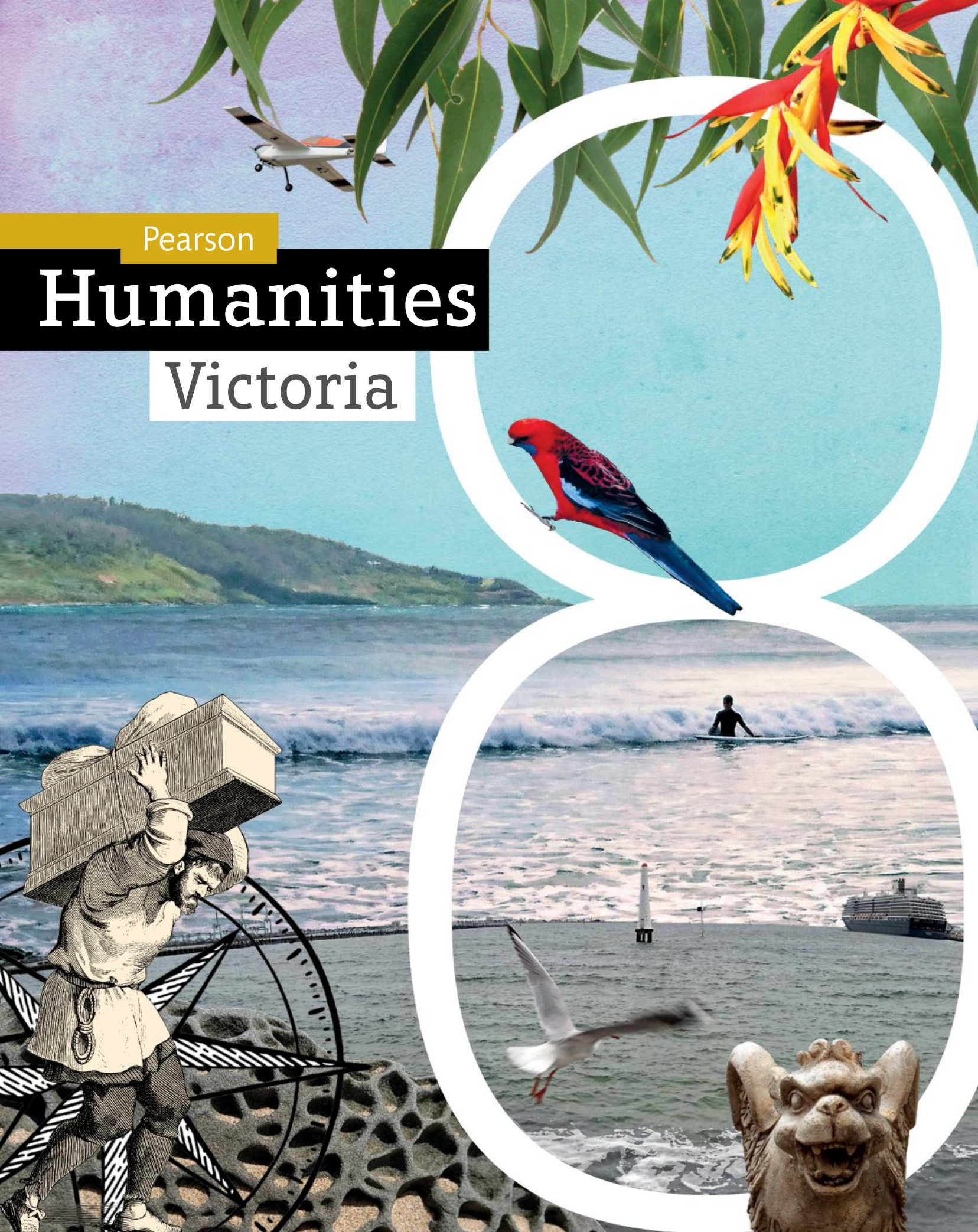
Pearson

Humanities

Victoria



Pearson

Humanities

Victoria

8





Pearson Australia
(a division of Pearson Australia Group Pty Ltd)
707 Collins Street, Melbourne, Victoria 3008
PO Box 23360, Melbourne, Victoria 8012
www.pearson.com.au

Copyright © Pearson Australia 2019
(a division of Pearson Australia Group Pty Ltd)
First published 2019 by Pearson Australia
2022 2021 2020 2019
10 9 8 7 6 5 4 3 2 1

Reproduction and communication for educational purposes
The Australian *Copyright Act 1968* (the Act) allows a maximum of one chapter or 10% of the pages of this work, whichever is the greater, to be reproduced and/or communicated by any educational institution for its educational purposes provided that that educational institution (or the body that administers it) has given a remuneration notice to Copyright Agency under the Act. For details of the copyright licence for educational institutions contact Copyright Agency (www.copyright.com.au).

Reproduction and communication for other purposes
Except as permitted under the Act (for example any fair dealing for the purposes of study, research, criticism or review), no part of this book may be reproduced, stored in a retrieval system, communicated or transmitted in any form or by any means without prior written permission. All enquiries should be made to the publisher at the address above.

This book is not to be treated as a blackline master; that is, any photocopying beyond fair dealing requires prior written permission.



Publishers: Cathy Beswick-Davison, Caroline Williams, Marita Tripp
Project Manager: Michelle Thomas
Production Editor: Casey McGrath
Series Lead Editor: Emma de Smit
Editor: Ingrid De Baets
Designers: Anne Donald, Jennifer Johnston
Typesetter: iEnergizer Aptara Limited
Cover art: Jennifer Johnston
Illustrators: Bruce Rankin, Tina Puopolo, Anne Donald, Diacritech
Rights & Permissions Editor: Samantha Russell-Tulip
Proofreader: Zoe Naughten
Indexer: Ann Philpott
Senior Publishing Services Analyst: Rob Curulli
Production Controller: Dominic Harman
Printed in Malaysia by Vivar

NATIONAL LIBRARY OF AUSTRALIA
A catalogue record for this book is available from the National Library of Australia

ISBN 978 1 4886 2345 5

Pearson Australia Group Pty Ltd ABN 40 004 245 943

Cover images
Pearson Australia: Jennifer Johnston (ocean, Port Mebourne, rosella). **Shutterstock**: COLOA Studio (Bird of Paradise); lynea (background, man); Robyn Mackenzie (gum leaves); MoreVector (compass); Akif Oztoprak (plane); Nirandorn Tongaroon (gargoyle).

Disclaimer/s
The selection of internet addresses (URLs) provided for this book/resource was valid at the time of publication and was chosen as being appropriate for use as a secondary education research tool. However, due to the dynamic nature of the internet, some addresses may have changed, may have ceased to exist since publication, or may inadvertently link to sites with content that could be considered offensive or inappropriate. While the authors and publisher regret any inconvenience this may cause readers, no responsibility for any such changes or unforeseeable errors can be accepted by either the authors or the publisher.

Some of the images used in *Pearson Humanities Victoria 8* might have associations with deceased Indigenous Australians. Please be aware that these images might cause sadness or distress in Aboriginal or Torres Strait Islander communities.

Pearson Humanities Victoria 7–10

Engaging students of all levels

A new series designed to support Victorian students and teachers with comprehensive curriculum coverage of history, geography, economics and business, civics and citizenship. It's been created to engage and captivate students of all levels as they learn about humanities, to help them reach their full study potential.

Student Book

A visually engaging spread-based design, with each chapter featuring images, illustrations, infographics and source materials to engage and captivate all learners. The **student book** includes self-contained toolkit chapters for each discipline, covering key concepts and skills. All core chapters are supported by additional worksheets, solutions, teaching strategies, instructional rubrics, chapter tests and online interactives.



Lightbook Starter

We know you want to check the readiness of your students and keep track of their progress. With **Lightbook Starter**, you get an innovative digital learning and assessment resource that prepares students and assesses them against outcomes. It's all about helping you guide your students and helping them take control of their learning.



Student Reader+

Reader+ is our next generation eBook. Students can read, take notes, save bookmarks and more—anywhere, anytime. Integrated resources and interactive activities enhance and extend the learning experience, helping to engage students, and give them choice and flexibility in their learning.



Teacher Reader+

Teacher Reader+ aids lesson preparation by combining student book page references with a wealth of teacher support to help you meet the demands of the Victorian Curriculum for humanities.

As the world's learning company, we're inspired by the way education changes lives.

We're creating innovative products and services to help all learners stay on the path to a better education.

Contents

SECTION 1

HISTORY

1 History toolkit **1**

1.1 What is history? 2
1.2 Introducing historical sources 3
1.3 Historical thinking 6
1.4 Chronology 8
1.5 Historical sources as evidence 9
1.6 Continuity and change 11
1.7 Cause and effect 12
1.8 Historical significance 14
1.9 The contribution of archaeology 15

2 The Vikings **17**

Timeline 18
2.1 The Viking world 20
2.2 Everyday life in Viking society 24
2.3 The Norse gods and religion 28
2.4 Viking expansion 30
2.5 Viking conquest 34
2.6 Viking rule over England and its decline 38
2.7 Significant individuals 40
2.8 The Viking legacy 44

H1 Medieval Europe DIGITAL ONLY **1**

Timeline 2
H1.1 The medieval European world 4
H1.2 Everyday life 6
H1.3 The Crusades 10
H1.4 Crime and punishment 14
H1.5 Military and defence systems 16
H1.6 Origins and spread of the Black Death 18
H1.7 The causes of the Black Death 22
H1.8 Treatments for, and responses to, the Black Death 24
H1.9 The impact of the plague 26
H1.10 Significant individuals 30
H1.11 The influence of the medieval European world 32

H2 The Ottoman Empire DIGITAL ONLY **1**

Timeline 2
H2.1 The growth of the Ottoman Empire 4
H2.2 Key features of the empire 6
H2.3 Everyday life 10
H2.4 Architecture and art 12
H2.5 An expanding empire 16
H2.6 A tolerant society 20
H2.7 The strength and influence of the empire 22

3 Japan under the shoguns **47**

Timeline 48
3.1 Japan before the shoguns 50
3.2 The origins of the shogunate 52
3.3 The unification of Japan 54
3.4 Political and social features of Tokugawa Japan 56
3.5 Cultural features of Tokugawa society 60
3.6 Everyday life in Tokugawa society and economic features 62
3.7 Control of foreign trade 64
3.8 Land use under the Tokugawa 66
3.9 The decline and the legacy of the Tokugawa shogunate 68
3.10 A significant individual 70

H3 Angkor/Khmer Empire DIGITAL ONLY **1**

Timeline 2
H3.1 Jayavarman II and the founding of the Khmer Empire 4
H3.2 Key social groups 8
H3.3 Daily life 12
H3.4 Power, wealth and trade in Angkor 16
H3.5 Cultural achievements: Temples 19
H3.6 Religion 24
H3.7 Water management in Angkor 26
H3.8 The decline of Angkor 28
H3.9 The significance of Angkor 30

H4 Mongol expansion DIGITAL ONLY **1**
Timeline 2
H4.1 Geography 4
H4.2 Nomadic life and society 7
H4.3 A significant individual 9
H4.4 The Mongol army 13
H4.5 Mongol expansion and conquered peoples 17
H4.6 Mongol rule in China 21
H4.7 Consequences of Mongol expansion 24

H5 Polynesian expansion DIGITAL ONLY **1**
Timeline 2
H5.1 The geography of Polynesia 4
H5.2 The origin and spread of Polynesian settlers 6
H5.3 Polynesian society 8
H5.4 Use of environmental resources 12
H5.5 Everyday life in Maori society 16
H5.6 Cultural legacies of Maori society 20

4 Renaissance Italy **73**
Timeline 74
4.1 Italian city-states 76
4.2 Everyday life 78
4.3 Art and architecture 82
4.4 Science and technology 84
4.5 Thinking and literature 86
4.6 Florence 88
4.7 Legacy of the Renaissance 90
4.8 Significant individuals 92

H6 The Spanish conquest of the Americas DIGITAL ONLY **1**
Timeline 2
H6.1 Pre-Columbian life in the Americas 4
H6.2 Life in an Aztec city 6
H6.3 Life in an Inca city 8
H6.4 The beliefs of the Aztecs and the Incas 10
H6.5 The Spanish arrive in the Americas 12
H6.6 First contact 16
H6.7 Impacts of the conquest 18
H6.8 Long-term effects of colonisation 20
H6.9 Significant individuals 22

SECTION 2
GEOGRAPHY

5 Geography toolkit **97**
5.1 Key concept: Environmental worldviews 98
5.2 Maps 100
5.3 Topographic maps 102
5.4 Drawing cross-sections 104
5.5 Latitude and longitude 106
5.6 Photographs 108

6 Landscapes and landforms **111**
6.1 Landscapes and landforms explained 112
6.2 The changing Earth 114
6.3 Rocks and the rock cycle 118
6.4 Mountain building 120
6.5 Weathering, erosion and deposition 122
6.6 Valuing landscapes 126
6.7 Landscapes and national identity 128
6.8 Case study: Indigenous perspectives on landscapes and landforms 130
6.9 Human impacts on landscapes 132
6.10 Protecting landscapes 136
6.11 Indigenous land management 140
6.12 World Heritage listing 142

7 Coastal landforms **147**
7.1 Processes shaping coastlines 148
7.2 Erosional landforms 152
7.3 Depositional landforms 154
7.4 Coastal landscape degradation 156
7.5 Managing coastal landscapes 160
7.6 In the field: Investigating coasts 164

Contents *continued*

8 Geomorphic hazards 169
8.1 Earthquakes 170
8.2 Case study: Asia's tsunamis 172
8.3 Volcanoes 174
8.4 Volcanoes transforming landscapes 176
8.5 Volcanic landscapes in Australia 180
8.6 Mass movements 184
8.7 Mudslides 186
8.8 Avalanches 188
8.9 Living in areas of risk 190
8.10 Bushfires in Australia 192
8.11 Surviving bushfires 196

G1 Alpine landforms DIGITAL ONLY **1**
G1.1 Alpine landscapes 2
G1.2 Glacial landforms and processes 4
G1.3 Alpine ecosystems 8
G1.4 Managing Australia's alpine environments 10
G1.5 Australia's alpine national parks 14

G2 Riverine landforms DIGITAL ONLY **1**
G2.1 Rivers 2
G2.2 Riverine landforms 6
G2.3 In the field: Investigating rivers 10
G2.4 People's impact 14
G2.5 Case study: Bow River catchment 18

G3 Desert landforms DIGITAL ONLY **1**
G3.1 Deserts 2
G3.2 Desert landforms 6
G3.3 Case study: The Sahara 8
G3.4 Case study: Monument Valley, USA 12
G3.5 Australian deserts 14
G3.6 Desertification 18

9 Urbanisation 199
9.1 Urbanisation: Growth and impacts 200
9.2 People and large cities 204
9.3 Australia's population distribution 206
9.4 USA's urban settlement pattern 210
9.5 Australia's internal migrations 212
9.6 Case study: Indigenous Australians 214
9.7 China's internal migrations 216
9.8 International migration 220
9.9 Australian migration 224
9.10 Australia's cultural diversity 226
9.11 International migration and urban lifestyles 228

10 Managing urbanisation 231
10.1 Environment and large cities 232
10.2 Impacts of large cities 234
10.3 Managing growth of cities 236
10.4 Sustainable cities 240
10.5 Case study: Melbourne 244
10.6 Case study: Canberra 246
10.6 Case study: Shenzhen, China 250

SECTION 3

CIVICS AND CITIZENSHIP

11 Civics and citizenship toolkit 253

11.1 What skills do you need to be an active citizen? 254
11.2 Posing questions and researching civics and citizenship issues 256
11.3 Analysing and interpreting sources 258
11.4 Solving problems and making decisions 260
11.5 Communicating and reflecting 262

12 Governing Australia 265

12.1 The Australian Constitution 266
12.2 The separation of powers 268
12.3 The three levels of government 271
12.4 Houses of Parliament 276
12.5 Changing the Constitution 280
12.6 Australia: Freedoms 284
12.7 Freedom of speech 286
12.8 Freedom of association and assembly 288
12.9 Freedom of religion and movement 290
12.10 Australians and democracy 292

13 Laws in action 297

13.1 The development of laws 298
13.2 Australia's legal system 302
13.3 Criminal and civil law 304
13.4 Principles of justice 307
13.5 The law and you 310
13.6 Aboriginal and Torres Strait Islander law 312

SECTION 4

ECONOMICS AND BUSINESS

14 Economics and business toolkit 315

14.1 Questioning and research 316
14.2 Analysis and interpretation 318
14.3 Economic reasoning, decision making and application 320
14.4 Reflection and communication 322

15 Understanding markets 325

15.1 Types of markets 326
15.2 Buyers and sellers 328
15.3 Setting market prices 330
15.4 Allocation of resources 334
15.5 Case study: Online markets in Australia 336
15.6 Case study: The stock market in Australia 338
15.7 The government and the market 340

16 Work futures 343

16.1 What workers want 344
16.2 Working for society and the economy 348
16.3 Ways people work 352
16.4 Workforce changes 355
16.5 Future work 358

Glossary 362
Attributions 370
Index 373

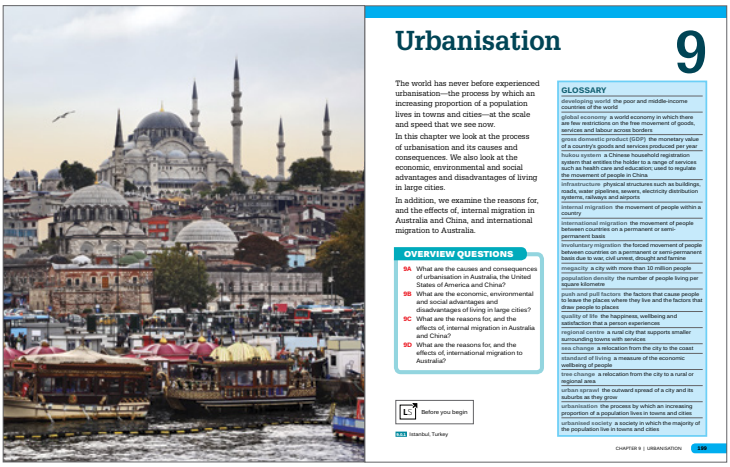
How to use this book

Student resources

Pearson Humanities Victoria 8 uses subtle learning strategies to introduce, reinforce, differentiate, deepen and accelerate learning for students. The student resources provide a comprehensive coverage of the **Victorian Curriculum for the humanities** and are fully supported by an innovative digital offering. Elective chapters are available in print, digital or through customisation, and all the content chapters are fully supported by Lightbook Starter and Student Reader+ resources. Students are set for success with this complete solution for learning about the humanities!

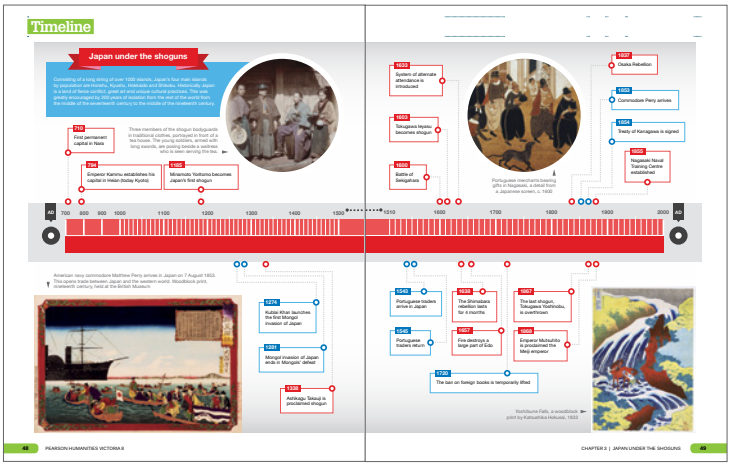
Be set

The **chapter opening page** sets the context for the chapter by engaging students through ideas that get them thinking about the content and concepts to come. The key vocabulary for each chapter is presented in the **chapter glossary**, which helps students to prepare for discipline-specific terminology. The stunning chapter-opening imagery and overview questions help to frame students' thinking about the chapter before they begin.



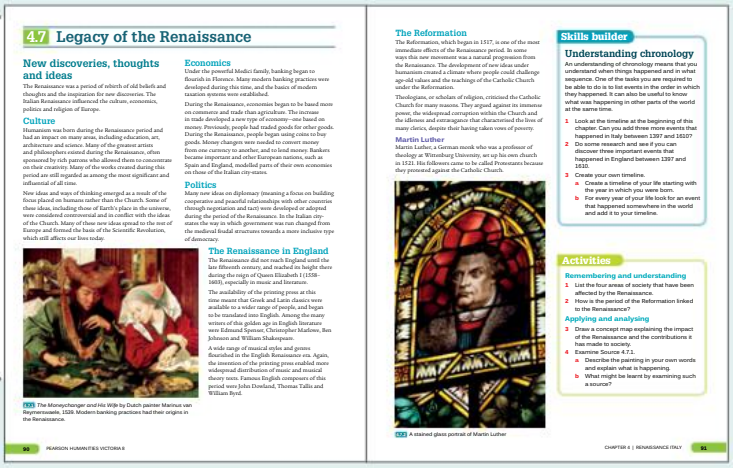
Be engaged

The spectacular **photos**, **illustrations**, **maps**, **timelines** and **infographics** are relevant and purposefully selected to build students' understanding of the text. A dedicated series literacy consultant, Dr Trish Weekes, has helped to craft the content so that it is accessible and contains enhanced scaffolding and explanation for students. The content's design is also geared towards **improving readability and navigation** of the text, and the maps comprise inset **locator maps** to aid students' understanding of physical geography.



Be skilled

Each **skills builder** outlines a subject-specific method or technique for students to master; they are instructive and self-contained, and step students through key skills to prepare and build student fluency and application. **Toolkit chapters** for each discipline cover key concepts and skills from the Victorian Curriculum and are tailored for Level 8. There are also additional graphic organisers and useful templates available for students via the Student Reader+.



4.7 Legacy of the Renaissance

New discoveries, thoughts and ideas

The Renaissance was a period of rebirth of old beliefs and thoughts and the inspiration for new discoveries. The Italian Renaissance influenced the culture, economies, politics and religion of Europe.

Culture

Humanism was born during the Renaissance period and had an impact on many areas, including education, art, architecture and science. Many of the greatest artists and philosophers existed during the Renaissance, often sponsored by rich patrons who allowed them to concentrate on their creativity. Many of the works created during this period are still regarded as among the most significant and influential of all time.

New ideas and ways of thinking emerged as a result of the focus placed on humans rather than the Church. Some of these ideas, including those of Earth's place in the universe, were considered controversial and in conflict with the ideas of the Church. Many of these new ideas spread to the rest of Europe and formed the basis of the Scientific Revolution, which still affects our lives today.

Economics

Under the powerful Medici family, banking began to flourish in Florence. Many modern banking practices were developed during this time, and the basics of modern taxation systems were established.

During the Renaissance, economies began to be based more on commerce and trade than agriculture. The increase in trade developed a new type of economy—one based on money. Previously, people had traded goods for other goods. During the Renaissance, people began using coins to buy goods. Money changers were needed to convert money from one currency to another, and to lend money. Bankers became important and other European nations, such as Spain and England, modelled parts of their own economies on those of the Italian city-states.

Politics

Many new ideas on diplomacy (meaning a focus on building cooperative and peaceful relationships with other countries through negotiation and tact) were developed or adopted during the period of the Renaissance. In the Italian city-states the way in which government was run changed from the medieval feudal structures towards a more inclusive type of democracy.

