseas in order to decrease costs
offshoring: the practice of relocating a business's processes from one country to another, to take advantage of lower costs
open innovation: the use of internal and external ideas by a business to improve its processes or products
operations: the area of a business that consists of all the activities engaged in producing goods and services
opportunity cost: what you have to give up if you choose to do A rather than B; the value of the next best alternative that is given up whenever a choice is made
original jurisdiction: the power of a court to hear a case for the first time
outdoor relief: the provision of assistance to the poor while allowing them to remain in their own homes
output: the end result of a business's efforts; the good or service that is delivered or provided to a consumer
outsourcing: reducing costs by transferring tasks normally completed by the business to outside suppliers
pacifist: people who hold a religious or other conscientious belief that it is immoral to take part in war
pandemic: disease epidemic affecting many different countries

parish: an area of local government centred on the local church, which fulfilled some of the functions that local municipal councils perform in our society
patent: a legally enforceable right to make or sell an invention, usually granted by government, to protect an inventor's idea from being copied
pauper: a very poor person
per capita: per person (literally 'by head')
perception: the process by which people translate sensory impressions into a view of the world around them
picking oakum: unpicking short lengths of rope coated in tar. Oakum would be rammed between the planks on wooden ships to make them watertight
pig iron: the initial product resulting from the smelting of iron ore in a blast furnace
plaintiff: a person who commences a legal action in a civil case
plantations: an area in which trees or other large crops have been planted for commercial purposes
portfolio: an area of responsibility given to a minister, such as health, education or defence
position description: a document that explains the duties and responsibilities of an employee
potable: drinkable; safe to drink
prairie: native grasslands of North America
precedent: a legal principle that is established by a court in resolving a dispute and is expected to be followed in later cases
precipitation: the forms in which moisture is returned to the Earth from the sky, most commonly in the form of rain, hail, sleet and snow
primary industry: industry involved in the gathering of natural resources, such as iron ore and timber, or activities such as farming and fishing
private members' bills: bills which are proposed by members of the House of Representatives on their own behalf rather than on behalf of the government
process innovation: when changes and improvements are made to the production process of a product or service
producers: individuals and businesses involved in the production of goods and services
product innovation: when a new product is created or an existing product is improved
productivity: a measure of efficiency; the amount of output produced compared to the amount of input required in production
profit margin: an indicator of the financial health of a business, expressed as a percentage, that measures the amount of profit that a business earns from the sales of its product
profit: what remains after all business expenses have been deducted from the money that has been collected from selling goods and services
proletariat: the working classes, especially industrial wage earners
propaganda: distortion of the truth to persuade people to support an action or point of view
prosecute: to take legal action against a person accused of a crime
pulp: the fibrous material extracted from wood or other plant material to be used for making paper
quality: the degree of excellence of goods or services and their fitness for a stated purpose
quota: in the Senate, refers to the share of votes required to be elected. It is calculated using the total number of votes cast and the number of vacancies to be filled.
rain shadow: the dry area on the leeward side of a mountain range
Ramsar site: a wetland of international importance, as defined by the Ramsar Convention — an intergovernmental treaty on the protection and sustainable use of wetlands
recession: a period of decline in economic growth when GDP decreases
referendum: (plural **referenda**) ballot in which voters decide on a political question. Where there is no change to the Australian Constitution involved, this is called an advisory referendum or plebiscite.

relative scarcity: the economic problem of having unlimited needs and wants with only limited means to satisfy them
remanded in custody: to be held by the authorities until a case is heard in court
remedial action: action taken to restore a site to its previous or natural condition, or to an equivalent condition
repeal: withdrawal of a law or set of laws by Parliament
repossessed: a legal process by which an item can be reclaimed to cover the cost of a debt
research and development (R&D): activities undertaken to improve existing products or create new products
research and development (R&D): refers to activities undertaken to improve existing products or create new products
resources: the land, labour, capital and enterprise used to produce goods and services that satisfy needs and wants. Production usually requires a combination of these resources.
respondent: the person defending an appeal
restructure: to significantly modify the management or ownership structure of a company
retrench: to remove a person from their job, usually because of the employer's cost cutting or difficult economic circumstances
rickets: a softening of the bones, leading to deformity of the limbs, caused by a deficiency of calcium and vitamin D
Roaring Forties: strong winds of the southern ocean that blow in an easterly direction. Called the 'Roaring Forties' because they are found around the latitude of 40 degrees south of the Equator
robotic technology: the branch of technology that deals with the design, construction, operation and application of robots and computer systems
royal commission: a special public inquiry set up by government to investigate a particular issue and to make recommendations for changes in the law
rural population: people living in the countryside, rather than in towns or cities
stalemate: a term that comes from the game of chess, meaning a situation in which neither side can gain a winning advantage
salinity: the presence of salt on the surface of the land, in soil or rocks, or dissolved in rivers and groundwater
scrutineer: a representative of a parliamentary candidate who attends the counting of votes to ensure the count is fair
scurvy: a disease caused by poor diet, especially a deficiency of vitamin C
seasonal crops: crops that are harvested in a certain season of the year, rather than all year round
security of tenure: the constitutional guarantee that a political office holder cannot be removed from office except under exceptional circumstances
separation of powers: the division of government into the executive, the legislature (parliament) and the judiciary with the aim of providing a system of checks and balances that prevents the excessive concentration of power in one group
sharemarket: a market for trading shares in listed companies; also called a stockmarket
shares: units of ownership in a company that entitle the possessor of the shares (the shareholder) to a proportion of any profits that the company makes
Sinn Fein: organisation formed in Ireland in 1905 to campaign for Irish independence from Britain. The name was also used by the pro-independence party after the failed 1916 uprising
Slavic: belonging to the Slavs (a language group including Russians, Serbs and other Central and Eastern European peoples)
smuggling: importing or exporting goods secretly or illegally
social justice: the aim to create a society that is based on equality, that values human rights and that recognises the dignity of every human being