The Renaissance in England

The Renaissance did not reach England until the late fifteenth century, and reached its height there during the reign of Queen Elizabeth I (1558–1603), especially in music and literature.

The availability of the printing press at this time meant that Greek and Latin classics were available to a wider range of people, and began to be translated into English. Among the many writers of this golden age in English literature were Edmund Spenser, Christopher Marlowe, Ben Johnson and William Shakespeare.

A wide range of musical styles and genres flourished in the English Renaissance era. Again, the invention of the printing press enabled more widespread distribution of music and musical theory texts. Famous English composers of this period were John Dowland, Thomas Tallis and William Byrd.

LS1 *The Moneychanger and His Wife* by Dutch painter Marinus van Reymerswaele, 1539. Modern banking practices had their origins in the Renaissance.

The Reformation

The Reformation, which began in 1517, is one of the most immediate effects of the Renaissance period. In some ways this new movement was a natural progression from the Renaissance. The development of new ideas under humanism created a climate where people could challenge age-old values and the teachings of the Catholic Church under the Reformation.

Theologians, or scholars of religion, criticised the Catholic Church for many reasons. They argued against its immense power, the widespread corruption within the Church and the idleness and extravagance that characterised the lives of many clerics, despite their having taken vows of poverty.

Martin Luther

Martin Luther, a German monk who was a professor of theology at Wittenburg University, set up his own church in 1521. His followers came to be called Protestants because they protested against the Catholic Church.

LS2 A stained glass portrait of Martin Luther

Skills builder

Understanding chronology

An understanding of chronology means that you understand when things happened and in what sequence. One of the tasks you are required to be able to do is to list events in the order in which they happened. It can also be useful to know what was happening in other parts of the world at the same time.

1 Look at the timeline at the beginning of this chapter. Can you add three more events that happened in Italy between 1397 and 1610?
2 Do some research and see if you can discover three important events that happened in England between 1397 and 1630.
3 Create your own timeline.
   a Create a timeline of your life starting with the year in which you were born.
   b For every year of your life look for an event that happened somewhere in the world and add it to your timeline.

Activities

Remembering and understanding

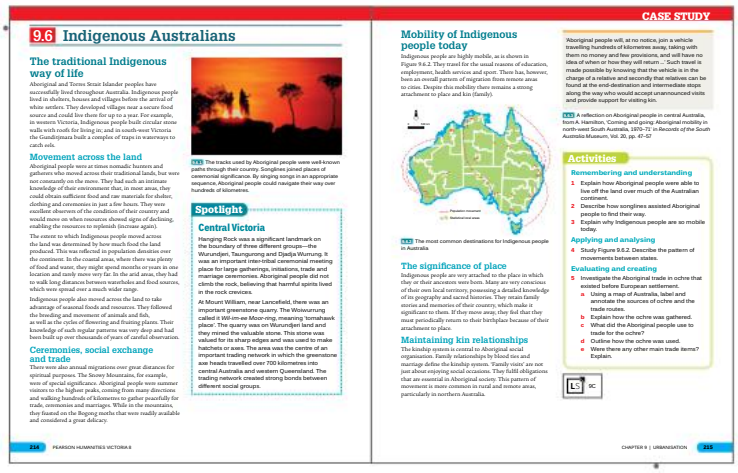
1 List the four areas of society that have been affected by the Renaissance.
2 How is the period of the Reformation linked to the Renaissance?

Applying and analysing

3 Draw a concept map explaining the impact of the Renaissance and the contributions it has made to society.
4 Examine Source 4.7.1.
   a Describe the painting in your own words and explain what is happening.
   b What might be learnt by examining such a source?

Be extended

The **case study** units relate to a specific event or location, and are written to extend students' knowledge and understanding. The **spotlight** boxes focus their attention on a place, an issue or a concept relating to the unit; they are designed to develop students' knowledge and understanding of the ideas and processes that are central to the Level 8 study of the humanities. The **in the field** units in the geography section provide a step-by-step guide to undertaking and evaluating fieldwork; they have been written as a guide and are not tied to a specific location, so they can be used with fieldwork studies the class is undertaking.



9.6 Indigenous Australians

The traditional Indigenous way of life

Aboriginal and Torres Strait Islander peoples have successfully lived throughout Australia. Indigenous people lived in shelters, houses and villages before the arrival of white settlers. They developed villages near a secure food source and could live there for up to a year. For example, in western Victoria, Indigenous people built circular stone walls with roofs for living in; and in south-west Victoria the Gunditjmara built a complex of traps in waterways to catch eels.

Movement across the land

Aboriginal people were at times nomadic hunters and gatherers who moved across their traditional lands, but were not constantly on the move. They had such an intimate knowledge of their environment that, in most areas, they could obtain sufficient food and raw materials for shelter, clothing and ceremonies in just a few hours. They were excellent observers of the condition of their country and would move on when resources showed signs of declining, enabling the resources to replenish (increase again).

The extent to which Indigenous people moved across the land was determined by how much food the land produced. This was reflected in population densities over the continent. In the coastal areas, where there was plenty of food and water, they might spend months or years in one location and had to move very far. In the arid areas, they had to walk long distances between waterholes and food sources, which were spread over a much wider region.

Indigenous people also moved across the land to take advantage of seasonal foods and resources. They followed the breeding and movement of animals and fish, as well as the cycles of flowering and fruiting plants. Their knowledge of such regular patterns was very deep and had been built up over thousands of years of careful observation.

Ceremonies, social exchange and trade

There were also annual migrations over great distances for spiritual purposes. The Snowy Mountains, for example, were of special significance. Aboriginal people were summer visitors to the highest peaks, coming from many directions and walking hundreds of kilometres to gather peacefully for trade, ceremonies and marriages. While in the mountains, they feasted on the Bogong moths that were readily available and considered a great delicacy.

LS3 The tracks used by Aboriginal people were well-known paths through their country. Songlines joined places of ceremonial significance. By singing songs in an appropriate sequence, Aboriginal people could navigate their way over hundreds of kilometres.

Spotlight

Central Victoria

Hanging Rock was a significant landmark on the boundary of three different groups—the Wurundjeri, Taungurong and Djadja Wurrung. It was an important inter-tribal ceremonial meeting place for large gatherings, initiations, trade and marriage ceremonies. Aboriginal people did not climb the rock, believing that harmful spirits lived in the rock crevices.

At Mount William, near Lancefield, there was an important greenstone quarry. The Woiwurrung called it *Wil-im-ee-Moor-ring*, meaning 'tomahawk place'. The quarry was on Wurundjeri land and they mined the valuable stone. This stone was valued for its sharp edges and was used to make hatchets or axes. The area was the centre of an important trading network in which the greenstone axe heads travelled over 700 kilometres into central Australia and western Queensland. The trading network created strong bonds between different social groups.

CASE STUDY

Mobility of Indigenous people today

Indigenous people are highly mobile, as is shown in Figure 9.6.2. They travel for the usual reasons of education, employment, health services and sport. There has, however, been an overall pattern of migration from remote areas to cities. Despite this mobility there remains a strong attachment to place and kin (family).

LS4 The most common destinations for Indigenous people in Australia

The significance of place

Indigenous people are very attached to the place in which they or their ancestors were born. Many are very conscious of their own local territory, possessing a detailed knowledge of its geography and sacred histories. They retain family stories and memories of their country, which make it significant to them. If they move away, they feel that they must periodically return to their birthplace because of their attachment to place.

Maintaining kin relationships

The kinship system is central to Aboriginal social organisation. Family relationships by blood ties and marriage define the kinship system. 'Family visits' are not just about enjoying social occasions. They fulfil obligations that are essential in Aboriginal society. This pattern of movement is more common in rural and remote areas, particularly in northern Australia.

Aboriginal people will, at no notice, join a vehicle travelling hundreds of kilometres away, taking with them no money and few provisions, and will have no idea of when or how they will return ... Such travel is made possible by knowing that the vehicle is in the charge of a relative and secondly that relatives can be found at the end-destination and intermediate stops along the way who would accept unannounced visits and provide support for visiting kin.

LS5 A reflection on Aboriginal people in central Australia, from A. Hamilton, 'Coming and going Aboriginal mobility in north-west South Australia, 1970–71' in *Records of the South Australia Museum*, Vol. 20, pp. 47–57

Activities

Remembering and understanding

1 Explain how Aboriginal people were able to live off the land over much of the Australian continent.
2 Describe how songlines assisted Aboriginal people to find their way.
3 Explain why Indigenous people are so mobile today.

Applying and analysing

4 Study Figure 9.6.2. Describe the pattern of movements between states.

Evaluating and creating

5 Investigate the Aboriginal trade in ochre that existed before European settlement.
   a Using a map of Australia, label and annotate the sources of ochre and the trade routes.
   b Explain how the ochre was gathered.
   c What did the Aboriginal people use to trade for the ochre?
   d Outline how the ochre was used.
   e Were there any other main trade items? Explain.

Be progressed

The student book **activities** reinforce key understandings and extend students beyond the text by involving them in a variety of learning experiences; they are crafted using Bloom's taxonomy to cater for the full range of learning abilities to move learners towards what they are expected to know and to help them consolidate that knowledge. Many of the activities are based on the stimulus material presented in the chapters, to facilitate the development of the skills.

There are handy icons in the student book to indicate the best time for students to engage with the corresponding **Lightbook Starter** assessment module. These formative assessment modules link back to overview questions at the start of the chapter.



4.4 Science and technology

Understanding the world

As people embraced new sources of knowledge and entered a new period of thinking during the Renaissance, they began to want to understand the world around them. Studies of the world and how it worked started a new age of science. During this time, science and art were closely linked and often great artists, such as Leonardo da Vinci, would study sciences such as anatomy to have a better idea of how to represent the body in their art.

Scientific principles

The scientific thinkers of the Renaissance proposed the idea that the philosophers and principles of the ancient Greeks might not be completely accurate.

Their new system of philosophy developed what is now called the scientific principles of observation, enquiry and experimentation. This system replaced the previous acceptance of the traditional view of nature and the surrounding world as forces beyond human control, following no rules that humankind could understand.

The application of these new scientific principles during the Renaissance began a period of significant development known as the Scientific Revolution. This was the emergence of modern science that transformed the views people had of society and nature. Increased understanding and knowledge in the areas of astronomy, chemistry, physics, mathematics, engineering and geography took place.

LS6 An illustration representing the Copernican or heliocentric system of the universe. Nicolaus Copernicus (1473–1543) was a mathematician and astronomer. He developed the astronomical model known as heliocentrism, which was a major event in the history of science. An engraving by Andreas Cellarius, 1661

Astronomy

Some of the developments in astronomy during the Renaissance:

- In 1543, Nicolaus Copernicus observed the sun and how it related to the rest of the universe. As a result, he came up with the theory that the sun was at the centre of the universe (heliocentrism). His views are commonly known as the **Copernican theory**. Before this, people had believed that the Earth was the centre of the universe. Of course, at the time not many people believed Copernicus.
- In 1609, Johannes Kepler developed three major laws of planetary motion, which enabled the orbits of the planets to be calculated mathematically. This was of enormous significance to the study of both astronomy and physics.
- In 1610, Galileo Galilei invented the telescope, which allowed him to discover four moons orbiting Jupiter, and also advanced the study of astronomy greatly.

Technology

The most important invention of the Renaissance was the printing press. This significant technological development was invented by Johannes Gutenberg, a German craftsman and inventor. Gutenberg developed a way of printing books using moveable type; that is, it was possible to reuse separate pieces of type by simply rearranging the individual letters in the required order to form different words. This revolutionised printing as it allowed information to be distributed to a wide audience quickly and easily. Gutenberg's invention spread after he printed 200 copies of the Bible and sold them at a fair in Germany. By 1500, more than 2500 cities in Europe had printing presses and over 35 000 books were in circulation.

Other significant inventions during the Renaissance include the first mechanical clock, the flashing toilet, the screwdriver, the submarine, cannons and muskets.

Did you know?

Leonardo da Vinci, as well as being an artist, was an engineer, sculptor, architect, inventor, mathematician, philosopher and military adviser. His detailed notebooks included designs for inventions such as the aeroplane, the helicopter, the parachute, a submarine, the tank, a machine gun and contact lenses. See Unit 4.8 to learn more.

LS7 The printing press, invented by Gutenberg in 1450

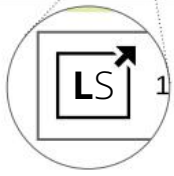
Activities

Remembering and understanding

1 Define the term 'scientific principles'.
2 Explain why the invention of the printing press was significant.

Applying and analysing

3 Imagine that you are able to travel back in time to interview one of the scientists or inventors of the Renaissance.
   a Write a list of five questions that you would like to ask.
   b Write the answers you believe would be given.
4 Choose one of the inventions listed in this unit and design an advertisement for it explaining the features of your invention and how it will revolutionise its field.



Lightbook Starter

The **Lightbook Starter** is a cutting-edge **formative** and **summative** assessment platform, containing **complementary sets of questions** for reviewing the student book's units and chapters. These digital questions serve as an alternative or additional assessment opportunity for students who enjoy the benefits of **instant feedback**, **hints** and **auto-correction**.

Students and teachers can enjoy the visibility of learning through a progress tracker that shows each student's achievement against selected curriculum learning outcomes.



Be ready

The **before you begin** section includes useful preparatory material and questions to **activate** the **prior knowledge** of students and to establish their knowledge baselines. In addition, the expected **learning outcomes** present the key knowledge of the chapter in a student-friendly manner.

Be assessed

A variety of **interactive question types** with **hints** and **solutions** help students to check their understanding of what they are learning; these tools provide scaffolding and guidance to students so that they can confidently attempt review questions in class or at home. The module reviews are useful as a revision device to help students identify their areas of weakness or as a **formative assessment** to inform teachers in their lesson planning. The Lightbook Starter can also be used by students to check their understanding throughout the chapter; students benefit from the Lightbook Starter's **auto-corrected** responses that re-teach key concepts and provide them with instant feedback.

Be in control

The Lightbook Starter enables teachers and students to use a digital assessment tool as an alternative or addition to the questions in the student book. The Lightbook Starter's structure mirrors the overview questions on each chapter opening of the student book so that it provides a **fully integrated approach to digital assessment** and feedback.

Be reflective

An integrated set of **reflection** questions support students in considering their progress and future areas for focus. Students are frequently prompted to reflect on what they've learnt, and how they've worked.

Be tracked

Students can enjoy seeing progress through the learning outcomes that are updated instantly in the **progress tracker**; the progress tracker **teacher dashboard** shows where the learners are in their learning and is mapped to Victorian Curriculum content descriptors.

Teacher Reader+

The **Teacher Reader+** makes lesson preparation easy by combining additional teaching strategies and ideas for class activities along with differentiation and EAL/D support. Suggested solutions are also included, as well as all the answers to the student book activities.

Be prepared

The **chapter resource summary** for each chapter provides an easy reference point and overview for teachers; there are also categorised activity references for each student book unit to help make tailored lesson planning easier. Full **answers**, including suggested alternative solutions, to all the activities are also supplied. Further, each unit's **learning objectives** are clearly stated.

Be supported

The **teacher guide** offers a range of ideas to introduce students to each new topic, as well as to spark and activate their prior knowledge in the subject area. There are also skills continuum rubrics for each discipline. Further, students can be encouraged to track their progression on the continuum throughout their learning.

Be differentiated

The **differentiated rich task worksheets** help learners to increase their fluency in using specific skills and to demonstrate their understanding of key concepts. The rich tasks are differentiated along three complexity levels to support different entry points for students. There is an accompanying **rubric** for each task that teachers can give students upfront to more explicitly define their goals.

Be report-ready

Students' understanding can be tested by using the ready-made **Lightbook Starter chapter assessment**. This **summative assessment** can be assigned by teachers; alternatively, teachers can use the **printable and editable chapter test** format available via the Teacher Reader+.



Student Reader+

Reader+ is our next generation eBook. Students can read, take notes, save bookmarks and more—anywhere, anytime.

Be equipped

Integrated resources and interactive activities enhance and extend the learning experience, helping to engage students, and give them choice and flexibility in their learning.


BEUCHAT
Master Lift
VX10

History toolkit 1

History is a record or account of past events, people, places and ideas. It shows us patterns in human behaviour throughout different civilisations, empires, nations and peoples. Sometimes broad patterns repeat, but there are always new circumstances. Knowing about history helps us to understand the present and prepare for the future.

OVERVIEW QUESTIONS

1A What is history?
1B What skills do historians need?
1C How do historians use sources to find out what happened in the past?

GLOSSARY

ab urbe condita Latin for 'from the [time of the] founding of the city [of Rome]'

AD/CE *anno Domini* (after the birth of Christ)/of the Common Era

ancient history the period from when humans began to produce written records

archaeologists professional workers who recover and analyse material remains such as artefacts

BC/BCE before the birth of Christ/before the Common Era

BP before the present

chronology the order (sequence) of events

civilisation when large groups of people live together in complex and well-developed ways

corroborating verifying information by searching a range of sources

deciphered decoded or translated

evaluate to judge the accuracy or reliability of a source

evidence primary and secondary sources

historians professional workers who research and write about the past

interpretations the views of people after the period of study (often found in secondary sources)

perspectives the views of people in the period of study (often found in primary sources)

prehistory the time before human civilisations

primary source a document or item created in the period of study

secondary source a document or item created well after the period of study

1.0.1 A marine archaeologist holding an amphora, collected from the underwater excavation of the harbour at Caesarea Maritima, Israel. This harbour was commissioned by King Herod the Great in 21 BC. Amphorae are ancient two-handled pottery jars, used to store wine or olive oil. Photographed off the coast of Israel, near modern-day Tel Aviv.

1.1 What is history?

Prehistory and ancient history

The period before civilisation is called **prehistory**. **Ancient history** began when humans started to produce written records. The earliest written records are usually simple lists of what people owed other people for goods. Ancient history was from around 3500 BC (BCE). The period corresponds with the rise of **civilisations**, where large groups of people lived together in complex and well-developed ways. Ancient civilisations contained some of the earliest **evidence** of religion, commerce, culture, law and social development. The first civilisations were those of Sumer, Egypt and India. However, there is evidence of Aboriginal and Torres Strait Islander societies dating back over 60 000 years.

Why study history?

History helps to explain why things are the way they are today; for example, why people in Australia drive on the left-hand side of the road, or why most Argentines speak Spanish. A good understanding of history is also useful when planning for the future because it shows common patterns of human behaviour and can help people avoid problems. Studying history teaches you many skills that you can need in other subjects and in the workplace, such as how to collect data and evidence, how to analyse that evidence, how to construct an argument, and how to communicate your findings to others. Better still, learning about the way people lived in the past is a form of time travel. It is fun to find out about the key moments of human drama that have shaped our world.



1.1.1 An inscription carved in stone showing cuneiform writing. Thousands of carvings and clay tablets provide us with information about almost every aspect of life in ancient Sumer.

Activities

Remembering and understanding

1 What marked the change from prehistory to ancient history?

Applying and analysing

2 Why might it be difficult to identify the purpose of an ancient artefact such as a cuneiform tablet (Source 1.1.1)?

1.2 Introducing historical sources

Historians and **archaeologists** construct accounts of what has happened in the past from the 'pieces of the puzzle' that are available from source material. Source material can be classified as either primary or secondary.

Primary sources

Primary sources are sources that were created at or around the time being studied. There are three main types of primary source material: written, spoken and preserved.

Written

For example: inscription, map, letter, diary, photo, artwork

Spoken

For example: oral history, audio recording, film or video interview

Preserved

For example: temple, tomb, axe, canopic jar

1.2.1 Primary sources



Finding primary source material can be difficult. Some primary sources have been destroyed. Often, using primary source material is difficult as well. Obviously, not being able to read ancient Greek will be a problem if your source is written in ancient Greek. Even when the primary source is in your own language there can still be obstacles. For example, in today's usage a 'craze' may be the latest fashion, but it used to mean a crack in the glaze of pottery a hundred years ago.

1.2.2 An artefact such as this glass perfume pot from ancient Greece is a primary source. It is on display in the Ashmolean Museum at the University of Oxford, UK.

Artworks can be valuable primary sources. They not only tell us about artistic techniques and materials, but also about what people thought, hoped for and feared. For instance, images of the Christian heaven produced in Europe during the Middle Ages often show rich pastures and the presence of saints and cherubs (a type of angel often depicted as a winged child). When an understanding of these images is combined with an understanding of other artefacts that have survived (such as churches and religious sculptures) historians are able to produce comprehensive accounts of religious life in medieval Europe.



1.2.3 A written source from ancient Rome, such as this inscription of a letter (in Greek) from the Roman governor of Achaea to the Greek city of Dyme, is a primary source. This inscription is in the Fitzwilliam Museum at the University of Cambridge, UK.

Did you know?

First-hand accounts of life in ancient Rome

Valuable primary sources about ancient Rome are found in the works of Marcus Cicero (106–43 BC), a Roman statesman, lawyer, philosopher and orator. He wrote fourteen books, fifty-eight speeches and 800 letters.

Secondary sources

Secondary sources were created well after the time being studied. Often these are created by historians, but they can also be created by other people who represent the period, such as a historian, novelist or a filmmaker.

Historian



For example: Mary Beard (Roman Empire), Eric Hobsbawm (revolutions and empires), Bruce Pascoe (Aboriginal agriculture)

Novelist



For example: Leo Tolstoy (*War and Peace*), Charles Dickens (*Great Expectations*), Kate Grenville (*The Secret River*)

Filmmaker



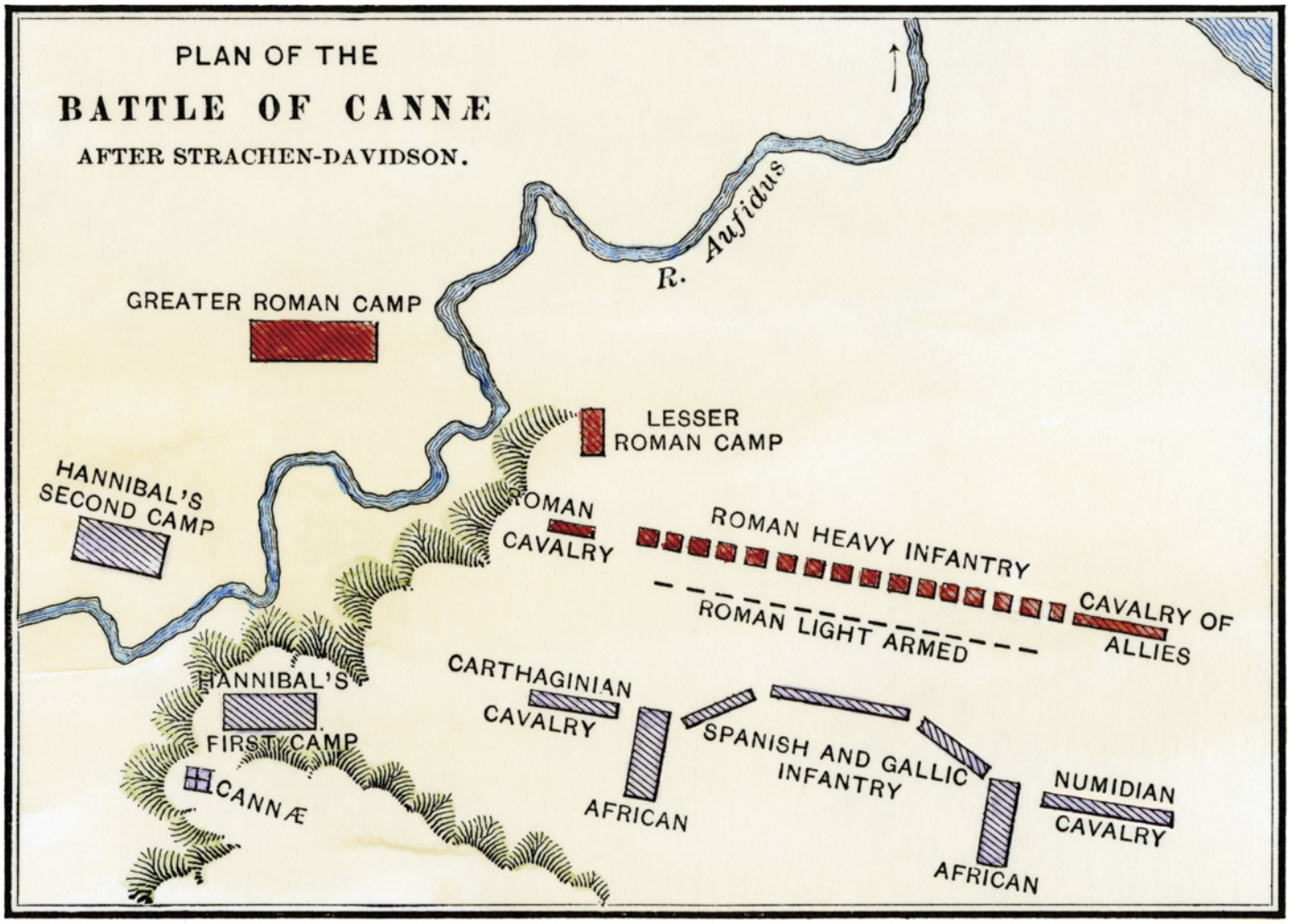
For example: Christopher Nolan (*Dunkirk*), Sofia Coppola (*Marie Antoinette*), Ridley Scott (*Gladiator*)

1.2.4 Secondary sources

When secondary sources are produced by historians, they are constructed from primary sources and the work of other historians. These secondary sources recount events of the past. They also generalise, analyse, interpret and evaluate these events in the light of common or popular viewpoints associated with their own period.

Interpreting sources

How do we make sense of, or interpret, source material? Sometimes this is difficult, especially if we don't understand the language the source is written in. For example, Linear A is a form of writing used by the Minoans that has not been **deciphered** (translated or decoded) in modern times. Sometimes we need further information before correctly interpreting a source, such as finding out that ***ab urbe condita*** means 'from the [time of the] founding of the city [of Rome]'.



1.2.5 This map is a secondary source. It deals with the Battle of Cannae, in which Hannibal (a famous general from Carthage) defeated the Romans during the Second Punic War in 216 BC.



1.2.6 An example of Linear A script, from the Minoan palace at Knossos, Crete, held by the Heraklion Museum in Greece



1.2.7 At its tallest point, the Rosetta Stone is 1.44 metres high. It weighs approximately 760 kilograms and is permanently displayed in the British Museum.

One example of interpreting a difficult source was the Rosetta Stone. Nearly 200 years ago, historians were able to develop a more accurate account of ancient Egyptian history by 'cracking the code' of the Rosetta Stone. The stone was created in 196 BC. It was a decree (an announcement) made by the then ruler of Egypt, Ptolemy V. The decree was written on the stone in three languages: the known ancient Greek and Egyptian Demotic, and the unknown ancient Egyptian hieroglyphs. The Rosetta Stone was discovered in 1799 AD, but was not fully deciphered until 1822, by Jean-François Champollion. Once the ancient Greek and Egyptian were translated, the hieroglyphs were then able to be known.

Activities

Remembering and understanding

1 Decide which of the following are primary sources and which are secondary sources. Explain why.

- **a** A mural created in 1976 commemorating the Great Depression
- **b** A 2001 historian's account of the Ottoman Empire that uses primary sources
- **c** A 2018 radio interview in which a Holocaust survivor recalls her experiences
- **d** A conference paper given by an academic in 1980 about the *Codex Mendoza*, a sixteenth-century book about life in the Aztec Empire

Applying and analysing

2 How do visual symbols such as hieroglyphs differ from other historical sources such as written accounts or tools used in the past?

Historical skills

3 What hypothesis could you make about ancient Greek society from examining the primary source in Source 1.2.2?

4 Why is the map in Source 1.2.5 a useful secondary source?

5 Why did the Rosetta Stone, shown in Source 1.2.7, prove to be a difficult source to interpret?

1.3 Historical thinking

Why think historically?

Historical thinking helps us to sort and make sense of historical information. With so many events in the past, it is important for us to know:

1 when an event occurred
2 how we know about the event
3 how the event changed things
4 why the event occurred
5 why we should care about the event now.

Historical thinking allows us to find as much 'proof' as possible so that we can understand how people lived in the past. This enables us to paint a picture in our minds of what the experiences of ancient people were and what their lives can teach us today.

Thinking like a historian helps us to develop twenty-first century skills. These include critical thinking, creativity, ethical understanding and knowledge of different cultures. Drawing on evidence and **corroborating** it (checking that it is valid and accurate against other sources) is a vital skill. In addition, corroborating evidence from sources and using it to construct an argument is an ability that is necessary in many professions.



1.3.1 Former prime minister Kevin Rudd issuing an apology to Australia's Stolen Generations in Melbourne's Federation Square on 13 February 2008. This was a highly significant event in Australia's history. The Stolen Generations are large groups of Aboriginal and Torres Strait Islander children who were removed from their families by Australian federal and state government agencies and church missions. This occurred for about 100 years from 1869.

Historical thinking concepts

The discipline of history requires five specific ways of thinking. The concepts involved in historical thinking are:

1 *chronology*—establishing when and in what order events occurred
2 *using sources as evidence*—analysing primary and secondary sources and using them to understand what happened in the past
3 *continuity and change*—evaluating how much a society changed or stayed the same over time
4 *cause and effect*—identifying how some events contributed to or directly caused other events
5 *historical significance*—understanding the importance of an object, person or event, at the time or later.

To see how these historical thinking concepts are applied to a real-life event, consider the Black Death (see Source 1.3.2).



Representation of the Black Death in the Toggenburg Bible, Switzerland, 1411

Chronology
When did it happen?
What happened before and after?

Using sources as evidence
What do historical sources say about it?
Do all sources agree on what happened?

Continuity and change
How did it change things?
What stayed the same?

Cause and effect
What caused the Black Death?
What consequences did it have at the time and later?

Historical significance
How many people were affected by it?
Why do people still talk about it?

1.3.2 Historical thinking concepts—the Black Death

Activities

Remembering and understanding

1 Why is it important for historians to corroborate evidence?
2 In your own words, list the five historical thinking concepts.

Applying and analysing

3 What kinds of primary and/or secondary sources would be useful in corroborating the following statement about the Black Death: 'In the year 1350, there was, in the kingdom of Scotland, a great plague … nearly a third of mankind died.' (*Chronicle of the Scottish Nation*, c. 1380)

Historical skills

4 Create a diagram showing how one or more of the five historical thinking concepts might be applied to the Vikings.

1.4 Chronology

The **chronology**, or order of events, is important to an understanding of the complexities of the past. Until recently, the most common way of dating events in Australia and the Western world was to use BC and AD. **BC** is an abbreviation for 'before Christ'; **AD** is an abbreviation for *anno Domini*, which is Latin for 'in the year of the Lord'. These terms show a Christian perspective that was traditional among early modern historians. Some people felt that there should be more neutral terms when we refer to dates, so a new system was devised to refer to the same years: **BCE**, or 'before the Common Era', and **CE**, or 'of the Common Era'. The use of either system is acceptable. Occasionally, the term **BP**, or 'before the present', is used to describe events that occurred in the past. Since the 'present' is always changing, this time scale can be confusing so the BP way of dating events is not common.

A timeline is a visual representation of time. Events are placed on a timeline in chronological order; that is, in the order of when they occurred, from the earliest to the most recent. Dates before 1 AD are recorded in descending order; that is, counting down towards an imaginary 'year zero'. Dates from AD are recorded in ascending order from 1 AD.

When an exact date is unknown, the convention (meaning common practice) is to place 'c.' before the estimated date. This stands for 'circa', which means approximately. You will see this convention used in timelines and associated with sources throughout this student book.

Activities

Remembering and understanding

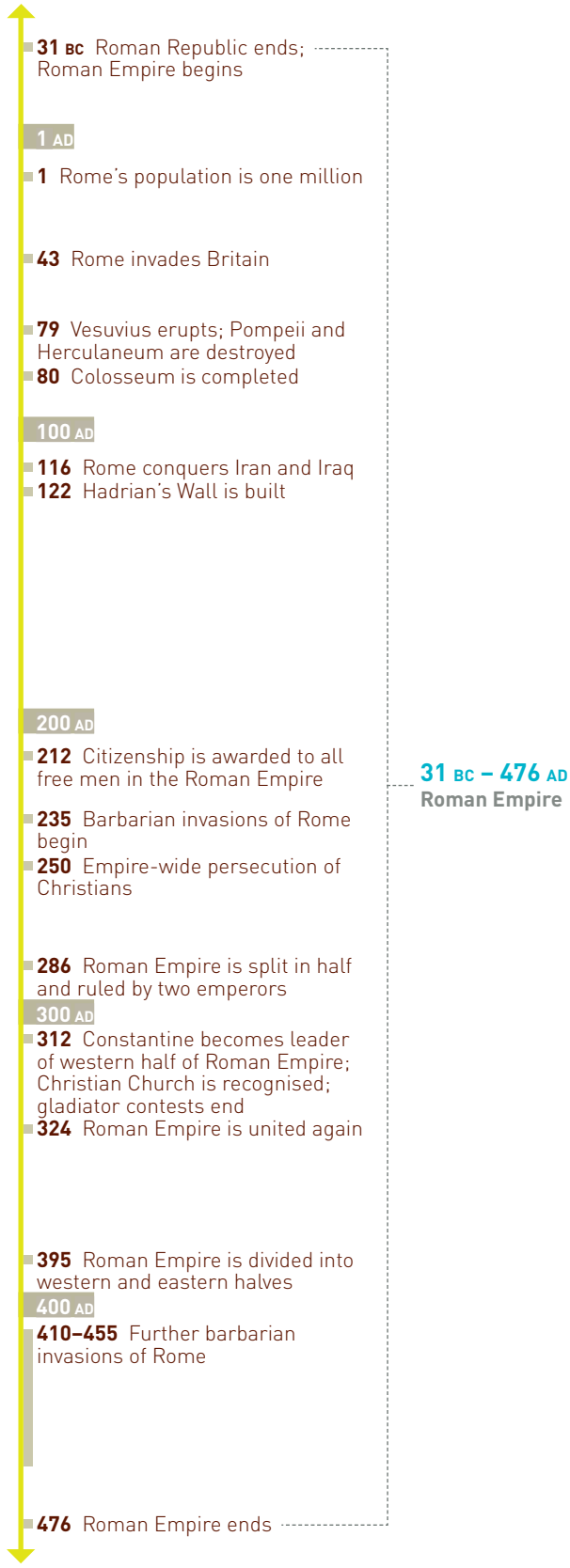
1 If the year 2001 was in the twenty-first century AD and the year 201 BC was in the third century BC, identify which centuries the following dates fall into:
   - **a** 550 BC
   - **b** 3999 AD
   - **c** 2 BC.

Applying and analysing

2 Write a paragraph explaining why the abbreviations BCE and CE are used by some historians instead of BC and AD.

Historical skills

3 Create a timeline of what you did yesterday. Look back at the previous unit and annotate your timeline with one or more historical thinking concepts. For example, can you see one event that happened as a result of an earlier event?



1.4.1 A sample annotated timeline for the period of the Roman Empire

1.5 Historical sources as evidence

Historians know about the past by working with primary and secondary sources. They collect evidence from as many sources as possible so that they can confirm what really happened. If historians only used a single source, they might be influenced by one opinion or perspective. Unfortunately, when studying ancient civilisations, we sometimes must rely on only one or two sources because there are no others available. Our understanding of an event can also change if new sources are discovered.

Good historians *ask questions* and *listen* to a source before they assume they understand it. They **evaluate** the source to assess how accurate and useful it is. One way of doing this is to corroborate the information in the source by finding other sources that agree with it or present similar information. As a general rule, if you find similar information in three trustworthy sources, you can consider the evidence fairly reliable.



1.5.1 Piltdown Man was a questionable source of evidence. Piltdown Man artefacts are exhibited at the Natural History Museum, London, UK. The 'discovery' was made by Charles Dawson in 1912 AD. In 1949, Dr Arthur Smith Woodward confirmed that Piltdown Man was the missing link between apes and humans. However, in 1953, tests on the remains cast doubt on this finding. Some researchers went so far as to brand the remains as fake. It was not until 2003 that two former British Museum employees were named as the probable hoaxers. They had a grudge against Dr Smith Woodward, who was their boss. It was established that the jawbone came from an orangutan.

Source

Type and provenance

- Is it primary or secondary?
- When and why was it created?
- Who created it?

Content

- What is it saying or communicating?
- How does it convey its message (for example, language, tone, use of symbols)?

Context

- What was happening at the time?
- How might this have influenced the creator of the source?

Evaluation

- How useful and reliable is it?
- Is it corroborated by other sources?

1.5.2 Asking questions of a source

Spotlight

Historical perspectives and interpretations

When using historical sources as evidence, it is important to consider that some sources convey historical **perspectives**, while others convey historical **interpretations**. In the context of studying history, perspectives generally refer to the views or experiences of people who were participants in the event; they are often found in primary sources. Interpretations generally refer to the views of people commenting after the event; they are often found in secondary sources. For example:

Spanish conquest of the Americas



Perspective



Aztec messenger, 1519:
Moctezuma II, ruler of Tenochtitlan, was terrified to learn how the [Spanish] cannon roared, how its noise resounded, how it caused one to faint and grow deaf. [It was like] a ball of stone ... shooting sparks and raining fire ...

Interpretation

Irwin R. Blacker, historian, 2015:
After seventy-five days, Tenochtitlan had finally been subdued by the persistent Spaniards and abandoned by its people ... The breaking of the siege of Tenochtitlan marked the beginning of Spanish rule on the mainland of the New World.

1.5.3 An example of a historical perspective and one of a historical interpretation

Activities

Remembering and understanding

1 **a** What makes a historical source 'trustworthy' or 'reliable'?
b Can we assume that someone who lived through an event is a reliable or accurate source?
c How might institutions such as museums check that their information is correct?

Applying and analysing

2 Which of the following institutions would be more trustworthy as a source of information on medieval Europe: Wikipedia or the British Museum?
Explain your answer, making sure that you consider the background of each institution.
Discuss your answer with a partner, then the class.

Historical skills

3 Decide whether each of the following sources convey historical perspectives or interpretations:
a 'A Letter Concerning Toleration' by Enlightenment philosopher John Locke, 1689, which argues that a range of religions should be allowed
b 'The Letter Concerning Toleration Briefly Consider'd and Answer'd' by Jonas Proast, 1690, which argues against Locke's view
c 'Locke: A Letter Concerning Toleration in Focus' by John Horton and Susan Mendus, 1991, which gives a twentieth-century assessment of Locke's letter.

1.6 Continuity and change

History often focuses on moments of dramatic change. However, there are also many continuities in history as well. For example, the Punic Wars between Rome and Carthage caused great social upheaval, but aspects of political life in Rome stayed the same; for example, an oligarchy (elite group) of nobles continued to control decision making in the Senate.

Historians try to judge how much an event changed things. They often do this by comparing a society before and after a significant event.

Another way to assess continuity and change is by comparing one location at two points in time. This is shown below in Source 1.6.1.

1867



Chinatown, Melbourne, illuminated at night with decorations welcoming the arrival of Prince Alfred (son of Queen Victoria)

2009



Little Bourke Street, Chinatown, Melbourne

1.6.1 Continuity and change in Chinatown, Melbourne

Activities

Remembering and understanding

1 How do historians try to judge how much an event changed a society?

Applying and analysing

2 Using Source 1.6.1, find continuities and changes in Chinatown between 1867 and 2009.

1.7 Cause and effect



1.7.1 One consequence of the terrorist attack on the World Trade Center in New York on 11 September 2001 AD was a change in US foreign policy. The new policy included a 'war on terror', so the US president at that time, George W. Bush, ordered the invasion of Afghanistan and Iraq.

A key part of historical thinking is working out the causes and consequences (or effects) of past events. Historians must piece together what happened to see how one event led to another and determine the link between the events. However, it is important to remember that one event might occur before another without necessarily causing it. Historians often must work out whether consequences were intentional or unintentional. We should take care in the assumptions that we make because we cannot know why historical actors made the choices they did. The only way we can know is if we have solid evidence about their decisions.

Source 1.7.3 identifies key causes and effects of the Italian Renaissance. The Renaissance was a period of innovation and intellectual growth in art, literature, architecture and thought that began in Italy in the fourteenth century AD and continued until the early seventeenth century. The diagram shows a link between the disruption to trade caused by the Hundred Years' War and the Medici Bank taking control of the Pope's finances following the war. The Medici family were great patrons of the arts, paying artists, architects and thinkers to create new works, which in turn helped to foster the Renaissance.

Two effects of the Italian Renaissance are identified as the spread of the Renaissance to other European countries and a revolution in scientific thought in western Europe.



1.7.2 US soldiers in Afghanistan in 2010

Activities

Remembering and understanding

1 What are two factors other than timing that you might consider when deciding if an event directly caused another?

Applying and analysing

2 Draw a cause-and-effect diagram like the one in Source 1.7.3 about a significant event in your life. Consider what happened in the lead-up to this event that caused it to occur and the effects the event had on you and your life.

Effects

Indirect or long-term

other

Scientific revolution

other

Direct

other

German, French and English Renaissance

other



Event: The Italian Renaissance (c. 1400 – c. 1600)

Causes

other

Medici Bank gains control over the Pope's finances

other

Direct

other

Hundred Years' War disrupts trade in north-western Europe

other

Indirect or long-term

1.7.3 Cause-and-effect diagram

1.8 Historical significance



1.8.1 The film *Gladiator* is set during the Roman Empire, which is a historically significant period.

Historians spend a lot of time assessing historical significance. This means working out why something mattered at the time and why it matters now. They sometimes refer to significant events as 'turning points'.

When deciding the extent to which an event or person was significant, many historians consider three things:

1 *quantity*—how many lives were affected?
2 *profundity* (seriousness)—how deeply were people affected?
3 *durability*—how long were people affected?

Using this approach, one would say that the Spanish conquest of the Americas was more historically significant than Michelangelo's painting of the Sistine Chapel, even though both were significant.

People sometimes disagree about an event's significance. For example, some Australians consider 26 January 1788 as significant for marking the beginning of Australia as a successful democratic country. Others believe it marks the invasion of Aboriginal and Torres Strait Islander land by Europeans and that an alternative date of significance to all Australians should be celebrated. As citizens, we should find out as much as we can about such events so that we can contribute in an informed way to public debates.

Did you know?

A significant Tasmanian



1.8.2 Portrait of Truganini, a hand-coloured photograph taken by Charles Alfred Woolley in 1866 AD

Truganini was a Nuenonne woman born on Bruny Island, Van Diemen's Land (now Tasmania) in c. 1812 AD. Her deep knowledge of Aboriginal languages and customs was recorded in detail by Englishman George Augustus Robinson, who later became Protector of Aborigines. Truganini assisted Robinson to find other Aboriginal Tasmanians for placement in his religious missions. She and others moved to Robinson's Flinders Island mission in 1835, where many people perished from poor nutrition and disease.

After several relocations including a trip to mainland Australia, Truganini died in Hobart in 1876. Her skeleton was exhumed two years later and placed on display in museums for many decades. On 30 April 1976, almost a hundred years after her death, Truganini's ashes were finally laid to rest near her birthplace on Bruny Island. The removal and display of ancestors' human remains has caused great distress for many Aboriginal and Torres Strait Islander people.

Activities

Remembering and understanding

1 In your own words, what are the three things that historians need to consider when deciding how significant an event or person is?

Applying and analysing

2 Select any of the following people that you think help to decide which events are deemed 'historically significant': leaders of countries, historians, writers, journalists, statisticians, scientists, artists, teachers, parents, students, historical figures. Explain the reason for your answer.

Historical skills

3 Suggest specific questions you would need to ask before assessing the significance of the Spanish conquest of the Americas in the fifteenth to sixteenth centuries.

1.9 The contribution of archaeology

Historians often rely on archaeological findings when they study previous civilisations. Archaeologists uncover most of the material evidence of earlier societies, which is usually in the form of human remains, tools and pottery.

Sometimes sites of archaeological interest are identified by accident, such as during a construction project, or when something unexpected shows up in an aerial photograph. Often technologies are used to confirm whether it is worth excavating the site; for example, ground-penetrating radar, and infra-red and thermal imaging equipment. These sophisticated technologies are used because excavation work is expensive and labour-intensive (meaning it requires a team of archaeologists often working with their hands and small tools).



1.9.1 Excavations at the Roman Forum in Rome. The site is marked out in a grid with string, a technique commonly used to assist untrained or inexperienced diggers and to ensure accurate record keeping.

Ancient Troy

Ancient Troy, on the coast of the Aegean Sea in present-day Turkey, was discovered by the archaeologist Heinrich Schliemann. It was excavated in four stages between 1871 and 1890. Ancient Troy was identified in Homer's *Iliad* as the city of King Priam.

Nine different cities were discovered in the same location (each with a different stratum, or layer of earth). The earliest Troy dates from between about 3000 and 2600 BC; the most recent, from about 334 BC to the fifth century AD.

Artefacts found by Schliemann were smuggled by him out of Turkey to Berlin, Germany. They disappeared after World War II and were rediscovered in Moscow, Russia, in 1993. This treasure included gold jewellery (earrings, hair rings, beads and pendants) and a gold sauceboat and flask.



1.9.2 A relief of a horse and rider. This artefact belongs to the eighth stratum of Troy (785–700 BC); it is currently displayed at the Canakkale Museum in Turkey.

Activities

Remembering and understanding

1 What are the most common things that archaeologists find from past civilisations?

Applying and analysing

2 Why do you think human remains are of interest to historians and archaeologists?

3 Identify an example of recent technology that has aided the work of archaeologists.

Evaluating and creating

4 Research some of the archaeological discoveries at Angkor, the capital city of the Khmer Empire (c. 802 – c. 1431), including how laser technology has assisted archaeologists. Identify one key discovery and explain what historians have been able to learn about the civilisation as a result.

Historical skills

5 In the case of the discovery of ancient Troy, what evidence is there that historians used sources other than archaeological artefacts to piece together what happened in previous societies such as ancient Troy?



The Vikings

2

The Vikings have long been regarded in history as a bloodthirsty race of seafaring warriors, with no real culture, who came in ships from the north to plunder and murder the god-fearing people of Europe for almost 300 years. Archaeological evidence shows otherwise; the Vikings had a rich oral culture and a complex, well-developed society that had a lasting impact on Europe and other far-flung lands.

OVERVIEW QUESTIONS

2A Where were the Viking lands located and what was the Viking way of life?

2B What caused the Viking expansion and what were its short- and long-term effects?

2C Why did Viking power eventually decline?