social media: the websites, platforms and applications that enable users to interact in virtual networks and communities and create, share or exchange information and ideas
social report: a report outlining what a business has done, and is doing, to meet its corporate social responsibilities
soft sport tourism: tourism in which someone participates in recreational and leisure activities, such as skiing, fishing and hiking, as an incidental part of their travel
Soviet: a council representing workers, peasants, soldiers and sailors
standard of living: how well off a country or community is, often measured by the level of wealth per head of population
stereotypes: widely held but oversimplified idea of a type of person or thing
street art: artistic work done with permission from both the person who owns the property on which the work is being done and the local council
strike: attempt by employees to put pressure on their employer by refusing to work
subsistence farming: farming that provides only enough to satisfy the basic needs of the farmer or community
subsistence: describes farming that provides food only for the needs of the farmer's family, leaving little or none to sell
suffrage *or* **franchise:** refers to the right to vote
suffrage: the right to vote
superannuation fund: an account that accepts, holds, invests, accumulates and eventually distributes superannuation contributions made by employees, their employers or the government
superannuation funds: organisations that receive a combination of employer and employee contributions so that money can be accumulated for the employees' retirement
superannuation: a retirement fund mandated by the government
surety: when bail is granted, a sum of money deposited with a court as a guarantee that an accused will abide by the conditions of bail and will appear in court when required to do so
sustainable: describes the use by people of the Earth's environmental resources at a rate such that the capacity for renewal is ensured
technology: the use of scientific knowledge to develop machinery, equipment and devices designed to solve business problems
tenuous: weak, thin
totem: an animal, plant, landscape feature or weather pattern that identifies an individual's connection to the land
trade barriers: government-imposed restriction (in the form of tariffs, quotas and subsidies) on the free international exchange of goods or services
trading partners: a participant, organisation or government body in a continuing trade relationship
trading post: a store or settlement established by a foreign trader or trading company to obtain local products in exchange for supplies, clothing, other goods, or for cash
transfer pricing: when one subsidiary of a transnational corporation charges another subsidiary for providing goods or services, often resulting in profits being moved between different countries to avoid the payment of tax on those profits
transnational corporations (TNCs): large business organisations that have a home base in one country and operate partially or wholly owned businesses in other countries
transportation: a sentence of banishment from England for certain crimes, to be served in an overseas colony
treadwheel: a punishment device, also called the 'everlasting staircase', comprising a large, iron-framed, hollow cylinder with wooden steps. As the device rotated slaves were forced to keep stepping forward
treaty: a formal agreement between two or more independent states or nations, and usually involving a signed document

treeline: the edge of the areas in which trees are able to grow
trial by media: creating widespread opinion regarding a person's guilt or innocence before a trial has occurred or before a verdict has been delivered
trustees: a group appointed to manage property on behalf of another person or organisation
tundra: the area lying beyond the treeline in polar or alpine regions
turnpike: a type of toll road
turnpike trusts: organisations established by parliament with the power to collect tolls on particular roads, and use the money to pay for maintenance of those roads
typhus: a fatal disease spread through the bites of lice and fleas
U-boats: German submarines
ultimatum: a final set of demands or terms backed by a threat
undernourished: describes someone who is not getting enough calories in their diet; that is, not enough to eat
undulating: describes an area with gentle hills
Universal Declaration of Human Rights: a declaration passed by the United Nations outlining the fundamental human rights of all people in the world
urban population: people living in cities or large towns
urbanisation: the growth and spread of cities
value adding: processing a material or product and thereby increasing its market value
water stress: situation that occurs when water demand exceeds the amount available or when poor quality restricts its use
waterlogging: saturation of the soil with groundwater so that it hinders plant growth
watertable: the surface of the groundwater, below which all pores in the soils and rock layers are saturated with water
Western-style diet: eating pattern common in developed countries, with high amounts of red meat, sugar, high-fat foods, refined grains, dairy products, high-sugar drinks and processed foods
windward: describes the side of the mountain that faces the prevailing winds
winter solstice: the shortest day of the year, when the sun reaches its lowest point in relation to the equator
workhouse: an institution built to house the poor
yield gap: the gap between a certain crop's average yield and its maximum potential yield