LS Before you begin

GLOSSARY

berserkers the name given to brave Viking warriors who fought in an uncontrollable, frenzied (crazed-like) state

Danelaw the area of England ruled by the 'Danes' (Vikings)

freemen people who are not slaves

Freyr the Viking god of fertility and plenty

futhark a runic 'alphabet', which was the Vikings' system of writing; the individual marks or 'letters' were called runes

jarl a rich Viking noble or landowner

karl a Viking freeman who worked for the rich nobles and landowners

knarr a Viking cargo ship

longship a long, narrow ship used by the Vikings for war and exploration

monastery a building or complex of buildings where monks live

Odin the Viking god of war, poetry and wisdom

Old Norse the language of medieval Scandinavian (Viking) countries

polytheistic to believe in more than one god

sagas stories about Viking voyages, feuds between Viking families and Viking gods and heroes

Scandinavia a region of northern Europe that consists of the modern countries Denmark, Norway and Sweden

skald a bard or poet

thing the Viking assembly that governed the community

Thor the Viking god of thunder, lightning and strength; his symbol was a hammer

thrall a Viking slave

Valhalla in Viking mythology, Valhalla was an enormous hall located in Asgard and ruled over by Odin; Vikings believed the souls of brave Viking warriors went to Valhalla

Vinland the Viking name for North America

2.0.1 The burning of a replica Viking longship at the Up Helly Aa Viking festival in Lerwick, Shetland Islands, Scotland

Timeline

The Vikings

Beyond the myths and legends, what do we really know about the people we call Vikings? The sophisticated technology of the Vikings, particularly related to shipbuilding and sailing, enabled them to reach four continents, which opened up opportunities for trade, plunder (raids) and settlement that changed the course of European history.

The fascinating world of the Vikings has been revealed through archaeological discoveries and artefacts that shed light on the Viking way of life. At the same time, these discoveries have helped to challenge the popular image of Vikings as ferocious, bloodthirsty warriors in horned helmets.

793 Viking attack on Lindisfarne, England

795 First Viking raids on Scotland and Ireland

800 Vikings settle Faroe Islands

810 Vikings attack Friesland, in the northern Netherlands

c. 840 Dublin, Ireland, founded by Vikings from Norway

844 First raids on Spain

850 First Viking raids on France

865 Vikings attack Constantinople, present-day Istanbul, Turkey

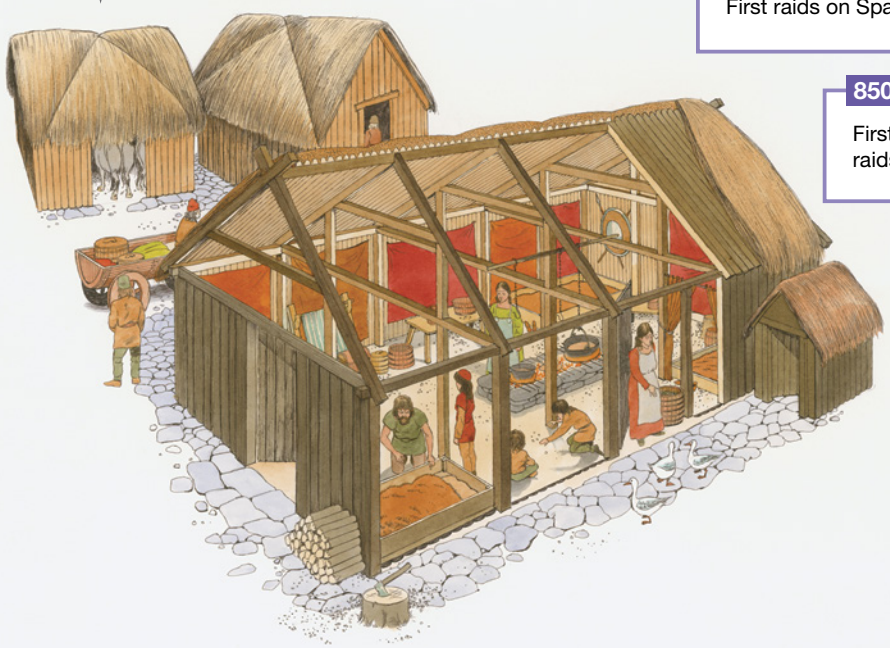
866 York captured by Vikings, who soon rule more than half of England

870 Iceland settled by Vikings from Norway

878 Danelaw in north-eastern England established through the Treaty of Alfred and Guthrum

AD 750 800 890

A sectioned view of a Viking house





A statue of Viking leader Leif Eriksson



Remains of the monastery in Lindisfarne, England

1042
An English king, Edward the Confessor, regains rule of England after a succession of Viking kings

900 1000 1100 1200 AD

911
French make a treaty with Rollo, a Viking warrior and leader

986
Erik the Red leads settlers to Greenland

c. 1000
Leif Eriksson reaches North America

c. 1010
Settlement established at L'Anse aux Meadows

1013
Svein becomes first Viking king of England

1066
Normans defeat the English king, Harold, at the Battle of Hastings, England

A section of the Bayeux Tapestry showing the defeat of the Saxons at the hands of the Normans at the Battle of Hastings in 1066



2.1 The Viking world

The Viking homelands

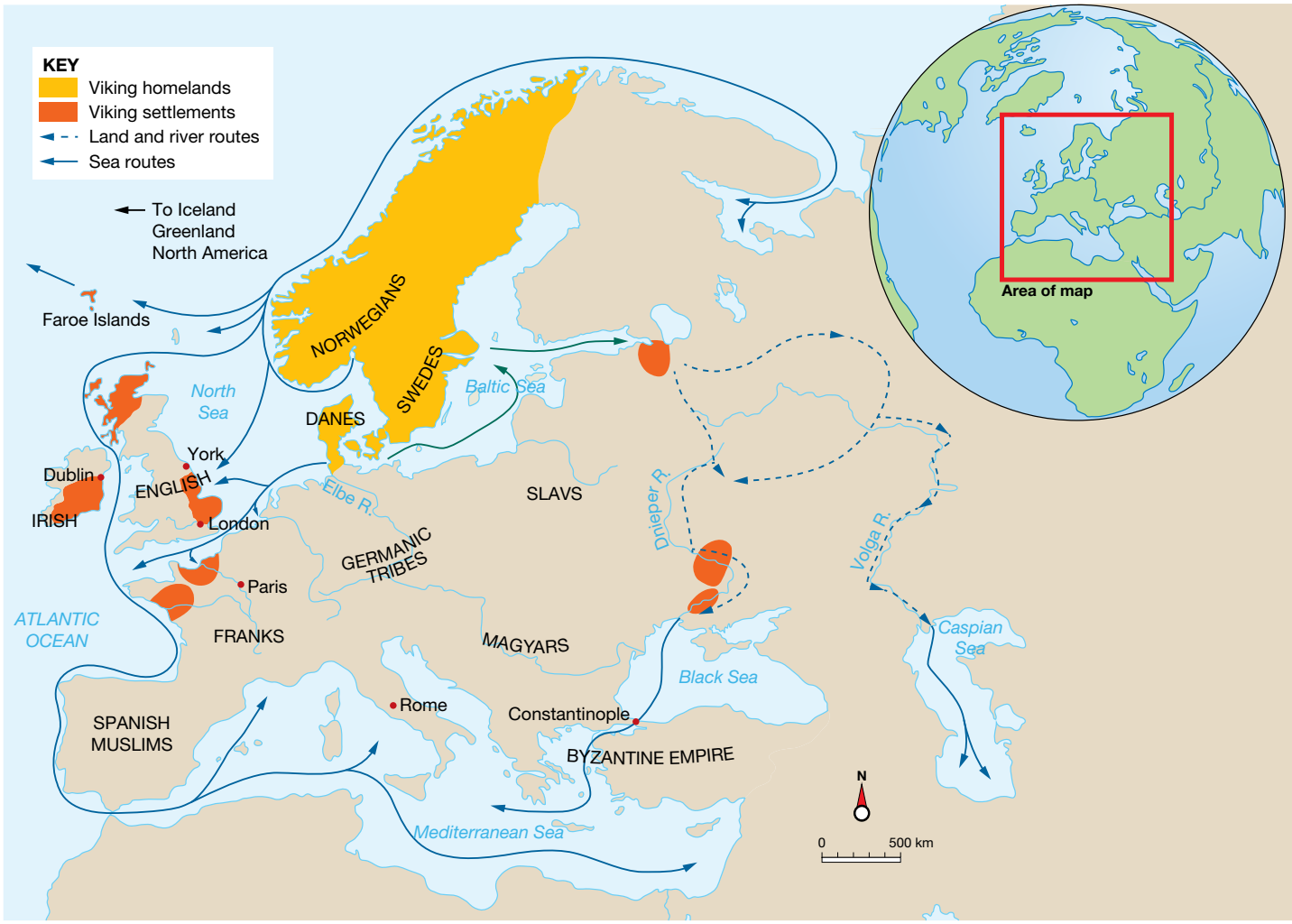
Until the end of the eighth century AD (CE), the Vikings lived in the area we now call **Scandinavia**, which today is made up of the countries we know as Norway, Denmark and Sweden. After 793, large groups of Vikings began leaving their homelands in Scandinavia, and traded and plundered (which means they raided places and stole goods of value) their way across vast distances of land and sea in search of wealth and new lands to settle. Their journeys took them from the Faroe Islands north of the United Kingdom to Greenland and North America; to England, Scotland and Ireland; to France and Spain, and even as far as Constantinople in Turkey.

Geographical features

Scandinavia is a harsh and cold environment. Norway and Sweden are mountainous, and farming and grazing land in Norway in particular is limited. During the winter months, the lands of Scandinavia are covered in snow and ice, making it very difficult for farmers to grow crops or feed their animals. Vikings were therefore forced to search for most of their food in the sea.

Shipbuilding

Most Vikings lived in villages and towns along the coast or near rivers and lakes in the countryside. This meant that trade and travel between places was usually by boat. Vikings were skilled boatbuilders, navigators and sailors. Viking ships were made from many types of wood: oak, elm, pine, larch and ash.



2.1.1 The Viking world



2.1.2 An artist's impression of a Viking ship

All ships were built with the clinker method. This means that each plank of the ship's hull slightly overlapped the plank below it, with the planks held together by iron rivets or nails. Tar and plant matter helped to fill the gaps between the planks, which was a way of keeping the ship watertight and afloat. Vikings kept their ships light, seaworthy and flexible, which they used to their advantage.

The Vikings built different types of boats and ships for different purposes. **Longships** ranged from 17 to 30 metres in length and were sometimes referred to as 'dragon ships' because their ornate prows (highly decorated front part of the ship) were carved into the shape of dragon heads. The Vikings also had trade ships with open 'holds' or storage areas in the middle of the deck, which sometimes had very large crews. Other boats were constructed for fishing and general transport.

Did you know?

It is believed that the dragon head on a Viking ship was intended to protect the ship and the sailors from sea monsters. The fearsome carving was also a good way of scaring the Vikings' enemies!

Social, cultural, political and economic features

Viking society

Viking society consisted of three main groups: **jarls**, **karls** and **thralls**.

JARL

- A jarl was a rich Viking nobleman or landowner.
- Jarls organised trading and raiding parties overseas.
- Kings and chieftains came from the jarl class of Viking society.
- Jarls were also warriors.

KARL

- The majority of **freemen** and women were karls.
- Some were landowners and took positions in government.
- Others were farmers, merchants, craftspeople and warriors.
- Karls could vote and carry weapons.

THRALL

- A thrall was a Viking slave.
- Thralls were the lowest class of Viking society.
- Most slaves were prisoners captured on raids.
- Thralls could gain their freedom through marriage, hard work or acts of bravery.
- Occasionally thralls were sacrificed to the gods.

2.1.3 An overview of Viking society

Viking government

In the eighth century, no single person or group ruled Scandinavia. Instead, various kings ruled over large areas. These kings came from royal families and claimed to be descended from a god. When a king died, a male relative succeeded (took over from) him. On occasion, a kingdom might be split up into smaller kingdoms under the control of several men. Women could not become rulers, although there is evidence that some women reached positions of great importance. Much of the running of the kingdom was left to earls appointed by the king. They collected taxes and organised the armies in times of war.

A *Thing*

Local towns and villages also created their own rules and laws and showed a relatively democratic approach to government. This means that some decision-making responsibilities were shared. An open-air meeting called a ***thing*** was held several times a year and lasted up to 7 days. At these gatherings, chiefs were elected, disputes were aired and settled, criminals judged and punishments set, and laws and taxes agreed upon for the community. All freemen were expected to attend the *thing*. Women, children and slaves were forbidden from participating.

The *thing* was also a social event and included sporting activities such as horseriding or wrestling. Merchants set up stalls with goods for sale and storytellers recited poems or **sagas** for entertainment.

Viking law and honour

In matters of law, the ideas of community, honour and shame were vitally important to the Vikings. When a dispute was being settled, whether it was to do with business, land, conflict between people or divorce, Viking law demanded that a large number of people be present to witness the settlement. In this way, people would be unlikely to go back on their word or ignore the agreed settlement because they would be shamed in the eyes of their community.

Viking punishment was based on a system of compensation. Compensation is a form of repayment, typically money, awarded to someone to make up for loss, injury or suffering. In Viking society, if you hurt or killed someone, you had to pay money to that person or their family. However, the person or family could refuse the payment and instead reserve the right to take their own revenge.

Thorwald, a mean husband, was murdered. Thorwald's father, Oswif, has come to seek compensation.

Compensation was decided upon as follows:

'For the slaying of Thorwald I award two hundred in silver'—that was then thought a good price for a man—'and thou shalt pay it down at once, brother, and pay it too with an open hand.'

Hauskuld did so, and then Hrut said to Oswif, 'I will give thee a good cloak which I brought with me from foreign lands.'

Oswif thanked him for his gift, and went home well pleased at the way in which things had gone.

2.1.4 An extract from the *Brennu-Njáls Saga* or *The Story of Burnt Njal*, Chapter 12: 'Thiostolf's flight', trans. G.W. DaSent, 1861

Another form of Viking punishment included trial by ordeal. This required the person accused of a crime to perform a task to prove their innocence. The tasks were always very painful; for example, walking on red-hot iron or picking up rocks out of pots of boiling water. If the wounds healed well, then the accused was proclaimed innocent; however, if the hands or feet blistered, the accused was found guilty of the crime and was hanged.

Vikings also used banishment as a consequence for wrongdoing. Banishment meant that a person was not allowed any contact with his family or friends. His weapons were confiscated. He was stripped of all legal rights, and if he did not flee far from his homeland he risked being hunted down and killed.

Warfare and weapons

The Vikings are often said to have emerged from a warrior society. This is reflected in their reputation as fearsome and skilled invaders. There is no evidence of formal military training—it appears that Viking fighting skills were learnt and practised as a part of everyday life. There was also a strong tradition of metalworking, shown by the types of weaponry that the Vikings used in their fearsome raids.

Viking weapons included spears, knives, axes, bows and swords. Every freeman would have been expected to carry a weapon. Most often, this would have been a spear. Axes were used as domestic tools (they were useful for jobs around the home), so would also have been common. Swords were much rarer because they were difficult to make and very expensive. They were only owned by successful Viking warriors and were passed down through generations.



2.1.5 An artist's impression of a Viking ready and armed for battle. Which features of the armour and weaponry are distinctly Viking?

Viking armour was made of simple leather or, when available, chainmail. Chainmail is a type of armour made up of chains of metal, linked together and worn over the body. Vikings also carried round shields made of wood with a central iron rod to protect the hand. The shields were often decorated with designs and bright colours. Helmets were bowl-like and made of metal, and included a nose guard.

Economy and trade

Not all Vikings were pirates who pillaged and plundered foreign lands. The Vikings were some of the most successful traders of their age. Their success was due in part to their superior shipbuilding skills. Vikings built ships called **knarrs**. These sturdy and strong vessels were able to carry up to 35 tonnes of cargo, such as timber, livestock and silver.



2.1.6 A reconstruction of a Viking village in Hedeby, Schleswig-Holstein, Germany, near the border with Denmark

Trading towns sprang up along Viking trading routes. Birka in Sweden and Kaupang in Norway are two such examples. The largest Viking trading town was Hedeby in Denmark. People could buy fur, honey, amber and wine in Hedeby, and the town became very wealthy and prosperous.

Merchants travelled across the Baltic Sea and along a number of rivers, including the Volga, in western Russia. They also travelled down the River Dnieper and across the Black Sea to Constantinople (modern Istanbul). From there, the Vikings travelled inland as far as present-day Jerusalem and Baghdad. The Vikings traded furs, skins and tusks in exchange for silk and spices. It is also most likely that they traded slaves captured in Russia.

Activities

Remembering and understanding

1 Refer to the map in Source 2.1.1.
   - a List the Viking homelands.
   - b Which seas did the Vikings travel across?
   - c Identify the present-day countries the Vikings visited.
   - d Name the countries that the Vikings settled in.

2 Outline the purpose of Viking trading expeditions.

3 Identify the three key groups in Viking society and provide one feature for each group.

4 Describe how a Viking ship was constructed. Refer to both the text and Source 2.1.2.

Applying and analysing

5 Explain why Vikings left their homelands, crossing dangerous seas to get to foreign lands. Your answer should refer to the geographical features that shaped Viking society as well as economy and trade. Write your answer in two paragraphs. Each paragraph should follow this structure:
   - a a topic sentence to introduce the subject of the paragraph
   - b evidence (e.g. geographical features, items traded or a reason for trading) to support the topic sentence
   - c a linking sentence to explain how the evidence supports the topic sentence. These linking sentences should show why the Vikings left their homelands for foreign lands.

Evaluating and creating

6 Imagine you are attending a *thing* to decide on a punishment for your neighbour. In the meeting, the crime will be outlined and an explanation for that crime given by your neighbour. You and the men of the *thing* will discuss the nature of the crime and the severity of the punishment. Write a transcript of the meeting—you want to record all that was said and done.

2.2 Everyday life in Viking society

Farming

The way that the Vikings lived was largely determined by the environment. Those Vikings that lived in the rugged country of Norway often survived and thrived through fishing and hunting animals such as bear and reindeer. Sometimes they supplemented or added to their living by trading the skins and pelts of animals they hunted. Where the land was suitable, rearing animals such as sheep, cattle, pigs and goats formed the main occupation for most people. In more temperate climates, where conditions were generally better, land was more suitable for farming crops. For example, in southern Sweden and Denmark, crops such as oats, barley, peas, cabbages and beans were grown. In good years, surplus (left over) crops were traded.

Did you know?

The Viking diet usually consisted of eggs, buttered bread, roasted horsemeat, fresh fruits and a bit of honey if the family was a little wealthier than average.

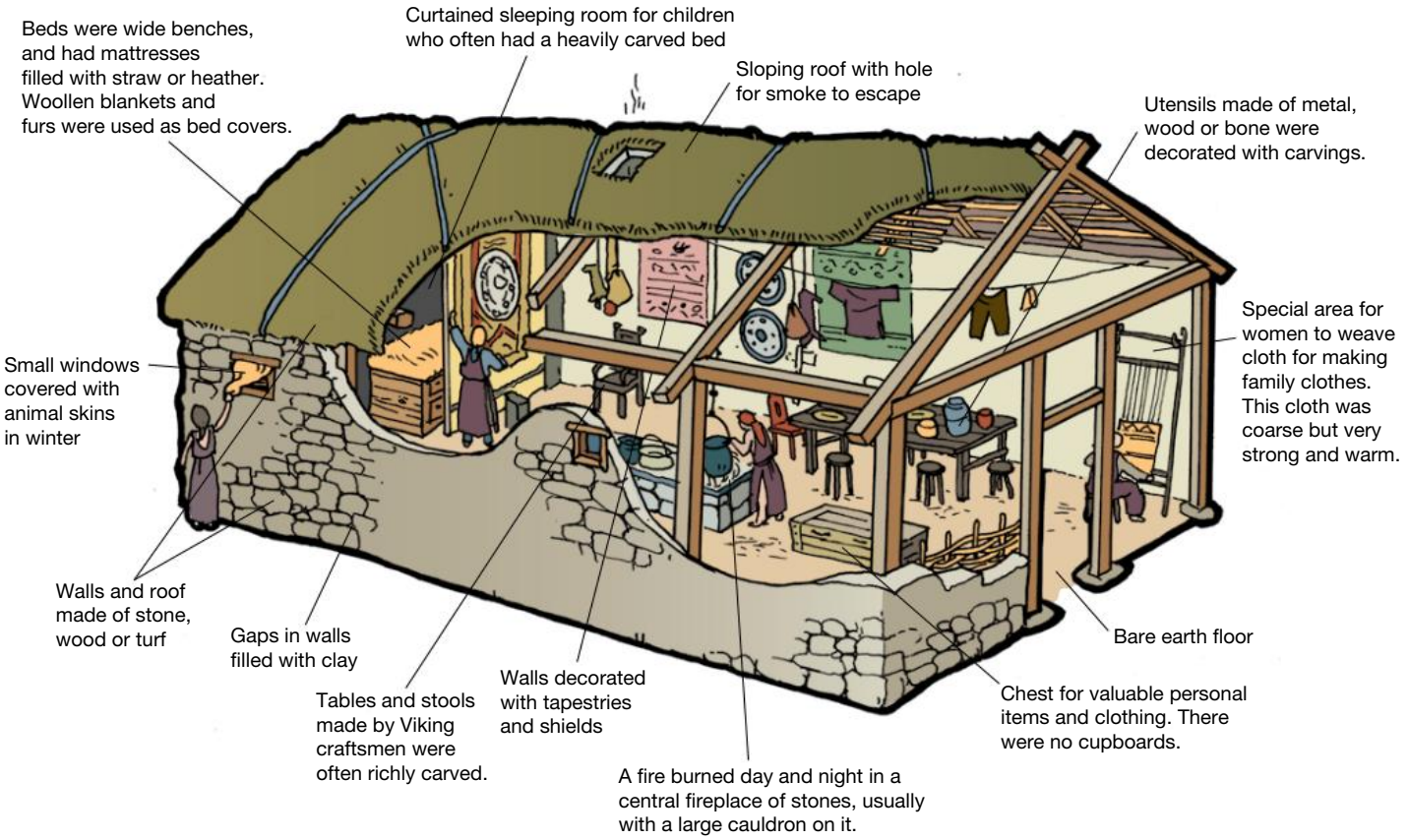
Housing

Viking houses were typically called 'longhouses'. As the name suggests, they were long (and narrow) houses made of locally available building materials. In Norway and Sweden, where lots of forests meant that timber was plentiful, the longhouses were sturdy, with solid wooden walls and roofs. The roofs were kept waterproof by layers of birch bark and turf (soil or peat), or by thatch (straw or reeds).

Most families and their animals lived under the same roof in winter. At the beginning of the Viking Age, longhouses did not have any windows—a fire in the middle of the building provided warmth, light and a means of cooking. Smoke from inside fires would escape through an opening in the roof. By the time the Vikings started on their overseas raids, many longhouses included an additional room for bathing, milking cows, smoking and storing food, and making bread. Separate areas had also been created for weaving and sleeping.



2.2.1 Remains of a Viking longhouse from the tenth century in the Faroe Islands



2.2.2 An artist's impression of the interior of a Viking longhouse

Women and children

Viking women were relatively powerful and independent in Viking society. After marriage, Viking women kept their surnames. They also looked after the keys to the family's barns and storage chests, and ran the household entirely when the men were away. Viking women had the right to divorce their husbands and it was a simple process. Either the husband or wife simply stated their desire to divorce in front of three witnesses and the marriage was over.