INDEX

A

Aboriginal peoples
  food sourcing 229–30, 231–2
  land management 229, 231
  sustainable lifestyle 229
  use of fire 230–1
  see also Indigenous Australians
active consumerism 304
active travel 330
adversary system 36
Africa, biofuel crops 281
Age Discrimination Act 2004 (Cth) 61
age pension 137
ageing population 180
agribusiness 239
agricultural revolution 397
  business approach to farming 402
  enclosure 399–400, 440–4
  new techniques 400–2
  open-field farming 398–9
agricultural technicians 188
agriculture
  genetically modified crops 297
  Green Revolution 234, 235
  greenhouses 237, 296
  modification of biomes 236–8
  shifting agriculture 228
  subsistence agriculture 226, 230, 398
  types in Australia 239–41
  urban farming 309–10
  water use 295
  world distribution 221
  yields, factors affecting 221–2, 294
aid, Australia as donor 384–5
Allies Day 542
altitude, and climate 214
American Revolution 406, 490
anti-Chinese riots 506
anti-conscription movement 548, 549
anti-discrimination agencies 47
anti-war sentiment 542, 545, 550
Anzac Day 542, 555–6, 557
Anzac legend 528, 555–7
appeal, right of 66, 67–8
appeals, procedure 67
appellants 66
appellate jurisdiction 66
aquaculture, fish farming 257, 260–1
aquaponics 310
aquariums 359
aquatic biomes 202
arbitration 48
Arkwright, James 419
Armenia 524
Ashley Cooper, Anthony (Lord Ashley) 470
Asia–Pacific region, Australia and 560–1
assisted migration, to Australia 499–500
Australia
  as food bowl for Asia 308–9
Australian Aid 384–5, 386
Australian Constitution, separation of powers 63
Australian economy
  business sector 84–5
  capital 85
  definition 81–2
  enterprise 85
  financial sector 86–7
  and global events 102–5
  and global financial crisis 103–4
  government sector 87–8
  and growth of Chinese economy 102–3
  household sector 83–4
  imports 114–16
  key economic questions 89–92
  labour 84
  land 84
  natural disasters and 104–5
  objectives 89–92
  participants 83–8
  relationship between households and business 85–6
  trade 99–101
Australian Electoral Commission 5, 9–10
Australian electoral system
  compulsory voting 9–10
  fixed or maximum terms for parliament 10
  one vote, one value 10–11
  preferential voting 11–12
  principles 8
  proportional representation 12–14
  secret ballot 8–9, 33
  single member and multimember electorates 11
  universal suffrage 9
Australian Flying Corps 538
Australian foreign policy 558–61
Australian Greens 6
Australian Human Rights Commission Act 1986 (Cth) 61
Australian Imperial Force (AIF) 528
  5th Division 538
  casualties 540, 559
  enlistment for 525, 526
  in France 538–40
  Indigenous Australian soldiers 544
  recruitment campaigns 543–4
Australian justice system
  appeals 66–8
  bribery 68
  coercion of witnesses 69
  court delays 70–1
  equality before the law 61–2
  independence of the judiciary 63–5
  principles 59
  trial by media 70
Australian Labor Party (ALP) 5, 547, 548
Australian legal system 36
Australian and New Zealand Army Corps (ANZAC) 526, 528, 531–3
Australian Prudential Regulation Authority (APRA) 128
Australian Trade Commission (Austrade) 369
Australian War Memorial 511
Australian Women's National League 545
Austria, declares war on Serbia 520
Austro-Hungarian Empire 467, 519
authorised deposit-taking institutions (ADIs) 128
automotive industry *see* car industry

B

backbenchers 26–7
bail 43
Bakewell, Robert 401–2
balance of trade 100
Balkans 518, 519–20
Ballarat, mobility map 339
Banking Act 1959 (Cth) 128
banking sector, deregulation 128
banking system 409
bankruptcy 139

banks 128, 129
Banks, Joseph 492
Barker, Tom 541
barrier reefs 210
Bean, Charles 533–4
Bedouin people 227
Bell, Alexander Graham 432
Bertalli's Alpine Breads 146
BHP Billiton 167
biodiesel 379
biodiversity
  in Australia 269
  loss of 252, 267–9
biofuels 279–80
biomes
  and food security 313–15
  climate and 211, 213–14
  conversion to agriculture 268
  definition 198, 200
  impact of food production 251–2
  in Australia 211–13
  major biomes of the world 200
  modification for agriculture 236–8
  role of soil 215–17
  types 200–2
biophysical world 251–2
Black Death 410
Black Hand 520
blast furnaces 422
blended marketing 149–50
Blind Heroes Fund 542
BlueScope 166
Body Shop 163–4
Boer War 558
Bogong moths 231–2
Bosnia 520
Boulton, Matthew 416
box scattergrams 301
Boxer Rebellion 558
bribery 68
Britain
  abolition of slavery 487
  alliances 518
  child labour 451–2, 470
  convict transportation 489–90, 491–3
  crime and punishment 489–90
  enclosure movement, impact 440–4
  factory reform 471
  food riots 442
  government inquiries 439
  government statistics 439
  housing and sanitation 454, 470, 472–3
  Poor Laws 455–7, 470
  population explosion, impact of 412
  population growth in eighteenth century 394, 410–12, 440
  public health reform 472–3
  social problems 489
  social unrest 459–60
  Swing Riots 443, 456
  trade unions 461–2
  urbanisation and overcrowding 453
  workhouses 457–8
  see also Industrial Revolution
British East India Company 403–4
British Empire
  and Industrial Revolution 397, 406
  American colonies 404
  expansion 403–6
  extent in 1800 405, 406
  raw materials from colonies 397, 406
  Seven Years' War 405
  trade 403–4, 408
Budj Bim National Heritage Landscape 232
building societies 130
Bullecourt, capture of 539
business case studies, analysing 166–7
business sector 84–5

C

Cabinet 27–8
canals 425
capital 85
capital growth 131
capital investment 157–8
capitalism 464
'captain's calls' 26
car industry
  in Asia 377–8
  in Australia 380
  in United States 378–9
car trade 377
cartoons 262
Castle Hill rebellion 495
cattle stations 240
censorship 541
Chadwick, Edwin 470, 472
change, as geographical concept 192–3
Chartists 461, 466
child labour
  chimney sweeps 452
  in coal mines 451, 470
chimney sweeps 452
China
  economic growth 102–3
  foreign-owned enterprises 380
Chinese immigrants 506
Chinese New Year 359–61
Churchill, Winston 528
cities
  accessibility 337
  encroachment on agricultural land 280
  providing equal access 337–8
civil law 37
Clarkson, Thomas 487
clearfelling 213
climate
  altitude and 214
  biomes and 211, 213–14
  influences on 214–15
  landforms and 214
  latitude and 214–15
  modification of 236–7
  ocean currents and air movement 215
climate change
  and cereal crop production 288
  and food security 286–8
  predicted consequences 287
climate classification, of Australia 211
clipper ships 429, 430
clothing industry
  impact of globalisation 379–80
  sweatshops 381
coalition governments 5
coalmining
  child labour 451
  extraction methods 421
  Mines Commission (1840–42) 448–9
  workers and conditions 447–9
coastal wetlands
  cross-section 205
  importance 205, 261
  loss of 261
  nature of 205
coercion of witnesses 69
Combination Acts 461
committal hearings 43–4
common law 51
communism 464
competition, and innovation 144–5
Competition and Consumer Act 2010 (Cth) 46
competitive advantage 144
  achieving efficiencies and cutting costs 154–5

corporate social responsibility 162–4
differentiation 159–60
improving productivity 157–8
improving profit margin 154
internal operations strategies 160
meeting changing demands 153
pursuing 153–5
reducing cost of products 156–7
research and development 160–1
strategies 156–61
competitive global market 153
complex choropleth maps 278
compulsory voting 9–10
conciliation 48
conscription 516, 547–9
consent orders 44
consumer law disputes 46–7
consumer protection 46
container fish farming 310
convict life 496
convict transportation 489
to America and West Africa 490
to Australia 489, 491–3, 498
convicts, secondary punishment 497–8
Cook, Captain James 492, 493
coral atolls 210
coral polyps 208
coral reefs
anatomy of 209
benefits of 210
formation 208, 210
threats to 210
corporate social responsibility
benefits of 162
and competitive advantage 162–4
strategies 162–3
Cort, Henry 423
costs, lowering 154–5
cottage industry 417
cotton trade, slavery and 484–5
court delays 70–1
court hierarchy
appeals 67
Commonwealth and states 40
High Court of Australia 40
higher courts 39
intermediate courts 38–9
jurisdiction 36–7
lower courts 38
roles of particular courts 41–4
courts, law-making role 51–4
credit unions 129
Crimes Act 1914 (Cth) 69
Criminal Code Act 1995 (Cth) 68
criminal law 36–7
Crompton, Samuel 419
crop rotation 401, 444
Crystal Palace, London 391
cultural tourism 359–61
cumulative line graphs 376
Cunningham, Phillip 495

D

Dalywoi Bay, NT, map 207
Darby, Abraham 422
Darwin, Charles 468, 469
Darwinism 468–9
debt management 138–40
decision-making procedure 55–6
Declaration of the Rights of Man and of the Citizen 466, 467
Deen Maar Indigenous Protected Area 232
defendants 37
deforestation 200
delivery speed 159–60
desertification 264, 278
deserts
as biome 201
in Australia 213
soils 216
dietary change
and sustainable food production 308
in Asia 308
impacts 307
differentiation 159–60
digital technologies 151–2
Disability Discrimination Act 1992 (Cth) 61
discrimination 60–1
divergence graphs 354
dividends 131
Donoghue v. Stevenson (1932) 54
doughnut charts 350
Dual Alliance 517
duty of care 53–4