Viking children did not go to school but learnt their trade or household skills from their parents. Viking boys worked with their fathers. If living on a farm, this work included fishing, planting trees, growing and harvesting crops, tending animals and even cultivating bees. If their father was a boatbuilder or a craftsman, the son would accompany him from a very early age and learn skills on the job. From the age of sixteen, boys were allowed to go to battle with their fathers.

Did you know?

A recent study of the DNA found at a tenth-century grave of a Viking warrior has revealed that the remains belonged to a woman. The nature of the burial and the inclusion of weapons suggests that Viking women were warriors and military leaders.

Girls stayed at home with their mothers and would have spent a large amount of time cooking, looking after younger children and weaving. Weaving was a particularly important skill to develop because women were responsible for creating clothing and blankets for the household.

Young girls would also learn from their mothers how to milk cows, make butter and cheese, harvest grain and make bread. Viking boys and girls usually married between the ages of twelve and fifteen. It was compulsory for the bride to bring a dowry (a form of payment) to the marriage. The dowry was provided by the bride's father.

> ... Ingibjorga ... was the fairest of women. Ari, Thorkel's son, asked her to wife, and she was wedded to him. He got a great dower with her, and amongst the rest that she brought with her from her home was a man named Kol: he was of high degree, but he had been taken captive in war, and was called a thrall. So he came with Ingibjorga to Surnadale.

2.2.3 An extract from *Gísla Saga Súrssonar* or *The Saga of Gisli the Outlaw*, Chapter 1: 'The thrall's curse', trans. G.W. DaSent, 1866

Craft

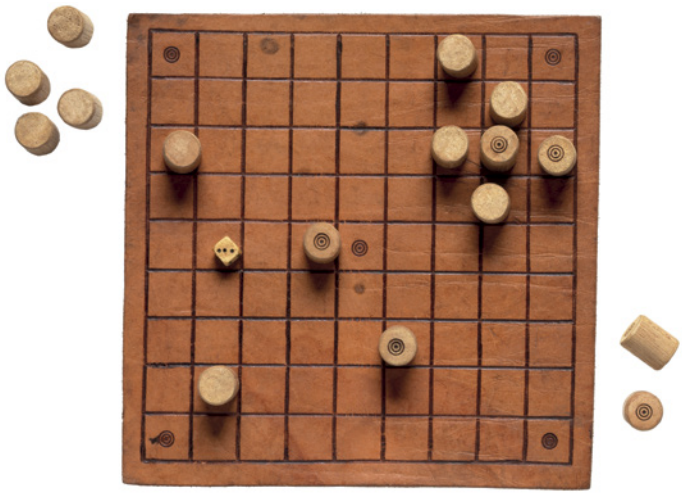
The Vikings were skilled artists and created ornaments and objects for use in their everyday lives. They carved intricate (detailed) patterns on all kinds of materials, including bone, leather, ceramics, wood, metal and stone. They also created objects for entertainment. Evidence has been found of a type of board game called *hnefatafl*, which was like the game we know as checkers or draughts. We also know they composed and sang songs, and made stringed and pipe instruments, fragments of which have been found.



2.2.4 An example of a Viking brooch



2.2.5 A Viking comb carved in the shape of a fish



2.2.6 A Viking board game called *hnefatafl*

Sagas and storytelling

The Vikings understood the world around them based not only on their experience, but through a strong tradition of stories and storytelling. It was through their stories that they remembered their past and passed on teachings and beliefs. Their stories of heroic achievement by those who lived in the past, called 'sagas', were at first passed on orally (by word of mouth). They were not written down until after the Viking Age, during the thirteenth century. The Vikings also valued poetry. Their poets were known as **skalds** and they were sometimes sent to battles so they could write poetry about the courage and great deeds of the Viking warriors. These poets also relied on word of mouth to pass on their stories.

> Sigvat did not talk quickly in ordinary language but skaldship came so naturally to him that he talked in rhymes as easily as if he were talking in the ordinary way.

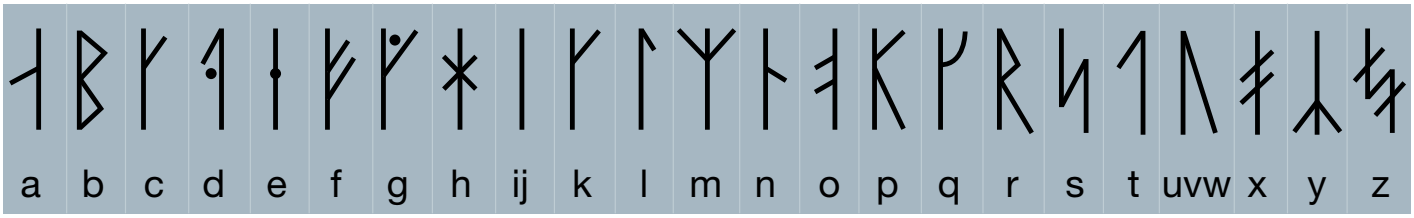
2.2.7 Snorri Sturluson (1179–1241) said this of a skald he admired. Sturluson was an Icelandic historian, poet and politician. He was one of the first people to write down the sagas.

Runes

Some Vikings could read and write. They had their own system of writing. The individual marks or 'letters' were called runes, and their 'alphabet' was called the **futhark**. Runes were scored (scratched) or carved into hard surfaces such as rock, bone or wood. There were different versions of the futhark, but each would have resembled the one shown in Source 2.2.9.



2.2.8 A Viking 'picture stone' with runic writing across the top, eleventh century



2.2.9 The runic alphabet, or futhark

Skills builder

Interpreting and evaluating sources of evidence

Why do historians need to interpret sources?

The primary sources that historians use to understand what Viking life was like can show different perspectives on the past. By examining these sources carefully, historians can make conclusions about their usefulness and reliability. Here are some inquiry questions that can help with your study of the Vikings.

- Who wrote or created the source?
- Why was the source created?
- What does the source suggest about Vikings?
- Was the source intended to be used by non-Vikings? Why or why not?

ACTIVITIES

Apply

1. Describe what a 'saga' is. How trustworthy is this type of source in communicating the history of the Vikings?
2. Use the four inquiry questions above to examine a Viking source from this chapter. Do you think the source is reliable? Why or why not?
3. What types of evidence are best for telling us how people lived in the past?

Activities

Remembering and understanding

1. List three important roles of Viking women.
2. Explain how the natural environment of the Viking homelands affected the daily life of the people who lived there.
3. Draw up a table with two columns. In one column write the heading 'Women and girls in Viking society'. In the other column write the heading 'Women and girls in the twenty-first century'. Compare and contrast the roles, position and rights of the two groups and write your responses in the columns.

Applying and analysing

4. From the point of view of a 12-year-old child, write a series of three diary entries that provide observations about daily life for children in Viking society.
5. In what ways might the runic alphabet, or futhark, have been easy to use? Why might it not have been used for writing long sagas?

LS 2A

2.3 The Norse gods and religion

The Viking mythical worlds

The Vikings thought of their world as a flat circle that was divided into three levels or worlds (imagine three discs on top of each other with a space between each). The three levels were called Asgard, Midgard and Utgard. Asgard was the top level and it was here that the Viking gods lived. The gods sometimes fought each other, as well as the giants and other beings located in other worlds. The second level was a region called Midgard, which meant 'middle world'. It was here that humans lived. Also in this region, but away from the humans, lived giants, dwarfs and dark elves. On the third level was Utgard, or the 'outer place'. This was a place of endless night, darkness and chaos. Its citadel (or strongest settlement) was Hel, a place ruled by a terrifying female goddess, also of that name. Separating Midgard and Utgard was a sea, which was home to Jormungand, a giant serpent. Jormungand encircled Midgard and held it together by biting its own tail. Binding all three levels with its roots was a great ash tree, Yggdrasill.

The Norse gods

The Vikings were **polytheistic**, meaning they worshipped many different gods and goddesses. Three of the most important Viking gods were **Odin**, **Thor** and **Freyr**, who lived in Asgard. Odin was the one-eyed god of war, warriors, knowledge and poetry. He inspired the Vikings in battle and gave them courage. Thor kept order with his hammer and was known as the god of thunder. He was the champion of farmers and he was strong and reliable. Freyr was the god of fertility and plenty. He bestowed peace and pleasure on mortals.



2.3.1 A nineteenth-century etching depicting the Viking god Thor

Viking religious practice

The Vikings had no churches or buildings in which they practised their religion. They performed their rituals in open places such as meadows, groves, rocks or the shores of swampy lakes. Some of these rituals included the sacrifice of animals. There is debate among historians as to whether or not the Vikings practised human sacrifice. Archaeologists have discovered some evidence of what appear to be the victims of sacrifice buried together with the deceased. However, there is nothing to indicate that this was common practice.

The Vikings believed very strongly in fate, which is the idea that the future is already laid out and difficult to change. They considered that the lives of their gods were as much bound by fate as people were.

Baldur was the god of light, he shone light and happiness wherever he went. One night, Baldur's mother, Frigg, began to have nightmares that foretold of Baldur's death. To avoid the fateful demise of Baldur, Frigg convinced every living thing and creature on Earth not to hurt Baldur. Content that Baldur was safe, Frigg relaxed her watchful eye. However, there was one creature that dwelled in the corner of the god's realm who had not promised. This half-god, half-human creature was called Loki and he was jealous of Baldur.

Loki planned and schemed. He made a disguise and tricked Baldur's blind brother, Hod, to throw a twig of mistletoe at Baldur. Hod did not know that this mistletoe was the only thing that could kill his dear brother. The mistletoe struck Baldur who immediately fell down dead. Everything and everyone (except for Loki) wept for Baldur.

2.3.2 'The death of Baldur' (a modern adaptation of the myth)

Death, burial and the afterlife

The Vikings believed in an afterlife, with the brave and heroic going to **Valhalla**. This was ruled over by Odin. All other people who died went to the terrible world of the goddess Hel. The dead were often buried with grave goods. These were intended to help the dead move from the human world to the afterlife. Their grave goods might include food and drink, weapons, coins, jewellery and clothes. Wealthy Vikings were sometimes buried in full-sized boats. See Sources 2.3.3 and 2.3.4 for an example.



2.3.3 The Oseberg ship photographed during its excavation in 1903

2.3.4 The Oseberg ship today on display in the Vikingskipshuset (Viking Ship Museum) in Oslo. It was discovered in a large burial mound.

Activities

Remembering and understanding

1 Identify and describe the three most important Norse gods.

2 Explain what the features of the Norse gods reveal about key beliefs and concerns of Viking society.

3 Outline the archaeological evidence that indicates the Vikings believed in life after death.

Applying and analysing

4 Explain how the story of 'The death of Baldur' in Source 2.3.2 demonstrates Viking belief in fate. Write your response in a paragraph that is structured as follows:

- **a** a topic sentence referring to the question (hint: this sentence should mention 'The death of Baldur' and the term 'fate')
- **b** evidence from 'The death of Baldur' to demonstrate an example of fate
- **c** a concluding sentence to link the evidence back to the topic sentence.

Evaluating and creating

5 Create a visual representation of the Viking mythical worlds of Asgard, Midgard and Utgard. Include Jormungand and Yggdrasill in your representation.

2.4 Viking expansion



2.4.1 Viking expansion

Exploration, trade and settlement

The Vikings travelled far beyond their homes in Scandinavia. They travelled to explore, to trade and sometimes to conquer and settle. The Swedish Vikings made their way through Russia and out to the Caspian Sea. They also journeyed as far as Constantinople (present-day Istanbul, Turkey). The Danish Vikings made their way through Germany, France, Spain and Italy. They also invaded and settled parts of Britain. The Norwegian Vikings were similarly interested in invading and settling parts of Britain, and in particular Ireland. They ventured to France, Iceland and Greenland. Many historians believe that the Norwegian Vikings made it as far as America and founded a settlement there.

Reasons for expansion

Many theories have been put forward to explain why the Vikings ventured from their homelands and began their violent raids and occupation (taking over) of other lands.

Reasons include:

- the Vikings' great sea power
- a lack of opposition
- increasing population and poverty
- political unrest
- religious conflict
- fame and fate
- trade and economic benefit.

Viking sea power

The Vikings had highly developed shipbuilding and navigational skills. They also had very capable sailors who sometimes performed the roles of traders and warriors. Their ships were ideally suited to moving swiftly and easily in both oceans and rivers. The Vikings were knowledgeable about lands near their own and were not afraid to venture into unfamiliar waters.

Lack of opposition

Using their longships, the Vikings were able to navigate around the rugged coastlines of the North Sea and elsewhere with relative ease. Using the element of surprise, they were able to attack targets such as villages and **monasteries** (places where monks live) before a defence against them could be organised. The Vikings stormed from their boats and plundered all the valuable objects they could find, often destroying everything else before leaving. Monasteries were particular targets because they often contained riches such as gold and silver crosses, chalices (ceremonial cups) and jewellery donated to monks by local Christians.

Increasing population and poverty

Rapid population growth combined with a harsh climate and Scandinavia's difficult landscape meant that people had to look beyond their homelands for suitable farming and cultivation. The custom in Scandinavia of the eldest son inheriting property on his father's death meant that in families with many sons all but one had to look elsewhere if they wanted to own land. Disputes over land and property were decided by the simple drawing of lots (chance), and the loser was cast out of his homeland. One saga tells the story of a famine-struck island: when lots for land were drawn, one in three families was forced to leave the island with all their possessions.

From their voyages of trade and exploration, and later their raids on villages and monasteries in England, the Vikings learnt that the lands to the south, and eventually to the east and west, might be suitable for them to settle.

Did you know?

The fiercest Viking warriors were known as **berserkers**. The word comes from the **Old Norse** word *berserkr*, meaning 'bear shirt', because it is thought that Viking warriors may have worn animal skins, including bearskins. These warriors frightened their enemies by charging at them in an uncontrollable fury, screaming and biting their shields. The expression 'to go berserk' comes from them.



2.4.2 This twelfth-century chess piece shows a wild-eyed berserker biting his shield with battle fury.

Political unrest

When increasing numbers of people are in competition for the same resources, such as farming and grazing land, there is bound to be conflict. In Scandinavia, war and conflict sometimes occurred between the various kingdoms for these very reasons. Migration (moving to another country) then became an attractive option for those who suffered the consequences of this violence and unrest.

Following the fall of the Western Roman Empire during and after the fifth century AD, there were no strong central rulers or governments in northern Europe. Kings or warlords battled neighbours trying to capture their territory and wealth. Foreign raiders were also very keen to capture land. With weakened defences, invaders were often able to attack and take over land.



2.4.3 Viking Iron Age swords, Jutland, Denmark

Religious conflict

By about 750, much of Western Europe was under the control of Christian rulers. Some of these rulers dealt harshly with those people who were not Christians. Charlemagne, also known as Charles the Great, was Christianity's most famous leader of the time. During the 770s, he embarked on a vicious campaign of converting the pagan Saxons to Christianity, which included forced conversion, mass executions and forced resettlement.

For example, in 782 at Verden, just south of Denmark, Charlemagne forcibly baptised 4500 Saxons and then had them executed. These atrocities sparked the desire for revenge and gave the Vikings yet another reason for occupying Christian lands.

Belief in immortality and fate

The Vikings were very familiar with the concept of fame. They believed that victory in battle, the discovery of new land and the possession of great wealth would create a lasting memory of them and make them immortal (meaning that they would live forever). They were expected to be adventurous and fierce, and face death bravely. A person's death, in fact, was commonly believed to have been decided at birth by the Norns, the mythological rulers of destiny.

> Fearlessness is better than a faint heart for any man who puts his nose out of doors. The length of my life and the day of my death were fated long ago.

2.4.4 From 'Skírnir's journey', one of the poems of the Poetic Edda, a collection of old Icelandic poems on mythical and religious subjects

Trade and economic benefit

Vikings travelled in pursuit of new lives and opportunities for themselves and their families. Vikings traded widely and set up merchant towns along popular trading routes. They were arguably the most successful traders of their time. The Norse merchant ships were often loaded with heavy goods such as timber, livestock and silver. The Vikings were also effective importers. Wool, furs and fish from Iceland, and skins and tusks from Greenland were commonly traded in Viking markets.

Did the Vikings discover America?

Christopher Columbus is widely recognised as the first European to reach North America in 1492. However, there is written evidence of Viking trips to **Vinland** (as the Vikings called North America) in two historical accounts: *The Saga of Erik the Red* and *The Saga of the Greenlanders* (known collectively as the Vinland Sagas). These epic tales were probably written down around 1200 or 1300 by scribes who either recorded the oral stories of the elders or copied another written source that is now lost.

The sagas tell of three expeditions to Vinland. The first was accidental: Bjarni Herjólfsson, on a voyage from Norway to Iceland to see his father, was blown off course until he neared a strange and unknown land. He sailed alongside this land for three days but refused to land.

The second expedition was planned: Leif Eriksson led a voyage to find the new world accidentally discovered by Bjarni. Leif is credited by many historians as being the first person from Europe to set foot on American soil.



2.4.5 *Leif Eriksson Discovers America*, oil on canvas, by Norwegian painter Hans Dahl (1849–1937)

Thorfinn Karlsefni led the third voyage, and according to the sagas settled there for some years. Both sagas claim that Thorfinn abandoned the settlement due to conflict with the Native Americans.

Thorfinn never returned to Vinland; however, archaeological evidence shows that other Vikings did. The Vikings traded skins with both Inuit and tribes who lived further south, and they regularly brought back wood and other items from this new continent. Various accounts have placed Viking colonies in the areas now known as Maine and Rhode Island and elsewhere on the Atlantic Coast. However, the only settlement for which the evidence is certain remains the site of L'Anse aux Meadows.

L'Anse aux Meadows

In 1960, Norwegian explorer Helge Ingstad, searching for possible Viking Age landing places in North America, discovered the settlement of L'Anse aux Meadows on the island of Newfoundland in Canada. Excavations carried out by his team over the next eight years found many pieces of evidence to support the hypothesis that what they had found was once a Viking settlement. This evidence included:

- the lower sections of walls of eight buildings, dated to the eleventh century
- long, narrow fireplaces in the middle of some of those buildings
- a cloak-fastening pin
- a stone oil lamp
- part of a spindle (for weaving)
- a fragment of a bone needle
- a sharpening stone
- evidence of iron-working and smelting
- a significant number of iron boat nails.



2.4.6 A Viking longhouse at L'Anse aux Meadows National Historic Site, Newfoundland

Further excavation work from 1973 to 1976 uncovered evidence of carpentry and a more detailed understanding of the iron-working at the site. Certain buildings were used as workshops for specialised activities. When the archaeologists had completed their work, they covered all their trenches and excavations with white sand and a layer of new turf to protect the site from the weather and possible damage.

There are different meanings given to the placename 'Vinland' by linguists (who study languages) and historians. Some translate it as 'Wine land', but other sources give us different definitions such as 'Vine land', 'Pasture land' or 'Meadow land', hence the name given to this site, L'Anse aux Meadows.

Activities

Remembering and understanding

1. Refer to the timeline at the beginning of the chapter. The period called the Viking Age is rather short, starting from about 790 to the Battle of Hastings in 1066. In what year was the first Viking attack on Lindisfarne, England?
2. According to the timeline, in approximately what year is Leif Eriksson believed to have reached North America?
3. Refer to Source 2.4.1.
   - a. Identify the largest region settled by the Vikings.
   - b. In which century did Viking expansion peak?
   - c. Identify the regions and countries that the Vikings frequently raided.
   - d. In which centuries was Scandinavia settled by the Vikings?
4. List all the countries that the Vikings either settled or raided.
5. In one to two paragraphs, explain why the Vikings left their homelands.
6. From which sagas does the evidence for the Viking discovery of America come from?
7. Create a PMI chart for Viking contact with America.

Applying and analysing

8. Create a Viking poster advertising travel to other lands. In your poster you will need to focus on one key reason for Viking exploration and the potential outcomes.
9. In two teams of three, prepare a debate on the following topic: 'The Vikings were opportunistic in their desire to travel beyond their homelands'.
10. 'History is shaped by those who wrote it.' What does this mean? What does this mean for the history of the Vikings?

Evaluating and creating

11. How was the L'Anse aux Meadows site preserved after the 1976 excavations? What other ways might there have been of preserving the artefacts and other discovered evidence of settlement? What method of preservation would be best for a site like this?
12. Compare the seven different theories outlined in 'Reasons for expansion'. Which reasons do you think may have been the most influential? Why?

2.5 Viking conquest

Raids in Western Europe

Vikings who went on raids were not members of a full-time army. Instead, they chose to join the raiding party for many different reasons. Some were driven out of their own territory because of local conflict; others wanted wealth to purchase land of their own or settle elsewhere; and some wanted to prove themselves in the eyes of others or achieve their own measure of fame.

Lindisfarne

The first recorded Viking raid on the country now known as England was in 789 and involved three ships from Norway. The first major raid came in 793, when the **monastery** at Lindisfarne was attacked by Viking raiders. Many sources note the ferocity of the attack, highlighting the horror of the surviving monks who witnessed the slaughter of many of their fellow monks and the terrible destruction that occurred.

> This year came dreadful fore-warnings over the land of the Northumbrians, terrifying the people most woefully; these were immense sheets of light rushing through the air, and whirlwinds, and fiery dragons flying across the firmament. These tremendous tokens were soon followed by a great famine: and not long after, on the sixth day before the ides of January in the same year, the harrowing inroads of heathen men made lamentable havoc in the church of God in holy-island [Lindisfarne] by rapine [violent robbery] and slaughter.

2.5.1 The Anglo-Saxon Chronicle for 793, trans. Rev. J. Ingram, 1823

> In the same year the pagans from the northern regions came with a naval force to Britain like stinging hornets and spread on all sides like fearful wolves, robbed, tore and slaughtered not only beasts of burden, sheep and oxen, but even priests and deacons, and companies of monks and nuns. And they come to the church at Lindisfarne, laid everything waste with grievous plundering, trampled the holy places with polluted steps, dug up the altars and seized all the treasure of the holy church. They killed some of the brothers took some away with them in fetters, many they drove out, naked and loaded with insults, some they drowned in the sea.

2.5.2 Simeon of Durham (c. 1090 – c. 1128), monk and historian of Durham Priory, writing of Viking attacks more than three centuries after those events, in his book *A History of the Kings of England*, 1855



2.5.3 Ruins of Lindisfarne Monastery. These ruins are the remains of a monastery rebuilt in the eleventh century. Archaeologists are still trying to find the exact location and evidence of the original monastery that the Vikings raided.

Other monasteries along the coasts of England, Scotland and Ireland were also raided within a number of years of the attack on Lindisfarne. The attacks resulted in widespread fear of the Vikings.

> ... never before has such terror appeared in Britain as we have now suffered from a pagan race ... Behold, the church of St Cuthbert spattered with the blood of the priests of God, despoiled of all its ornaments; a place more venerable than all in Britain is given as a prey to pagan peoples.

2.5.4 Alcuin of York, late eighth century, describing a raid on a monastery in present-day Scotland

Iona

Iona, an island off the coast of western Scotland, also suffered at the hands of the Vikings. This was a holy island and had been an important base from which Christianity had spread throughout Scotland. Iona was first attacked by Vikings in 795. The Vikings returned to Iona a number of times over the next three decades, repeating their plunderous raids. In 806, the Vikings murdered more than eighty monks on a beach in a particularly brutal attack. Today, this place is known as Martyrs Bay. (A martyr is someone who dies for a cause that they believe in. In the case of the Iona martyrs, that cause was Christianity.)