E

economic growth 94–5, 180
economic performance
alternative indicators 97–8
indicators 93–7
economic questions 89–92
economy *see* Australian economy
ecotourism 357–8
education, as export industry 371–2
eel farming 232
efficiencies, achieving 154–5
egalitarianism 466, 503
election campaigns 16
advertising 19
interest groups 19
opinion polls 18–19
political party activities 19–20
public debate 17
social media 20
traditional media 17–18
electoral system *see* Australian electoral system
Emden, sinking of 527
emigration
during gold rushes 503–6
to Australia 499–502
Empire Day 542, 556
employees
in Australia 171–2
changing roles 174–6
competition and job insecurity 175–6
entitlements 178
in global workplace 176
intrapreneurs 176
retrenchments by industry 175
traditional roles 175
employers 172
responsibilities in workplace 177–9
enclosure movement
changes in agriculture 399–400
impact on rural population 440–4
endemic species 269
Engels, Friedrich 466
English Civil War 407
Entente Cordiale 518
enterprise 85
environment, as geographical concept 194
environmental law disputes
administrative action 49
civil action 49–50
criminal action 50
environmental managers 188
environmental refugees 287
Eugene, Oregon, walkability 334–5
Eumerella Wars 232
Eureka Rebellion 461
Europe
alliances at beginning of 1914 517
industrialisation 431
European Union, impact of climate change 288
evolutionary theory 468–9
exports
agricultural exports 375
education 37–8
from Australia 37–8
wheat 374
extremism 385

F
factories, textile manufacturing 396, 419–20
Factory Acts (UK) 470, 471
fair trade movement
  and active consumerism 304
  and non-government organisations and (NGOs) 384
Fair Work Act 2009 (Cth) 180
Fairtrade International
  benefits to farmers 306
  certification 305, 384
  producer countries 305
Family Court of Australia 39, 44
Family First Party 7
farmland areas, creating 242–3
farms, types in Australia 240–1
Federal Circuit Court of Australia 38
Federal Court of Australia 39
federal elections
  counting House of Representatives votes 21–3
  counting Senate votes 23–4
  voting procedure 14–15
federal electorates
  number 12
  size 11
federal government, forming of 24–5
fertiliser use 234, 238
financial risks
  protection from 135–7
  types 133–5
financial intermediaries 86–7
financial sector 86–7
First Fleet 492–3, 495
fish
  as staple food 225
  container fish farming 310
  farming of 260–1
  overfishing 257–9
  protection of sharks 260
Fisher, Andrew 525
flow maps 387–8
Foljambe, Joseph 400
food aid
  cash vouchers 300
  definition 298
  donors 299
  in Australia 301–3
  recipients 299
  school feeding programs 300
food insecurity
  causes 276
  countries at risk 275, 276
  impact 276
food problems 220
food production 221–2
  Australia and 239–41
  environmental factors 234
  fertiliser use 234
  future changes 294–5
  global protein demand 257
  impact on biomes 251–2
  improving 294–5
  increases in 234
  trade and economic factors 234–5
  use of technology 236
food riots 442
food security
  Australia and 274
  biomes and 313–15
  climate change and 286–8
  components of 273
  impact of land grabs 282
  meaning of 272
Food Security Risk Index 274, 275
food shortages, land loss and 278–82
food staples
  around the world 223
  fish 225
  maize 224
  wheat 224
food trade 373–5
foreign policy 558–61
forests
  as biomes 200
  impact of clearing 254–5
  importance 253
  old-growth forests 212–13
  reasons for clearing 254
formal votes 22
France
  alliances 517–18
  industrialisation 431
  Seven Years' War 405
Franco-Russian Alliance 517
Franz Ferdinand, Archduke 520
French army, mutinies 550
French Revolution 466
fringing coral reefs 210
frontbenchers 27
Fulton, Robert 432

G
Gallipoli campaign
  casualties 533
  conditions 531
  landing of Anzacs 529–30, 533–5
  Lone Pine diversion 531
  Nek, the 531–2
  strategy 528
  Turkish counterattack 530–1
  withdrawal 532
geographical cartoons 262
geographical concepts 189
  change 192–3
  environment 194
  interconnection 191–2
  place 190–1
  scale 189–90
  space 195–6
  sustainability 195
geographical skills 187
geography, work and careers in 187–8
George v. Skivington (1869) 53
geospatial skills 187
German New Guinea 524, 526, 559, 560
Germany
  alliances 517
  declares war on Russia and France 520
  industrialisation 431
  revolution 559
  strikes 550
  unification 467
  war reparations 559
GIS (geographical information system) 256
global financial crisis 103–4
Global Liveability Ranking 97
global market, overseeing of 111
global supply chains 117–19
global workplace 176
globalisation
  benefits 110
  downside 110
  economic issues 109–10
  environmental sustainability and 111
  impact on Australia 111
  impact on clothing industry 379–80
  international economy and 109–12
  nature of 108
  the internet and 112
gold rushes 503–6
goldsmith bankers 409
Goldstein, Vida 545
government sector 87–8
government statistics 439
governments
  responsibilities in workplace 180–1
  role in workplace 173

Grant v. Australian Knitting Mills (1936) 54
graphs
  cumulative line graphs 376
  developing from tables 124–5
  divergence graphs 354
  multiple line graphs 376
  ternary graphs 233
grasslands
  as Australian biome 212
  as biome 201
  characteristics 203
  importance of 204
  world grassland locations 203
Green Revolution 234, 235
greenhouse gases 253
greenhouses 237, 296
Greenway, Francis 496
Griffith, NSW 242–3
Gunditjmara people 232

H

Hargreaves, Edward 503
Hargreaves, James 419
Heaven v. Pender (1883) 53
Henty family 501
Hetherington, Henry 461
High Court of Australia 40
Highland Clearances 489, 499
Hindenburg line 539
historical debate 533–4
history, cause and effect in 395
horse power 413
household final consumption per person 368
household sector 83–4
Hughes, William Morris ('Billy') 547, 548, 559, 560–1
Huli people 228
Human Development Index (HDI) 97, 385, 386
human rights disputes 47–9
human rights protection 60–1
humanitarian principles 385
hunger
  impacts 291–2
  problem of 291
  see also food insecurity
hunters and gatherers 226–7
hydroponics 310

I

identity theft 135
illegal wildlife trade 387
Imperial Camel Corps 538
imperialism 464–5, 517
imports
  effects on economy 116
  nature of 113
  reasons for 115–16
  top 30 countries of origin 114
  top ten goods and services 115, 372
independent members of parliament 7
India, Kolkata wetland system 311
Indigenous Australians
  food aid 303
  food insecurity 231, 303
  relationship to land 323–5
  see also Aboriginal peoples; Torres Strait Islander peoples
industrial action 173
Industrial Revolution
  banking system and 409
  canals 425
  causes 395–7
  coalmining 421, 447–51
  entrepreneurship 408
  historical sources on 393–4, 438–9
  horse power 413
  iron production 422–3
  meaning of term 393
  population explosion 394, 410–12, 440
  power sources 413–16
  railways 427–9
  rise of middle class 407–8
  roads 426
  shipping 429–30
  steam power 415–16
  textile industry 417–20
  timeline of social changes 437
  timeline of technological changes 392
  transport 424–30
  water power 414
  wind power 415
Industrial Workers of the World (IWW) 541
inflation 96–7
informal votes 22
innovation
  competition and 144–5
  definition 145
  examples of 146–7
  fostering in business 146
  open innovation 150–1
  process innovation 146–7
  product innovation 145–6, 147
  types of 145–6
insurance 136
intensive farming 241
interconnection 191–2
interest 129
interest groups 19
intermediate courts 38–9
International Covenant on Civil and Political Rights 70
international relations 558–61
international students 371–2
internet, benefits to globalisation 112
intrapreneurs 176
investment, types 131–2
iron production 422–3
irrigation
  environmental impacts 266
  purpose 242, 265
  rice production and 246, 247
  types 236
isoline maps 337
Italy
  joins Allies 522, 524
  unification 467

J

Japan
  2011 tsunami 104–5
  demands for racial equality 560
  industrialisation 433
job insecurity 175–6
Johnston, William 495
judges, appointment and tenure 64
judicial independence 63–5
juries 38
jurisdiction 37
just-in-time (JIT) real estate 158
justice, principles of 59
justice system *see* Australian justice system

K

Kalahari Bushmen (San) 226–7
Katter's Australian Party 7
Kay, John 419
knighthoods, reintroduction of 26, 28–30
Kolkata wetland system 311

L

Labor Party *see* Australian Labor Party (ALP)
labour 84
land
  competition for 279–82
  differing perceptions and management 324
  importance 323

land (*continued*)
Indigenous Australian relationship to 323–4, 325
marginal lands 324
land degradation
causes 263, 279
extent of 252, 279
forms 279
impacts 264
nature of 263
land grabs 280–1
land loss
causes 278
food shortages and 278–82
land reclamation 238
landforms, influence on climate 214
landscape architects 188
landscapes, modification for agriculture 238
laneway revival 326–7
latitude, climate and 214–15
leaders' debates 17
League of Nations 560, 561
legal system *see* Australian legal system
Lenin, Vladimir 552, 553
Liberal Party of Australia 5–6
Light Horse Brigade 526, 531, 538
Lincoln, Abraham 488
liveability, 20-minute neighbourhoods 333, 334
livestock trade 375
Local Courts 38
logging 212
Lovett, William 461
lower courts 38
Luddites 459

M

McDonald's, 'Create Your Taste' 147
Magistrates Courts 38
civil jurisdiction 44
criminal jurisdiction 43–4
maize, as staple food 224
majority rule 8
managed funds 132
mangroves 206
Mannix, Daniel 548
maps
complex choropleth maps 278
flow maps 387–8
isoline maps 337
proportional circle maps 306
thematic maps 199
topographic maps 208, 244
topological maps 322
marginal lands 324
marketing 149–50
markets, influences on 90–1
Marx, Karl 464, 466
Marxism 552
Marxism–Leninism 553
materials management 158
Meals on Wheels 303
media
in election campaigns 17–18
trial by media 70
see also social media
mediation 44
medical tourism 345–6
Meikle, Andrew 413
Melbourne
20-minute neighbourhoods 333, 334
accessibility 338
bike paths 331
laneways 326, 327
population during gold rushes 504
ministers 4
mixed farms 241
mobile phone production
assembly 118
components 118
raw materials 117–18
sustainability issues 119
monoculture 263, 282
Morse, Samuel 42
mountains, influence on climate 214
movement of peoples
historical sources 477–8
timeline 1750–1914 476
multiple line graphs 376