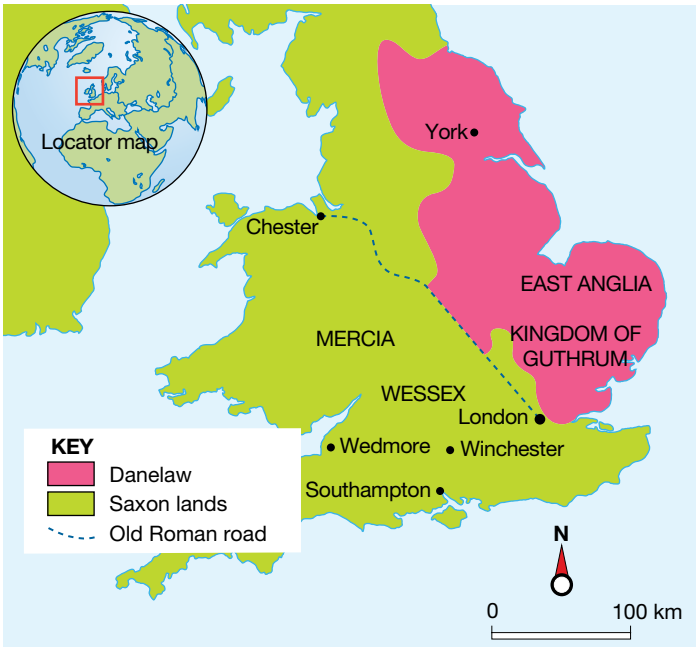


2.5.5 A modern artist's impression of the Viking raid on Iona Abbey in 806

The Vikings' impact on England and Scotland

The arrival of the Vikings in England and Scotland had a significant impact on the native people. Within 30 years of their arrival, the Vikings controlled much of north-eastern England. To maintain peace, they demanded that the English pay them a tribute (a kind of tax), called the Danegeld ('Dane's gold'). This payment was usually made in silver. There was much fighting between the Viking settlers and the English. But in 886, the English king, Alfred the Great, defeated the Vikings and established a peace treaty. The treaty was intended to ensure that the Vikings stayed north of the old Roman road, which ran from London to Chester in an area later called the **Danelaw** (see Source 2.5.6). The defined Viking territory was also intended to make it clear which laws people would answer to in which areas. The term 'Danelaw' literally means 'the land where Danish law applies'.

Living in England also had an impact on the Viking invaders. Over time the Vikings became part of the local populations and adopted many of the customs and habits of the local people, including their religion. This meant that the Vikings began to accept Christianity as their religion too. Although, their version of Christianity included some aspects of their former pagan religion.



2.5.6 The division of England after King Alfred's peace treaty with the Vikings in 886

Jorvik (York)

Much of our understanding of how Vikings lived in England comes from the archaeological record. A great example of this is the town the Vikings called Jorvik, known today as York. In its time, Jorvik was one of the busiest and richest trading towns in Britain. In 866, Danish Vikings captured the wealthy Anglo-Saxon town of York and renamed it Jorvik. Goods from Viking territories in Europe, Russia and Scandinavia passed through Jorvik's busy port near the junction of the Ouse and Foss rivers (the Ouse was Jorvik's link to the North Sea). Norwegian Vikings ruled Jorvik from 919 and, with the earlier rule by the Danish Vikings, Jorvik was the centre of the Kingdom of York for almost 100 years. By the time the Vikings lost control of Jorvik in 954, large numbers of Vikings had already settled there and been absorbed into the local population. It is estimated that, by the year 1000, Jorvik may have had a population of 10 000 people. The Domesday Book of 1086 records Jorvik (known again by its original name of York) as being second to London in wealth and size.

Excavations of Jorvik

Two major archeological digs in York have provided valuable insights into the way people lived in Jorvik during the Viking era. This includes the construction and layout of their buildings, how people made a living, what they ate, and the goods that they made and sold. The first dig occurred in 1972 when archaeologists dug three trenches and found up to 9 metres of archaeological layers dated to the Viking Age. The damp and peaty soils had preserved all kinds of organic materials such as wood, animal bones, plants and seeds, and leather and cloth, including shoes and remnants of clothing.

Further archaeological riches were uncovered in a major excavation that was carried out in the Coppergate area of York between 1976 and 1981. Along with burial sites and skeletons, the dig also uncovered approximately a quarter of a million pieces of pottery, which researchers were able to date. They were used to determine how and where the objects were made and, importantly, what they were used for. The tonnes of animal bones and oyster shells uncovered provided evidence of what Vikings ate.



2.5.7 York's Viking history is celebrated at the Jorvik Viking Festival held every year in February and includes spirited re-enactments of Viking battles as shown in this image.

Timber used for building was also found, along with thousands of Roman tiles that had been repurposed by the Vikings for a range of other uses. Metalworking waste (known as slag) provided important insight into technology in the Viking settlement and how it evolved over time. Finally, among the 20 000 assorted objects archaeologists found were a small mouth organ, a barrel lock and key, a wooden board game, ice skates made from animal bones and a delicate silk bonnet believed to have come from the Byzantine Empire (present-day Turkey). Finds such as the silk bonnet provide important evidence of the extent of the Viking empire and the Vikings' trading activities.



2.5.8 A shoe discovered in the excavations of Jorvik (York)



2.5.9 An archaeological dig at Coppergate in York in the 1970s

LS 2B

Activities

Remembering and understanding

1. Use a Venn diagram to compare and contrast the similarities and differences between Sources 2.5.1, 2.5.2 and 2.5.4.
2. According to Alcuin of York in Source 2.5.4, why did the English fear the Vikings?
3. Describe the Danelaw. In your answer, make reference to Source 2.5.6.
4. What impact did England have on the Vikings?

Applying and analysing

5. Use the timeline at the beginning of the chapter to calculate the number of years between the first Viking raid and when Danelaw was established.
6. Conduct some internet research to find out the dates of some other significant Viking raids. Add these events to a new timeline. You can create your own timeline online, using sites such as sutori.com.
7. **a** Identify evidence from Sources 2.5.1, 2.5.2 and 2.5.4 that shows the English feared Viking attack.
   b Use the evidence from Question 7a to write a one- to two-paragraph response to the question: 'Explain why the English feared Viking invasion.'

Evaluating and creating

8. Use Sources 2.5.1, 2.5.2 and 2.5.4 to write a newsflash describing the attack on the monastery at Lindisfarne.

2.6 Viking rule over England and its decline

Viking kings on the English throne

The establishment of the Viking self-rule region, the Danelaw, in the north in the 880s, led to a period of prosperity. Increased wealth, especially in Jorvik (now York), attracted attacks from other Vikings on the Danelaw and this, combined with further conflicts with the English, meant that Viking political and military power in England and over the Danelaw went though a period of decline. From 910, Alfred's son and successor, Edward the Elder, controlled much of the Danelaw.

The Vikings continued to dream of ruling all of England, however, and Svein became the first Viking king of England in 1013. His rule lasted for a short time, and after his sudden death, his son Cnut took over the throne. King Cnut ruled from 1016 to 1035. In an attempt to establish better relations with the English, Cnut married Emma, the widow of the defeated English king, Ethelred. Emma and Cnut had a son, Harthacnut, but she had also had a son, Edward, by Ethelred. Edward succeeded his half-brother, Harthacnut, to the English throne. He was known as Edward the Confessor (1042–1066).

King Harold

When the childless King Edward died, his council met to elect a new king. The council could find no suitable candidate from the English royal family and so they decided to make Harold Godwinson, Earl of Wessex, the new king. Harold had Danish royal blood on his maternal (mother's) side and he had been running the kingdom in the final years of Edward's reign. However, not everyone was pleased with his appointment and he faced challenges from those who believed they had an equal claim to the English throne.

A Viking challenger

The Norwegian Viking king Harald Hardrada believed himself to be the best warrior in the Christian world. He saw no reason why a Viking should not rule England again. Hardrada set off for the north of England with a fleet of 360 longships. In September 1066, they landed in Yorkshire. After a fierce battle, the city of York surrendered to the Vikings.

The new English King Harold was facing serious problems. Hardrada was invading England from the north and enjoying a good deal of success. To make the situation worse, there was a second claimant to his throne: William, Duke of Normandy. William claimed that King Edward had promised him the English throne and he was determined to see the promise kept. Harold had to decide whether or not to march north to confront Hardrada, which meant leaving the south of England unprotected against an attack from William and his Norman army.

Viking defeat

Concerned that Hardrada would strengthen his control in Yorkshire and become a greater enemy, King Harold decided to march north in the hope that he would defeat Hardrada and make it back to the south in time to confront William. Harold's army marched over 300 kilometres in 6 days and caught the Viking army unawares. He killed Hardrada and most of the Viking soldiers at the Battle of Stamford Bridge on 25 September 1066. The English victory was so successful that only twenty-four longships were needed to carry the Viking survivors home. While celebrating the victory feast, Harold learnt that William had landed in the south of England.

Norman invasion and victory

After his victory at Stamford Bridge, King Harold gathered his army together and marched south to resist William's threat. Unfortunately for Harold, his defeat of the Vikings in the north of England had left him vulnerable. His troops were exhausted from long marches and fighting. Harold and his tired soldiers met William and his army outside Hastings. Despite fighting bravely into the evening, the English were defeated by the Normans, who had a much larger army and quickly surrounded them. King Harold was killed in the battle. The Battle of Hastings is now one of the most famous English battles, since it was the last time England was ever invaded and began a new era of Norman control.

Had Harold not been forced to leave William's landing on the south coast unopposed, and then face him with an army that had probably suffered significant losses, was ill-prepared and weary, then the outcome may have been very different.

2.6.1 On the Battle of Stamford Bridge, 25 September 1066, by G. Foard and T. Partida, 2005

Did you know?

- The Normans were descendants of Vikings who had settled in Normandy, in present-day France around 900 AD.



2.6.2 Norman soldiers crossing the English Channel in 1066, a scene from the Bayeux Tapestry. This giant tapestry recorded the Battle of Hastings and the Norman invasion.

Activities

Remembering and understanding

1 How did Harold Godwinson become king of England?

2 Look at the ship in Source 2.6.2. What Viking influences can you see in the Norman fleet?

Applying and analysing

3 What reasons are provided for Harold's defeat at the Battle of Hastings in Source 2.6.1?

4 Imagine you are the newly crowned King Harold Godwinson. Write a series of three to five journal entries describing how you are attempting to keep the throne of England safe from invaders.

Evaluating and creating

5 What problems might have faced a Viking fleet once it reached a foreign shore? Write a brief report on this question, considering such aspects as:

- the people they encountered
- repairs to ships and equipment
- supply of food and drink, shelter.

Use the information you already have as well as your imagination.

6 Use the internet and your library to find information to answer the following questions:

a What might have caused the Vikings to be so aggressive in their dealings with other people?

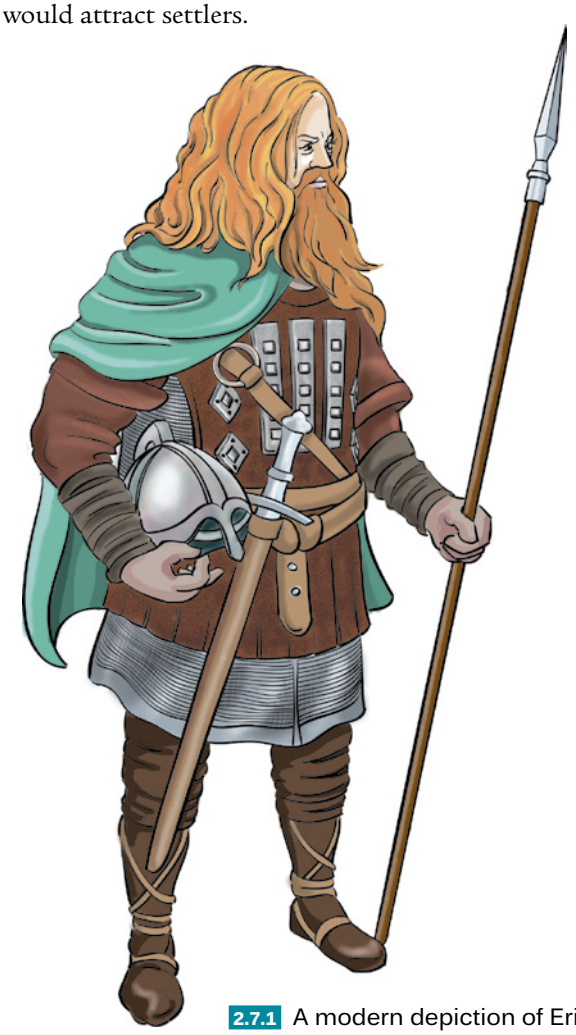
b Was that violent behaviour limited to the Vikings or common to all people of that time?

2.7 Significant individuals

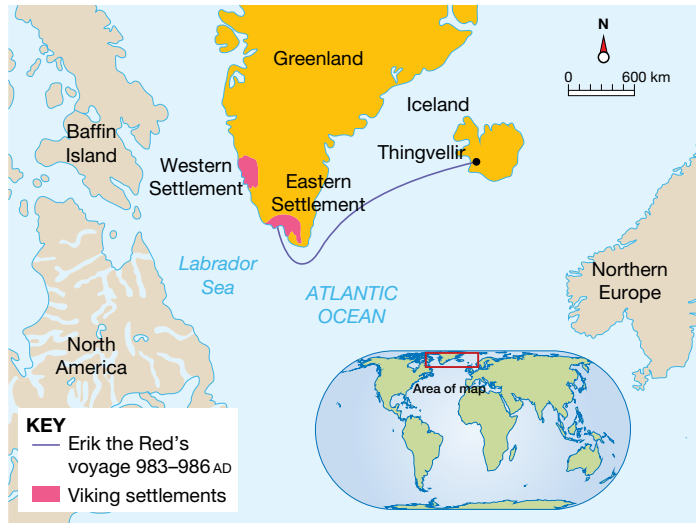
Erik the Red and Greenland

Erik Thorvaldsson, known more commonly as Erik the Red because of his red hair, was born in Norway around 950. He went to live in Iceland with his family after his father, Thorvald, was convicted of murder and forced into exile. Erik was also convicted of murder after he killed a neighbour and another man following a feud over the death of some slaves. He was sentenced to leave Iceland within three years and to remain in exile for another three. While waiting to leave, Erik became involved in another dispute in which men were again killed. This time he was ordered to leave Iceland immediately.

West of Iceland is the much larger and mostly barren island of Greenland. This island was first sighted by a Viking sailor who had been blown off course in 930, but did not seem a favourable place to settle and was ignored for many years. Knowing of this unpopulated land to the west, Erik explored it over the next 3 years, between 982 and 985. He named the island Greenland in the belief that its name would attract settlers.



2.7.1 A modern depiction of Erik the Red



2.7.2 The route taken by Erik the Red from Iceland to Greenland

He returned to Iceland to encourage others to settle it with him. He embarked on a new voyage to Greenland in 986, this time with a fleet of twenty-five ships loaded with settlers, livestock and provisions. Only fourteen of these ships reached their destination. Unlike Iceland, Greenland was treeless, which had a great impact on the maintenance of ships and eventually on the Greenlanders' ability to trade.

The two settlements—Eastern and Western—did well in the relatively favourable climate of the time, even allowing for the growing of crops in some locations. Fishing also provided a rich source of food. Farming of sheep and cattle became the island's main occupation, and horses, pigs and goats were also kept. The Greenlanders also began a profitable trade in polar bear furs, walrus skins and ivory (walrus tusks). They carried on this trade in partnership with the Inuit people to the north.

Greenland's decline

The settler population in Greenland numbered 4000 at most, with up to 300 farms supporting its inhabitants. Erik the Red died in about 1003. Conditions in Greenland became worse after 1300, and eventually the island was uninhabitable, as temperatures fell sharply, resulting in flooded wetlands and increased ice sheets, which cut off the island from the rest of the world for years at a time. The colder climate also forced Inuit populations to head south down from northern regions, which sometimes resulted in violent battles with the Greenlanders. It seems that by 1540 there were no longer any people of European descent living in Greenland.

Leif Eriksson and the discovery of America

Leif Eriksson (also sometimes spelled Ericson) lived from approximately 970 until 1020. His father was the infamous Erik the Red. The timeline in Source 2.7.4 provides an overview of Eriksson's life and key achievements.



2.7.3 A statue of Leif Eriksson in front of Hallgrímskirkja in Reykjavik, Iceland

Today Leif Eriksson is credited by many historians as being the first person of European descent to set foot on American soil. The Saga of the Greenlanders describes five expeditions to the lands to the west, one of them being the journey taken by Leif in 1000. Leif is recorded as sailing a lengthy stretch of coastline and islands, including Baffin Island ('Helluland' in the saga), Labrador ('Markland' in the saga) and a place further south referred to as 'Vinland', where wild grapes grew and rivers were abundant with salmon.

970 — **970** Leif Eriksson was born, probably in Iceland where his parents, Erik the Red and Thjodhild, met

986 Leif's family moves to Greenland following his father's conviction for murder and exile from Iceland

980

999 Leif and his crew travel from Greenland to Norway and were blown off course to the Hebrides. They stayed for the summer, during which time Leif worked for King Olaf Tryggvason and converted to Christianity

990

1000 Leif returns to Norway where he was encouraged to return to Greenland

1001 Leif travels back to Greenland as a missionary. He was blown off course again and this time he came across Vinland (North America). Leif and his crew built a small settlement and spent the winter there

1000

1002 Leif returns to Greenland with a cargo of grapes and timber. On the return voyage Leif rescues Icelandic castaways, earning himself the title of 'Leif the Lucky'

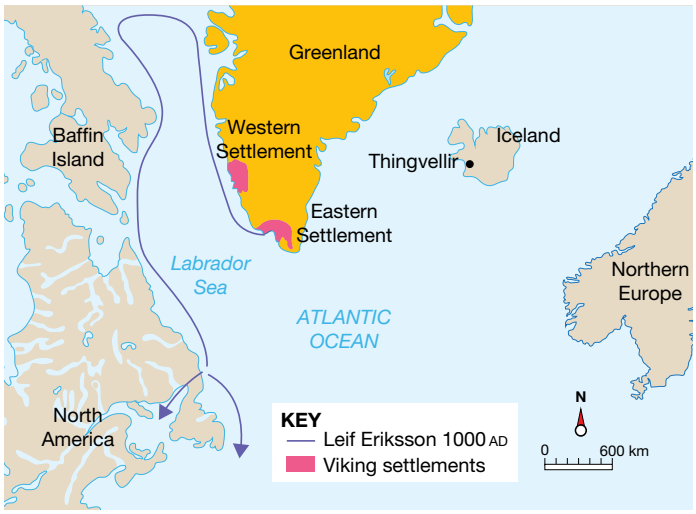
1003 Leif settles in Greenland and begins preaching Christianity. His mother, Thjodhild, quickly converts and builds a church called Thjodhild's Church

1010

1020 Leif Eriksson dies. The last mention of Leif alive is in 1019 and by 1025 his chieftaincy has passed onto his son, Thorkell

1020

2.7.4 A timeline for Leif Eriksson (dates are approximate and may vary from other sources)



2.7.5 The route taken by Leif Eriksson

Becoming a Christian

Eriksson is also well known for converting to Christianity after spending a year in Norway with King Olaf Tryggvason. When Leif eventually returned to Greenland he started preaching Christianity to the Greenlanders. His mother, Thjodhild, also converted to Christianity. She built a church in which Greenlanders could practise their new faith. Little else is known about Eriksson's later life and eventual death.

Some of what we do know about Leif Erikson comes from Viking sagas. An extract (part) from one of these sagas is shown in Source 2.7.6. The saga begins by providing us with some background about how Leif Erikson came to be in Norway and how he formed a positive relationship with the king. The saga tells us that a conversation between Leif and the king was what sent Leif off on a great adventure.

Leif had sailed to Norway, and was there with King Olaf Tryggvason ... He joined the bodyguard of King Olaf Tryggvason, and the king formed an excellent opinion of him, and it appeared to him that Leif was a well-bred man. Once upon a time the king entered into conversation with Leif, and asked him, 'Dost thou purpose sailing to Greenland in summer?'

Leif answered, 'I should wish so to do, if it is your will.' The king replied, 'I think it may well be so; thou shalt go my errand, and preach Christianity in Greenland.'

Leif said that he was willing to undertake it, but that, for himself, he considered that message a difficult one to proclaim in Greenland. But the king said that he knew no man who was better fitted for the work than he. 'And thou shalt carry,' said he, 'good luck with thee in it.' 'That can only be,' said Leif, 'if I carry yours with me.'

Leif set sail as soon as he was ready. He was tossed about a long time out at sea, and lighted upon lands of which before he had no expectation. There were fields of wild wheat, and the vine-tree in full growth. There were also the trees which were called maples; and they gathered of all this certain tokens; some trunks so large that they were used in housebuilding. Leif came upon men who had been shipwrecked, and took them home with him, and gave them sustenance during the winter. Thus did he show his great munificence and his graciousness when he brought Christianity to the land, and saved the shipwrecked crew. He was called Leif the Lucky.

2.7.6 Extract from Chapter 5 of *The Saga of Erik the Red*, trans. J. Sephton, 1880, from the original *Eiríks saga rauða*



2.7.7 A modern impression of Vikings building their traditional longhouses in a new settlement. Did scenes like this occur at L'Anse aux Meadows?



2.7.8 A replica of Thjodhild's Church in Greenland, originally built near this site in 1300. Erik the Red's longhouse can be seen in the background.

Skills builder

Determining historical significance

One of the key skills in history is to be able to determine the significance of an idea, trend, event, individual or a group. Basically, this involves determining whether or not something or someone from the past was important.

For this activity, you will develop a concept map that demonstrates the historical significance of Erik the Red or Leif Eriksson. Use the following questions to help you make your judgement:

- How important was your chosen individual to people who lived at the time?
- How many people were affected by the decisions made by your chosen individual?
- How long-lasting were the consequences of these decisions?
- What is this person's legacy in a historical sense? What did they leave behind or how did they shape the future?

Activities

Remembering and understanding

1 Refer to the text about Erik the Red.
- **a** Where was Erik born and why did Erik grow up in Iceland?
- **b** Why did Erik name the island Greenland?
- **c** Explain why the Viking settlements in Greenland were initially successful.
- **d** What were two main reasons that the settlements in Greenland failed after Erik's death?

2 Refer to the timeline in Source 2.7.4.
- **a** Identify Leif's parents.
- **b** Why did Leif's parents move to Greenland?
- **c** What is the modern name for Vinland?
- **d** How did Leif get the name of 'Leif the Lucky'?
- **e** What did Leif do after returning to Greenland in 1003?

3 Examine Source 2.7.6.
- **a** What was Leif's role in Norway under King Olaf Tryggvason?
- **b** What did King Olaf want Leif to do?
- **c** Why did King Olaf select Leif for the task identified in Question 3b?

Applying and analysing

4 You are an investigative journalist researching the life of Erik the Red or Leif Eriksson. Prepare a one-minute television exposé discussing the highlights of Erik or Leif's life.

LS 2C

2.8 The Viking legacy

A rich legacy

The Vikings left behind a rich legacy that can be seen throughout the world, from language and placenames to government and popular culture. The word 'legacy' means anything handed down from the past, from an ancestor or a predecessor.



2.8.1 The legacy of the Vikings

Viking legacy in language

As a result of trade, farming and settlement in the north and mid-east of England, the dialects of Old Norse and Old English merged. This blending of dialects gradually affected the English spoken throughout the entire country.

Scandinavian (Viking) words can be identified in modern English. Names beginning with 'sk', for example 'sky' and 'skin', have their origins in Old Norse. A number of words connected with legal proceedings also have Norse origins, namely 'law' and 'wrong'.