N

Napoleonic Wars 467
National Belgian Relief Fund 542
national employment standards (NES) 178
National Party of Australia 5, 6
national security 385
nationalism 467, 517
naval arms race 518
Navigation Acts (Imp) 408
negligence, law of 54
neighbourhoods, accessibility 335–6
net profit 155
New South Wales, colony of
early trials and challenges 494–5
gold rush 503, 504, 506
settlement 493
Newcomen, Thomas 415
newspapers 18
Nicholas II, Tsar 550
Nick Xenophon Team 7
Nokia supply chain 117–19
nomadic herders 227
non-government organisations (NGOs), and fair trade 384
Norfolk Island penal settlement 497

O

obiter dictum 52
ocean currents, and climate 215
Official Development Assistance (ODA) 384
offshore companies, top locations 381
offshoring 156
Olympic Games, impact of holding 363–4
open innovation 150–1
open-field farming 398–9, 444–5
operations strategies 160
opinion polls 18–19
opportunity cost 92
Opposition (Australian government) 4
original jurisdiction 66
Ottoman Empire 467
outdoor relief 455, 456
outsourcing 156
Owen, Robert 464, 466, 470

P

pacifism 542, 545
Palmer United Party 7
Papua, Australian administration 560
Paris Peace Conference 559–61
park rangers 188
parliamentary debate 30–1
parliaments, fixed or maximum terms 10
patents 393
patriotism 542–3, 545
Pauline Hanson's One Nation Party 7
permafrost 201
perspectives, identifying and analysing 474
Peterloo Massacre 460, 461
Philip, Prince, knighthood 26, 28–30
Phillip, Governor Arthur 492, 493, 494
photography, analysing 562
picking oakum 457, 458
pig iron 422–3
Pitt, William 487
place, as geographical concept 190–1

places
changes over time 326
mapping of 321
perceptions of 320
plaintiffs 37
plantation farming 241
Plumpy'nut 292
pneumatophores 206
policy agenda, setting 30
policy-making, in Australian politics 26–8
political parties 4–5
formation of 5
in Australia 5–8
Poor Laws (UK) 455–7, 470
population growth 292
Port Arthur penal settlement 497–8
portfolios 27–8
position descriptions 175
precedent
application of 53–4
creation of 52
doctrine of 51–2
preferential voting 11–12, 22–3
Prime Minister and Cabinet
responsibilities and decision making 26–30
shaping policy and law 30–1
prime ministers 28
Princip, Gavrilo 520
private members' bills 27
problem solving procedure 55–6
process innovation 146
product innovation 145–6
productivity, improving 157–8
profit margins, improving 154
propaganda 542
proportional circle maps 306
proportional representation 12–14, 23–4
Public Health Acts (UK) 472–3
public transport
changing needs 328
connecting with 328
forms and uses 329
satisfaction with 329–30
'puddling' 423

Q

quality 159
Question Time 30

R

Racial Discrimination Act 1975 (Cth) 60
racial equality 560
radical nationalism 556
radio 18
railways 427–9
ratio decidendi 52
raw materials 397
recklessness 50
Red Cross 545
Reibey, Mary 496
relative scarcity 82, 89
remand 43
repatriation 554
representative democracy 3
research, carrying out 105–6
research and development (R&D) 160–1
respondents 66
restructuring 156
résumés, preparing 181–3
rice, importance of 245
rice production
in Asia 245–7
in Australia 247–8
robotic technology 379
Romania 524
Rotherham plough 400–1
Rural Access Program 339
Russia
Bolshevik revolution 552–3
involvement in World War I 550, 553
Provisional Government 550–1, 552
Russian army 550

S

salinity 266, 278
salt marshes 206
Samsung, open innovation 151
San people 226–7
sanitation 454, 470, 472–3
satellite images 283
savanna *see* grasslands
savings 136–7, 139–40
scale 189–90
scams 133, 135
school feeding programs 300
Scientific Revolution 463
scrutineers 22
seagrass meadows 206, 212
secret ballot 9
seed drill 400
Senate
quota of votes required 23–4
as states' house 11
separation of powers 63
Serbia 520
Seven Years' War 405
Sex Discrimination Act 1984 (Cth) 60
sharemarket 131
sharemarket charts, reading 140–2
shares 131–2
sharks
overfishing 259
protection of 260
sheep stations 240
shifting agriculture 228
shipping 429–30
Sinn Fein 547
Slater, Samuel 432
slave trade
abolition in America 488
cotton trade and 484–5
early opposition 486–7
end in Britain 488
kidnappings and trading arrangements 480
Mansfield Judgement 487
Middle Passage, the 481
origins 479
selling of slaves 481–2
Smith, Adam 464, 487
Snap Laundromat 146–7
social media
business use 148–9
in election campaigns 20
social reports 163
socialism 464
soil
differences in 215–16
modification for agriculture 238
organisms in 217
role in biomes 215–17
the Somme, First Battle of 538
Sophie, Duchess 520
space, as geographical concept 195–6
'Spanish' influenza 554
spatial relationships, in thematic maps 199
spatial technologies
meteorologists 188
species extinctions 268
Speenhamland system 441–2
sport tourism 362–4
Statute of Monopolies 1623 (Imp) 408
steam engines 396, 415–16
steam ships 430
Stephenson, George 427, 428
stock breeding 401–2
subsistence agriculture 226, 398
Sudan Campaign 558
Sundrop Farms 295–6, 297

superannuation 137, 179
  funds 137
supply chain management 117
Supreme Courts 39
  appellate jurisdiction 42
  original jurisdiction 41
  state differences 41
surveyors 188
surveys 73–5, 353
sustainability, as geographical concept 195
Sustainable Development Goals (SDGs) 385
sweatshops 381
Swing Riots 443, 456
Sydney Cove, penal settlement 493, 494, 496

T
tables, creating and analysing 31–2
taxation 179
technology applications, investing in 158
television news 17
temperate zones, soils 216
term deposits 132
ternary graphs 233
Tesco's, virtual supermarkets 151
textile industry
  conditions in factories 445–6
  innovation in Industrial Revolution 418–19
  move to factory production 419–20
  traditional cottage industry 417–18
Thanksgiving 359
thematic maps, spatial relationships in 199
tidal flats 206
Tolpuddle Martyrs 462
topographic maps
  patterns and correlations 244
  transects 208
topological maps 322
Torres Strait Islander people
  food sources 230
  sustainable lifestyle 229
tourism
  Australian tourism 351
  cultural tourism 359–61
  ecotourism 357–8
  future of 344–5
  impacts 354–6
  importance 342–3
  in 347–8
  increase in 344
  medical tourism 345–6
  negative impacts 355
  positive impacts 356
  sport tourism 362–4
  trends 344
tourist destinations
  in Australia 352
  for Australians 350
  top 10 countries 348
  types of 343
tourists
  accommodation 348–9
  top ten spenders 348
  types 343
  visiting Australia 351–2
trade
  in animals 375
  with Asia region 100–1
  and Australian economy 99–100
  Australia's trade organisation 369
  Australia's trading partners 370
  car trade 377
  exports 371–2
  fair trade movement 34–5, 382–4
  in food 373–5
  in goods and services 367–8
  problems of 304, 382
  trading partners 101
  see also exports; imports
trade unions 172–3, 461–2
transects 208
transnational corporations (TNCs) 110
  biggest and richest 121–2
  definition 120
  positives and negatives 122–3
  regulation of 123
  worldwide assets and sales 120–1
Travelling Kitchen Fund 542
Treaty of Neuilly 559
Treaty of St Germain 559
Treaty of Sèvres 559
Treaty of Trianon 559
Treaty of Versailles 559
treeline 200
trench warfare 535–7
trial by media 70
Triple Alliance 517
Triple Entente 517, 518
'triple-F' crisis 280
tropical rainforests, soils 216
Trotsky, Leon 552, 553
Tull, Jethro 400
tundra 201, 216
Turkey, massacre of Armenians 524
turnpike trusts 426
20-minute neighbourhoods 333, 334

U
unemployment 95–6
United Nations
  Sustainable Development Goals (SDGs) 385
  World Food Programme (WFP) 298–9, 385
United States
  abolition of slavery 488
  American Revolution 406, 490
  car industry 378–9
  cotton industry and slavery 484–5
  industrialisation 432
  joins Allies 523, 539
Universal Declaration of Human Rights 60
universal suffrage 9
urban farming 309–10
US Declaration of Independence (1776) 466

V
Villers-Bretonneux 540

W
walkability 333–5
Walkability Index 335
war, glorification of 516
war graves 557
war memorials 555, 557
War Precautions Act 1915 (Cth) 541
water
  insecurity 284
  power 414
  quality of, deterioration 285
  scarcity, causes of 284
  security, threats to 283
  stress 284
waterlogging 266
watertable 266
Watt, James 416
Western-style diet 308
wetlands
  in Australia 212
  Kolkata wetland system 311
  see also coastal wetlands
wheat, as staple food 224
wheat farms, in Australia 240–1
White Australia Policy 506, 559, 560
Whitney, Eli 432, 484
Wilberforce, William 487
Wilhelm II, Kaiser 518, 559
Wilson, Woodrow 560, 561
wind power 415

witnesses, coercion of 69
women
  war effort 545–6
  workforce participation 169, 545
Work Health and Safety Act 2011 (Cth) 178, 180
workhouses 455, 456, 457–8
working hours 179
workplace
  changes in 169–70
  employer responsibilities 177–9
  global workplace 176
  government responsibilities in 180–1
  impact of competition and technology 174–5
  participants in 170–1
workplace agreements 181
workplace health and safety (WHS) 178
workplace legislation 180
World Fair Trade Organization 382
World Food Programme (WFP) 298–9, 385
World Happiness Report 97–8
World Trade Organization (WTO) 369
World War I
  Allied victory 539–40
  Australia's support for Britain 525
  battlefronts 522, 523
  Bullecourt, capture of 539
  causes of 516–21
  Eastern Front 522, 539, 550
  Hindenburg line 539
  historical sources 513–15
  homefront 541–6
  in the colonies 524
  long-term causes 516–18
  Middle East theatre 526
  repatriation 554
  Somme, the First Battle of 538
  timeline 512
  trench warfare 535–7
  triggers 519–21
  Villers-Bretonneux 540
  war at sea 523, 526
  Western Front 522, 526, 535, 538–40
  Ypres, Third Battle of 539
  see also Gallipoli campaign

Y

Ypres, Third Battle of 539