By the fourteenth century, the impact of Old Norse on the English language can be further identified in the use of everyday words such as 'give', 'anger', 'window', 'dream' and 'husband'. Finally, the influence of Viking settlement in England is obvious in placenames. Viking settlement used the suffix 'by' in the placename; 'by' meaning a homestead or village. The Viking origins of English towns such as 'Grimsby' (Grim's homestead or farm) and 'Derby' (village near deer) are therefore easy to recognise.



2.8.2 This street sign in Leicester, England, celebrates a Viking link—note the name 'Granby'.

Did you know?

In the nineteenth century, Richard Wagner wrote his opera *Der Ring des Nibelungen* (*The Ring of the Nibelung*), which drew on Old Norse sagas. It is from the production of Wagner's opera that the false image of Vikings wearing horned helmets arose.



Democratic systems

The legacy of the Vikings is also evident in English democratic systems and processes. The Viking *Althing* was thought to be the first national assembly in Europe. The *Althing* could propose and pass laws; it also acted as a court of law and imposed sentences on those found guilty of crime. All Viking freemen took part in the *Althing*. Parliamentary government has its origins in England and the similarities between this system and the system that the Vikings introduced are obvious.

Viking legacy in literature

The word 'Viking' first came into use in the nineteenth century. Erik Gustaf Geijer wrote his poem 'The Viking' (in Swedish, '*Vikingen*'), which described the Vikings as heroic and brave Norsemen. Vikings appear in novels such as Frans Gunnar Bengtsson's *The Long Ships* and, more recently, Tim Severin's 2005 trilogy based on a young Viking adventurer, Thorgils Leifsson.

Vikings are also popular in young adult fiction. Henry Treece's Viking sagas—*Viking's Dawn*, *The Road to Miklagard*, *Viking's Sunset*—follow the life of Norse boy Harald Sigurdson into adulthood and middle age as he makes a succession of journeys across the seas seeking fortune and revenge. Donna Jo Napoli's *Hush* and Jackie French's *They Came on Viking Ships* both feature female slaves in Viking communities. Napoli's story of a captured and enslaved Irish princess, Melkorka, is based on the *Laxdoela Saga*.



2.8.3 The main character in *Thor* is played by Australian actor Chris Hemsworth.

Viking legacy in popular culture

In the twentieth century, J.R.R. Tolkien, when writing his Lord of the Rings trilogy, was heavily influenced by Norse sagas such as the *Volsunga Saga* and the *Poetic Edda* and *Prose Edda*. The comics *Thor* and *Hägar the Horrible* have been very popular and successful. There have even been a Viking Barbie doll and a Viking Smurf! More recently, Hollywood launched a successful movie franchise in 2011 with *Thor*, based on a Marvel Comics character, which depicts the Viking god of the same name. There has since been a sequel, *Thor: The Dark World* (2013), and a third film, *Thor: Ragnarok*, was released in 2017.



2.8.4 The book cover of *Lord of the Rings* by J.R.R. Tolkien

Activities

Remembering and understanding

1. Define the term 'legacy'.
2. Describe the Viking legacy to the modern world.
3. What evidence is there to suggest that the Vikings integrated successfully into English society?

Applying and analysing

4. Why do you think the Vikings are such a popular subject for literature?



Medieval Europe H1

The era of medieval Europe, also known as the Middle Ages, was a time of contrasts. Beginning after the fall of the Roman Empire in 476 AD, this era lasted for almost 1000 years. It began as a period of underdevelopment and stagnation, meaning that society did not advance very quickly. Despite the terror and upheaval caused by the plague, known as the Black Death, and a series of natural disasters, gradually things changed and the medieval period left behind castles, cathedrals, universities and the concept of parliamentary rule.

OVERVIEW QUESTIONS

H1A Why is this period in European history sometimes referred to as the Dark Ages?

H1B How did the relationship between the West and Islam change during this period?

H1C How did the Black Death impact on the feudal system?

LS Before you begin

H1.0.1 The medieval Citadel of Carcassonne, southern France. The city was protected by double walls, many watchtowers and heavily fortified gates that were built in the thirteenth century.

GLOSSARY

bacteria tiny microbes that repeatedly multiply and spread; some bacteria can cause disease

barter a system of trade where goods and services of equal value are swapped or exchanged without the use of money

Black Death a devastating plague (disease) that killed millions of people in Europe between 1348 and 1353

bubo a plague sore; typically a swelling that appeared under the armpits, on the neck or near the groin

chivalry a set of behaviours that guided the action of knights, including bravery, honour and courtesy

Christendom refers to the countries in Europe where Christianity was the main religion

clergy men and women who take vows to devote their lives to God and religious duties

epidemic a rapid outbreak of a disease, infecting a much higher number of people than usual

feudalism a social system in medieval Europe, based on a number of legal and military customs

flagellants people from an extremist religious group in the Christian Church who whipped themselves as punishment for their sins

Gothic a style of medieval architecture that features tall pillars, high curved ceilings and pointed arches

guild an organisation of craftsmen and merchants that set standards of work and protected its members

knight a noble who provided military service to a lord or a king

Magna Carta a charter or official document by which King John of England gave some political and legal rights to the English people in June 1215

pandemic an epidemic of infectious disease spread across a large region, often across continents

pilgrimage a journey to a religious shrine

plague an infection caused by the bacteria *Yersinia pestis*

siege a military operation whereby enemy forces cut off essential supplies to force surrender

subsistence farming when farmers grow enough food to live on, but not enough to sell for profit

Timeline

Medieval Europe

The Middle Ages, or medieval period, tends to fascinate us with its gruesome stories and its horrible history of starvation, disease and war. But look a little deeper, particularly in medieval Europe, and you can see the first signs of the change in the society that emerged from the 'Dark Ages'.

590 Christianity is adopted in most areas of Western Europe

632 Death of the Prophet Muhammad, the beginnings of Arab expansionism and the spread of Islam

800 Charlemagne is crowned emperor of the Holy Roman Empire by Pope Leo III

850 Three-field system of crop rotation has spread throughout Europe

1000 Castles have become common throughout Europe

AD 590 600 700 800 900 1000 1100

590–1000 Dark Ages

1000–1300 High Middle Ages



Castle ruins in Estonia at Vastselina

1066 William of Normandy defeats King Harold at the Battle of Hastings

1095–99 First Crusade

1140 First Gothic buildings built

The Black Death claimed millions of lives in medieval Europe.



1147–49
Second Crusade

1189–92
Third Crusade

1215
King John of England is forced to sign the Magna Carta

1348–53
Black Death arrives in Europe; population falls by nearly one third

1140 1200 1300 1400 1500 AD

1300–1500 Late Middle Ages



1381
Peasant uprising in England

1431
Joan of Arc is burnt at the stake in Rouen, France

1455
Gutenberg Bible is printed in Mainz, Germany

Jousting was a popular event for wealthy knights, with the aim being to knock the other knight off his horse.

H1.1 The medieval European world

The Middle Ages

The Middle Ages, or *Medium Aevum* in Latin (which gives us the word 'medieval' in English), refers to the period of time between the collapse of the Roman Empire in 476 AD and the beginnings of early modern history around 1500 AD.

After the collapse of the Roman Empire, Europe remained in a state of nearly constant crisis and turmoil. Despite this, there were periods of economic revival (improvement) and prosperity (wealth).

Spanning almost 1000 years, the Middle Ages are often divided in to three periods: the Dark Ages, the High Middle Ages and the Late Middle Ages.

The Dark Ages

In the Dark Ages or Early Middle Ages (about 500–1000), most peasants lived in poor conditions. They regularly suffered from famine and diseases. The economy was based on **subsistence farming**—this is when farmers grow only enough food to live on, but not enough to sell for profit. Population growth was static, which meant that the number of people living in Europe remained about the same. There were small local markets and people relied on a **barter system** to get their goods and services rather than money.

The High Middle Ages

During the High Middle Ages (1000–1300), there was improved agricultural production through the use of new farming techniques. Population growth encouraged territorial expansion (occupying more land) in the east and south of Europe. More towns were established and older ones became larger. Merchants travelled further and trade routes were re-established across Europe towards the east.

The Late Middle Ages

Economic growth slowed down during the Late Middle Ages (1300–1500). Continued warfare brought economic burdens and widespread looting (stealing in times of chaos or war) by mercenary armies. These mercenaries were usually **knights** who were hired by lords to fight in exchange for money. Natural disasters such as drought or flooding led to widespread destruction of crops across France and England. Successive outbreaks of the **Black Death** heavily reduced populations and caused labour shortages. Peasants rebelled in France and England because they felt they paid more tax than they could afford or more than their fair share.



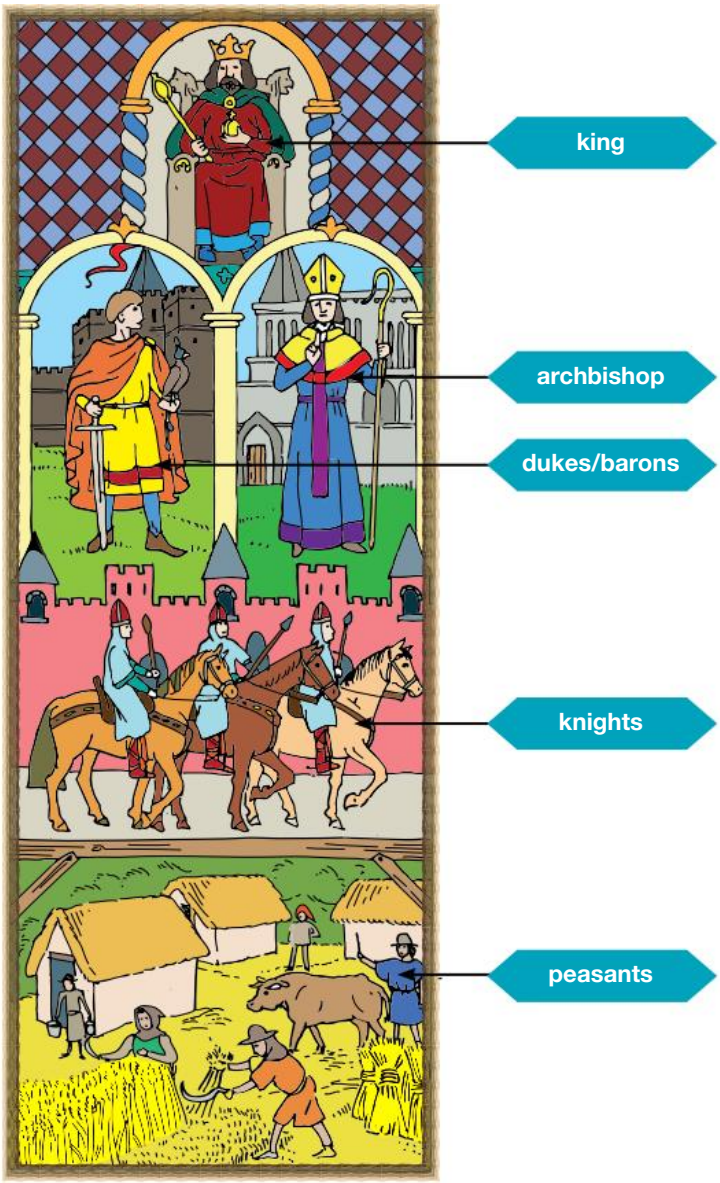
H1.1.1 Kingdoms of Western Europe by 1500. The Holy Roman Empire was made up of a group of territories in central Europe that formed during the Middle Ages.

Society in the Middle Ages

There were many social divisions (classes) and there was limited opportunity for social mobility, which meant that it was difficult to move between classes. Few if any people rose above the social class into which they were born. There was a division between those who were part of the church **clergy** and those who were not, and there was a strict hierarchy (or order) within social groups.

Hierarchy among the lower classes

There were two categories of peasants: villeins and serfs. Villeins were free and owned or rented land to grow crops, but they still belonged to their lord. Lords tended to be wealthy and to own large estates of land. Villeins could move around and work on a lord's land during the harvest. Peasants who were bonded to a lord were called 'serfs' and could not leave the land without the lord's permission.



H1.1.2 The main social groupings in medieval Europe

The nobility

Strict hierarchical relationships were based on the feudal bond, which was a promise made between a high-ranking lord and his vassal. A vassal was a person who held land as long as they kept their bond with their lord. Vassals were also expected to remain loyal to their lord (show allegiance). A knight swore to serve his lord faithfully in war and was rewarded with protection and a gift of land (also known as a fief). Knights became rich landowners and in turn made gifts of land to lower order vassals as a reward for military service.

Over time, kings across Europe asserted or enforced their rights as feudal lords. William, Duke of Normandy, relied on the support of his knights to invade England in 1066. Once established as king of England, he encouraged the development of **feudalism** by rewarding his nobles with English land. This way, 'William the Conqueror' controlled the entire English countryside.

Activities

Remembering and understanding

1 Identify at least three ways in which Europe grew strong again during the High Middle Ages.
2 What were the key social groups in medieval society?

Applying and analysing

3 With a partner, suggest possible situations in which wealthy lords needed to rely on the feudal bond to raise an army.
4 Examine in the text the values that knights in medieval Europe were expected to follow. With a partner, discuss why these virtues were so important in medieval society.

Evaluating and creating

5 Develop a modern version of the chivalric code that could be used by any person as a guide to good behaviour. What expectations would you include? Create your code as a set of five or six dot points. Write a paragraph explaining the values that form the basis of your code.

H1.2 Everyday life

Families

Medieval families were of a moderate size and generally included the married couple and two or three children. Although the birth rate was high, high mortality (death) rates meant that half of all children died before they reached the age of seven. Boys were considered to be adults by fifteen and girls could marry by fourteen. Life expectancy was low by modern standards. The average person lived about 30 to 35 years. Population mortality rates also meant that step-parenting was common.

Women

Women were always subject to the authority of the male members of their families. This means that women were controlled by either their father or their husband. Women could spend half their lives pregnant, facing great dangers giving birth. They had few legal rights and had no financial independence.



H1.2.1 An engraving showing the marriage of Philipe d'Artois to Marie, daughter of the Duc de Berry, by William Smith, 1839

Works of art show noble women doing embroidery (needlework), spinning or weaving. Peasant women are often shown doing strenuous work, meaning that it required lots of physical effort, in the fields alongside their husbands. Women who joined religious communities or convents worked according to their social status: the nobles embroidered and weaved; the poor cultivated (farmed) the soil because convents were self-supported communities. This meant that everyone living in the convent had a role to play in helping to meet its needs.



H1.2.2 The agricultural year was a common theme for religious and secular art (art that was not connected with any religion). This thirteenth-century German illustration shows peasants harvesting.

Life on the land

Peasant men and women worked in the fields in all seasons. Their tasks included manual ploughing (digging up or turning over the soil), sowing (planting seeds), weeding, harvesting (collecting the crops) and threshing (separating the grain from the crop). Medieval agriculture was based on the open-field system where common land was divided into three fields. Crop rotation allowed two fields to be cultivated and harvested in autumn and spring.

The third field was left fallow (unused) so that it became fertile again for the following year. This happened because the soil needed a chance to recover from the process of cropping. Livestock grazed on the third field and provided fertiliser. The only form of mechanisation available was the mill, which used the power of water and wind to grind grain. Watermills had existed since Roman times, but windmills were an innovation of the twelfth century.

Town life

Towns grew slowly during the Middle Ages. Towns became important centres for manufacturing with craftsmen producing everyday goods such as shoes, clothing, furniture and pottery for exchange at the weekly markets. Lawyers, teachers, doctors and merchants inhabited larger towns. Merchants engaged in long-distance trade and offered finance (moneylending) and banking. Merchants and craftsmen such as carpenters and tailors were organised into trade **guilds**, associations that looked after their members and ensured quality.

Housing

Housing reflected social status and wealth in the Middle Ages. Castles and manor houses were designed to defend a lord's family and his possessions, and to overawe his enemies (meaning to impress his enemies so much that they would feel afraid of his power). These structures were built out of stone and were large enough to entertain and accommodate lots of people. They included large halls, big kitchens, bakeries, food storerooms and many bedchambers (today we call these bedrooms). Fresh water came from a well and many fireplaces were used for warmth and cooking.

By contrast, peasant houses were modest, mostly constructed of wood and thatch. While the organic materials (things like wood and straw) that were used kept the heat in, they attracted mice and rats. A successful peasant's house might have had two stories with the bedchambers upstairs. The poorest peasants lived in cottages consisting of a single room and a turf roof, which means that it was made of grass and the surface layer of earth, which included the roots. This made the whole place damp and dark. One fireplace was used for cooking and heating and was the only source of light. Floors were made of earth and covered with rushes (reeds) and sweet-smelling herbs.

Furniture was scarce at all levels of medieval society. Lice and bedbugs bothered everyone regardless of social status, and having a room for bathing was a luxury. Most people in towns visited public bathhouses called 'stews'.



H1.2.3 A medieval kitchen interior, shown in a copy of a sixteenth-century painting called *The Miracle of the Broken Sieve*

Food

Meals were very bland (without flavour) for the majority of the population. Households prepared their own food, although townspeople could buy their bread from a baker and their meat pies and pasties from cooks. Peasants ate two meals a day, the main meal being around eleven in the morning. A lord might eat breakfast.

A few other facts about diet in the Middle Ages include the following:

- Bread made from wheat, barley or rye was the main energy food.
- Butter, cheese, eggs and milk provided most protein. Only the wealthy ate meat regularly.
- The staple drink was ale, cider or water. In northern Europe the rich could afford wine.
- Fruits and vegetables were only available in season. For example, apples, pears, cherries and plums were picked in late autumn.
- Kitchen gardens provided peas, onions, leeks, cabbages and beans.
- The poorest people mainly ate meals of brown bread and pottage, which is a thick soup or stew made with vegetables and grains.



H1.2.4 Sir Geoffrey Luttrell dining with his family, an illustration from the Luttrell Psalter, c. 1325–1335

Health care

Medieval remedies (treatments) for sickness included medical attention from a doctor and prayers for God's mercy. **Epidemics** like the **plague** were considered to be a punishment from God, and only penance (a punishment inflicted on oneself) or prayer were believed to be cures. Most infectious diseases, including leprosy, a chronic bacterial infection, were poorly understood. Some trained doctors provided diagnoses based on the colour and smell of urine and some tasted their patients' blood. Hospitals were paid for by the wealthy and usually run by religious orders, as physical health was considered to be directly related to spiritual health. Medical treatment was still based on practices dating from ancient times.

Did you know?

Lepers were required to ring a bell to warn people of their approach.



H1.2.5 A leper ringing his bell. From *Pontifical*; *Tabula*, fifteenth century



H1.2.6 Bloodletting was a common method of treatment for a range of illnesses. An illustration from the fifteenth century

Travel

Manuscripts, maps and paintings show that people in the Middle Ages were on the move even though road travel was dangerous, uncomfortable and slow. Men and women travelled in England, France and Spain to visit holy sites such as the shrine (holy place) of St Thomas à Becket in Canterbury or that of St James of Compostela in Spain. Furthest afield was the holy city of Jerusalem, and **pilgrimages** there began in the tenth and eleventh centuries. Wandering scholars, who we would refer to as students, also travelled across Europe as more universities opened in renowned (famous and admired) learning centres such as Bologna and Paris.

Towns were linked by roads but also by rivers and seas. Merchants travelled by water as it was cheap. The great trade routes across the Mediterranean allowed the Italian cities of Venice and Genoa to flourish and grow in size and importance.

The Church

The Catholic Church was the most important institution in medieval Europe. People believed that God was in control of absolutely everything and that life's joys and struggles were rewards and punishments from God. It provided a unifying culture, which means that it brought people together, across all regions. People identified themselves as Christians living in **Christendom**.

Religious celebrations such as Lent, Easter, Pentecost, Advent and Christmas divided the year. All families undertook Church sacraments or rites of passage such as baptism and marriage. Churches and cathedrals were the tallest buildings in towns. Stained glass and colourful wall paintings provided spiritual lessons for those who could not read by providing images to look at and study.

There was a strict hierarchy within the Church, with the Pope holding ultimate power and responsibility. Other members of the clergy included cardinals, bishops, priests and deacons. Emperors and kings obeyed the Pope, and the authority of the Church was rarely challenged, though this began to change in the Late Middle Ages. Disobeying the Church was considered to be heresy—a belief different to those considered acceptable, usually in the eyes of the Church. Heresy was punishable by excommunication, which is a form of spiritual punishment through banishment (or banning) of a person by the Catholic Church.

Monasteries and nunneries

Medieval Christian monastery life was well established by 1000. Monks and nuns lived a peaceful communal life that centred on prayer, work, study and meetings.



H1.2.7 Edwin the Monk, c. 1450

Priests and monks provided basic education to boys in Latin and were in charge of copying manuscripts from the monastery libraries. Nuns and monks looked after the poor, the ill and pilgrims by providing basic health care, food and clothing.

By the eleventh century, some monasteries had become very rich through gifts of land by kings and lords. In a reforming movement, meaning one designed to bring about change, friars or mendicants (begging monks), followed the model of St Francis of Assisi and led a life of wandering and preaching while living in poverty. During the thirteenth century, the Franciscan and Dominican friars spread across Europe, forming an intellectual elite (intelligent and highly respected class) who were dedicated to preserving learning.

Activities

Remembering and understanding

1. Identify three kinds of work that women could do in medieval society.
2. Describe the open-field system of medieval farming.
3. Use a T-chart to list the similarities and differences between medieval towns and the towns and cities that we live in today.
4. Provide three reasons why people travelled in the medieval period.

Applying and analysing

5. Using a Venn diagram, compare and contrast the key indicators of social status (for men and women) in medieval society and in Australian society today.
6. Explain the importance of the Church in the lives of ordinary people during the medieval period.

Evaluating and creating

7. Interpret the medieval diet by creating a menu for a banquet or an illustrated concept map.

LS H1A

H1.3 The Crusades

The Christian and Islamic worlds

By 900, the common culture of the Mediterranean world had split into:

- Western Europe or Christendom
- the Byzantine East, which was dominated by the Orthodox Church
- the Levant (present-day Lebanon, Syria, Jordan, Israel, Palestine, Cyprus and parts of southern Turkey), which was dominated by Islam.

The language, architecture and religion of all three regions were very different. Relations between Christians and Muslims changed significantly during the period 1000–1300.



H1.3.1 A Moor and a Christian playing the lute, a thirteenth-century miniature (small painting)

Contact between Christendom and Islam

The followers of the prophet Muhammad controlled Arabia, the Levant, North Africa and most of Spain from the eighth century. The Arabic language spread rapidly in these regions and a distinctive architectural style followed. The heritage of the Moors, or Muslim Spanish, can be seen in the richly decorative architecture of Granada (see Source H1.3.2).

Contact with Muslims in Spain and through the pilgrimages to the Holy Land (today known as Israel and Palestine) brought change to medieval Europe. Arabic science, mathematics, medicine and technology, which were more advanced, were introduced to the whole of Europe. Christian scholars learnt how to access Arabic historical sources, which had preserved the works of Greek philosophy, biology, astronomy and technology.



H1.3.2 The fourteenth-century Alhambra, a Moorish palace in Granada, Spain

Reconquering Spain

For most of the Middle Ages, however, Christians and Muslims were engaged in bitter warfare. In Spain, the wars of reconquest from the tenth to the twelfth century brought about an end to the Moorish occupation and rule. Early in this period, Muslims under Christian rule were tolerated and played an important role in commerce.

However, by 1260, the whole of Spain was Christian except for Granada. The wars hardened Catholics against both Muslims and Jews; these groups were forbidden to practise their religion and were forced to choose between conversion to Christianity or exile.

Holy wars

The wars of reconquest in Spain were part of a Christian holy war against Islam that emerged during the High Middle Ages. The wars of conquest that were waged against Islam in the Holy Land are referred to as the Crusades. There was also a holy war against the pagans (believers of many gods; also non-Christians) of the Baltic regions of Estonia and Finland in the twelfth century.

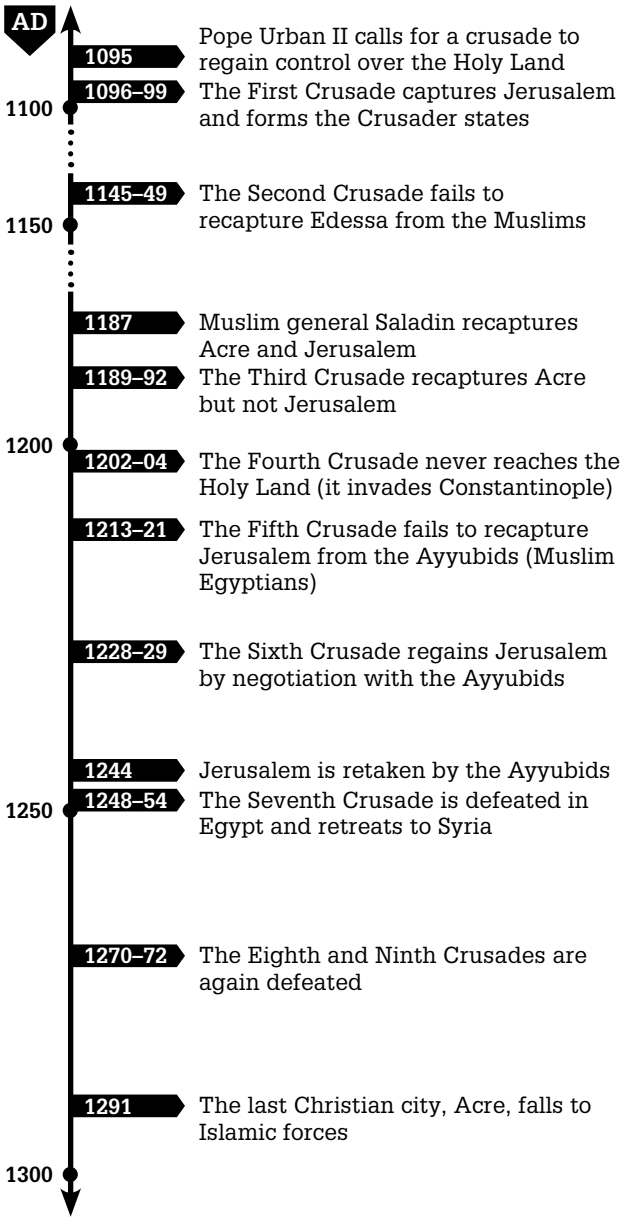
Causes of the Crusades

Religious conviction was a major cause of these holy wars. This refers to a strong belief in your own religion at the exclusion of all others. The Church argued that non-believers should not control the sacred sites of Christ's life and death. Jerusalem was considered to be the spiritual centre of Christendom, and pilgrimage to Jerusalem was part of a growing system of penance. Getting to Jerusalem was a long and difficult journey and doing so was seen as helping to make up for your sins. The Pope guaranteed that those who fought against Muslims would automatically go to heaven. The call from Pope Urban II for a holy war in 1095 resulted in a crusading frenzy (wild rush) to the Holy Land. Kings, nobles, their vassals and servants crossed the entire European continent and Asia Minor to endure desperate hardships and fight in bloody battles.

Other complex issues explain the movement of thousands of men from Western Europe. There was an urge in medieval society to conquer and settle new territories. Agricultural improvements and economic expansion led to intense competition for land among the nobility. The practice of inheritance by the eldest son meant that younger sons were looking for new lands. They were also looking for an opportunity to join the service of other noblemen and fight for advancement in the social order. These crusading knights swore homage or allegiance to wealthy barons and travelled towards Jerusalem to fight.

Consequences of the Crusades

Christian knights massacred pagans and Muslims as they travelled through Eastern Europe and many cities in territories that are now modern Turkey, Syria and Israel. The survival rate, even if some made it to Jerusalem, was low. Those who remained in the Holy Land set up the Crusader states, such as the Kingdom of Jerusalem, and imposed a feudal system with fiefs and castles. They ruled over a population of Muslims and Jews who were joined by waves of European knights, peasants and townspeople. Towns became culturally European and were dominated by nobles originally from France and by merchants from Italian trading cities such as Venice, Genoa and Pisa.



H1.3.3 Timeline of the Crusades

The First Crusade

In 1096, several large armies of Western knights and foot soldiers marched to the Holy Land in response to Pope Urban's call. The counts of Flanders, Boulogne and Toulouse and the dukes of Normandy and Lower Lorraine led them. It took 3 years to cross Europe, Constantinople (modern Istanbul) and Antioch in Syria to reach Jerusalem. Knights carried the sign of the cross on their surcoats (a loose robe worn over their armour) and shields. The Crusaders suffered through times of famine, disease and warfare.

The First Crusade was a success. The Christian armies captured three major cities: Nicaea, Antioch and Jerusalem. Antioch fell only after an 8-month **siege**. The siege of Jerusalem was particularly terrible and ended in destruction and massacre. The Crusaders' hold over the region was always under threat, and the renowned Muslim warrior and leader Salah al-Din, or Saladin, recaptured the city in 1187.

The Kingdom of Jerusalem and its important trading port of Acre finally fell in 1291. Six further Crusades were led in person by kings from England, France and Germany, including Richard the Lionheart of England and Louis IX (Saint Louis) of France. They waged war in the Holy Land for years in an effort to strengthen Christian rule over the region.

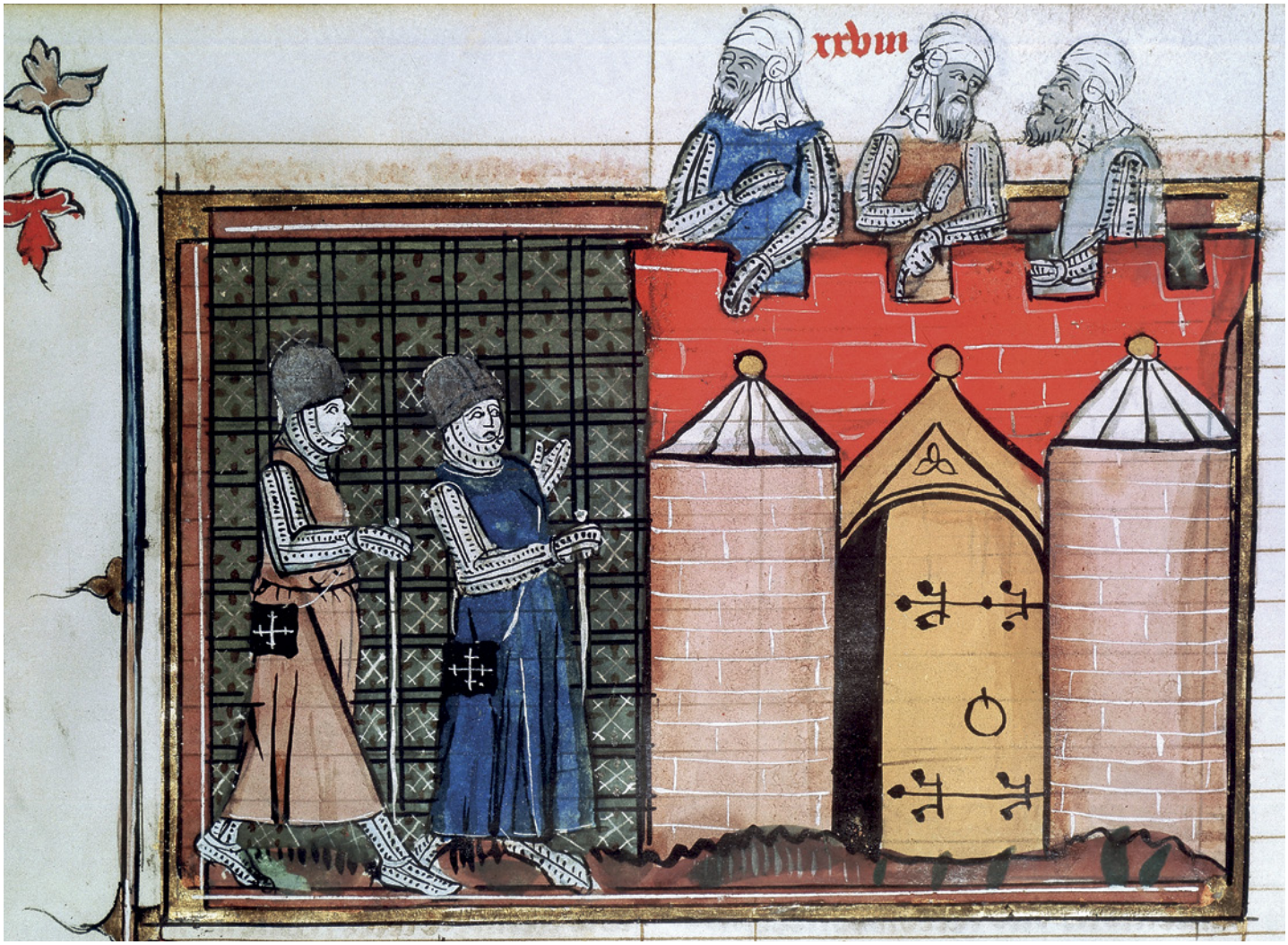
Did you know?

The word 'crusade' comes from the Middle French word *croisade*, which means 'marked by the cross'.

The Knights Templar and Knights Hospitaller

The Crusades region was constantly at war, and bandits often attacked unarmed pilgrims who flocked to the Holy Land. Two religious orders of knights were formed to defend pilgrims and the newly established Christian fiefdoms of Jerusalem, Antioch, Edessa and Tripoli. The Knights Templar (named after the temple of Jerusalem) were monks and knights. They lived monastic lives but were highly trained warriors, dedicated to protecting the Holy Land.

The Knights of the Hospital of St John, known as the Hospitallers, were the carers for the sick and dying pilgrims in the Holy Land. They founded a hospital during the First Crusade and later were given the job of protecting strategic castles such as the well-preserved Krak des Chevaliers in Syria. By the 1160s, they had also become a standing (permanent or professional) army of 300 knights.



H1.3.4 Knights Templar before Jerusalem, from *Le Roman de Godefroi de Bouillon*, fourteenth century

Spotlight

Chaucer and the order of knighthood

Geoffrey Chaucer was an English writer of the fourteenth century. His collection of stories, *The Canterbury Tales*, provides us with some insight into the knightly code of behaviour, which was based on Christian virtues such as loyalty, honesty and honour. We refer to the system that guided the behaviour of knights as the chivalric code. Other poetry and tales of chivalric romance included knights who were motivated by love.

> A knight there was, and he a worthy man, Who, from the moment that he first began To ride about the world, loved **chivalry**, Truth, honour, freedom and all courtesy. Full worthy was he in his liege-lord's war ...

H1.3.5 An extract from Geoffrey Chaucer's *The Canterbury Tales*, end of the fourteenth century. A 'liege-lord' refers to a person who was superior to the knight in the feudal system and to whom the knight owed allegiance.

Islamic perspectives

The success of the First Crusade was partly due to the fact that Crusaders had invaded an Islamic world that was geographically vast. It was also fragmented, or divided into parts, by different rival dynastic rulers. The region remained divided along religious and sometimes military lines until the time of Saladin, who fought to control Aleppo, Mosul and eventually Jerusalem. To Saladin and the Islamic world, the Crusaders, or the Franks as they referred to them, were territorial competitors.

> In that year, news began to trickle in about the appearance of the Frankish troops, coming down in an innumerable multitude. People took fright.

H1.3.6 Ibn al-Qalanisi, a chronicler from Damascas who described the arrival of the Franks, quoted in Amin Maalouf, *The Crusades through Arab Eyes*, Cairo, 1990

In order to build up a force large enough to capture the Kingdom of Jerusalem from the Franks, Saladin had to persuade the Islamic warriors that he was a legitimate leader. He gathered enough troops in order to invade Jerusalem in 1187. He captured the city in October, but had to fight against forces of the Third Crusade who were determined to save the kingdom. It was Saladin's successor, the Mamluk sultan of Egypt, who waged an aggressive war and later captured the Kingdom of Jerusalem.

> Regard the Frank! Behold with what obstinacy they fight for their religion, while we, the Muslims, show no enthusiasm for waging holy war.

H1.3.7 Saladin quoted in Amin Maalouf, *The Crusades through Arab Eyes*, Cairo, 1990

Activities

Remembering and understanding

1. Which European country was under Muslim control in the medieval period?
2. What advances in knowledge did Muslim learning bring to Europe?
3. Identify three reasons to explain the Christian holy wars against Islam.
4. Who was Saladin?

Applying and analysing

5. Assess what the Europeans gained from the First Crusade.
6. Examine the reasons why the first crusading army found it relatively easy to capture so many cities in the Holy Land. Share your findings with a partner and compare your ideas.
7. Write a news report that examines the role of the Knights Templar and Hospitaller. In your report, compare and contrast their roles.
8. Explain what the Muslims had to do to regain control of their lands.

Evaluating and creating

9. Imagine you are a knight living in medieval Europe. Write a one-page diary entry on a day in your life. Choose an important day such as a tournament day, setting out on a Crusade or reaching the city of Jerusalem to provide focus for your ideas.

LS H1B

H1.4 Crime and punishment

Customary laws

By modern standards, the legal systems in different parts of Europe seemed chaotic or disorganised during the Middle Ages. Local judges had a lot of freedom in the administration of justice. While there were attempts to systematically collect and clarify laws (to bring them together), there was no single code of laws within the many different medieval kingdoms.

Many local customary laws reflected age-old traditions. Customary laws guided social behaviours and provided precedents for legal judgements. A precedent is a decision by a court that can be used to decide future court cases; its use means that similar cases will be dealt with in similar ways. In some kingdoms, princes and kings were above the law, whereas in England there was a jury system and the law served the interests of the people.



H1.4.1 The Court of King's Bench, Westminster Hall, c. 1460

English law included aspects of Roman law and the laws of the Saxons, which had been rewritten by royal judges. It was referred to as the 'common law' because it was commonly applied to everyone in the kingdom. Over time, only the English parliament could make changes to laws or introduce new ones. In 1381, after the Peasants' Revolt in England, an act of parliament made it treasonable (considered as a crime against your country) to begin a riot. There were acts against high treason and acts forbidding men to attend parliament fully armed.

Criminal and civil law had separate courts. Ordinary people in the towns and villages could be tried in urban and manorial courts. There were also royal courts such as the Court of Common Pleas. Lords charged with high treason against the king faced trial in parliament, which was the highest court.

Punishment

The gallows

Public punishments were carried out as deterrents in the Middle Ages. A deterrent is something designed to discourage people from committing certain acts, like crimes. There was no sense of the modern concept of rehabilitation. Gaols existed but overcrowding encouraged judges to sentence men and women to be executed. Gallows (wooden scaffolds) for hanging people found guilty of crimes were deliberately built at town crossroads. Bodies were left swinging as they rotted where they could be seen by many people. Commoners were hanged whereas members of the nobility were beheaded. Tyburn (in central London today) was the location of the gallows for convicted criminals and traitors.

Parliamentary sources record traitors being taken from prison in the Tower of London to the gallows at Tyburn where they would be first disembowelled (have their entrails or internal organs removed), then hanged, beheaded and quartered (when each of their four limbs was tied to a horse, which would then be guided to pull in different directions). The traitor was unfortunately still alive while being disembowelled and just conscious enough to see his entrails being burnt. Heads of traitors were displayed on spikes for years and were a grisly reminder of the punishment for treason against the king.



H1.4.2 Execution of the Despensers, from the *St Alban's Chronicle*. Hugh Despenser was sentenced to be hanged, drawn and quartered in 1326.

Other punishments

Other punishments demanded by customary laws included life imprisonment, but this was rare. Sometimes criminals evading arrest could be executed on the spot and women caught evading arrest could be forcibly drowned without a trial. Instances of burning at the stake are actually rarer than imagined. Women accused of witchcraft and heresy (strong opposition) against the Church were more likely to receive hanging as a punishment. Parliament did not introduce burning alive for heresy until 1401.

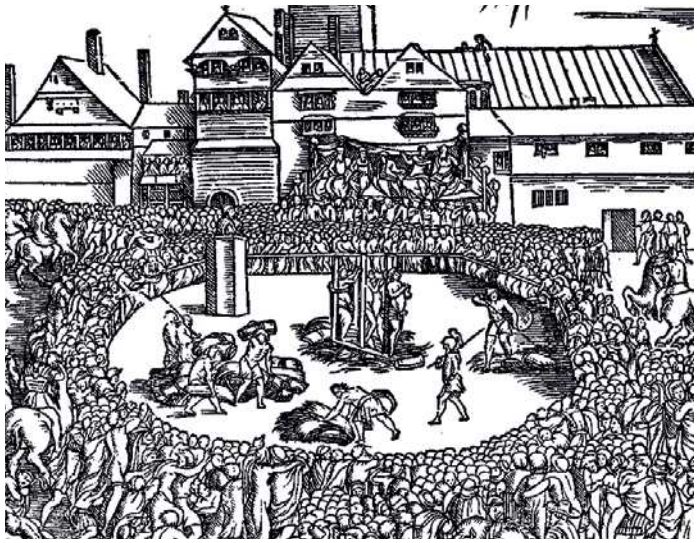
The town watch

There were no police forces in the Middle Ages. Most communities relied on people raising a 'hue and cry', which meant making lots of noise if a theft or murder was being committed.

Criminals were usually pursued from town to town and faced difficulties in escaping justice when the town gates were closed at sundown only to be reopened at sunrise. Town gates were guarded by watchmen. In London, which had six gates, there were about 200 watchmen. People lurking in the dark streets were simply arrested.

Did you know?

In medieval England, punishment of a loss of a limb could be carried out on an animal instead of the guilty person. Stranger still, in France, donkeys, pigs and cows were tried and hanged for murder if they killed a human. In 1349, a cow was burnt at the stake for killing a child.



H1.4.3 This woodcut from 1548 shows Anne Askew, John Lascelles, Nicholas Belenian and John Adams being burnt at the stake in Smithfield, London.

Trial by ordeal

Trial by ordeal reflected the importance that the Church played in the process of enforcing laws issued by kings. The belief was that God would intervene during a trial on the side of truth. Trial by hot water, where the accused had to plunge their hand into a cauldron of hot water was first documented in the sixth century in the kingdom of the Franks. Other ordeals included being thrown into a pool or being made to grasp a red-hot iron. The Normans introduced trial by combat in England. By 1215, trial by ordeal was condemned as being irrational by the Church, and King Henry II of England encouraged the system of trial by judge and jurors or sworn men to reach a verdict.

Activities

Remembering and understanding

1 Identify three key ways in which justice was carried out in England during medieval times.
2 Make a list of the different types of punishment that were applied in the Middle Ages.

Applying and analysing

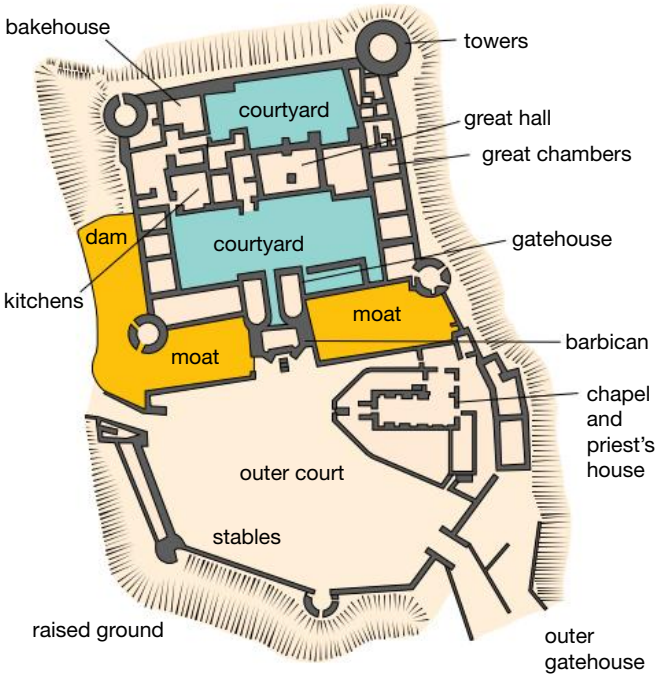
3 Why do you think that the punishment for traitors was so violent and why was it carried out in public?
4 Look closely at Source H1.4.1 and consider the similarities and differences with a courtroom scene today.

H1.5 Military and defence systems

Castles

Europe in the Middle Ages was a dangerous place to live. Competition between landowners for territory was fierce and the desire for wealth drove many feudal lords to launch attacks on each other. Landless knights also posed a threat as they travelled the countryside in search of opportunity and wealth. Whole communities suffered when land and crops were damaged by natural events or destroyed by a deliberate act of sabotage or war.

Fortified (or strengthened) structures therefore played an important role in the defence and protection of a lord's land and portable wealth. Castles grew out of the Roman idea of a military stronghold or *castrum*. The Romans had built *castra* to defend frontiers and important trade and communication points. Likewise, medieval kings and lords built castles to control roads, river crossings, mountain passes and villages.



H1.5.1 The floor plan of Farleigh Hungerford Castle, in Somerset, England. Construction of the castle began at this site in the fourteenth century.

From timber to stone fortifications

There were many different kinds of castles and it is possible to trace their development over time. The earliest castles were built in the Loire River valley in France during the tenth century. Castle building spread throughout Europe and was also introduced in the Holy Land by the knights of the First Crusade. The only building material there was stone, and as the benefits of building strong castles out of stone were obvious, the idea was taken back to Europe. Stone castles quickly replaced earlier structures that had been built of local timber. Timber castles could be built relatively quickly, but could be burnt down in an attack.

Motte and bailey

The earliest castles in Europe were built on a high mound of earth called a motte. This gave landowners added protection, but also allowed them to see over long distances. The lord and his family lived in a tower built on the mound.

The soldiers, horses, cattle, kitchen and stores were kept in the bailey, which was the large circular enclosure near the tower. Over time, a large square tower replaced the bailey. The first floor or donjon was used to keep prisoners and to protect the water supply in the well, weapons and general stores. This tower was called the keep.



H1.5.2 A detail of a miniature from the *Castle of Love*, with the lover addressing three women. From a prayer book, c. 1500

The Normans introduced castles in England following their invasion in 1066. Despite their military strategic function, illuminated manuscripts such as the *Castle of Love* (see Source H1.5.2) show how poets and painters gave castles a romantic and fairytale glamour.

Castles of Edward I (1272–1307)

Eight castles were built in Wales during the reign of Edward I of England in order to subdue or control the Welsh. They illustrate how castles developed over time in reaction to changing methods of assault or siege warfare used by the enemy.

Improved design

Round towers, which were harder to climb, replaced square towers. The castles of Caerphilly, Harlech and Beaumaris in Wales included a new design of concentric rings (like circles within circles) of ditches and walls to protect the central compound. The defensive system of the castles also included a drawbridge that could be raised against invaders. Harlech Castle featured a gateway with four mighty towers and three portcullises (strong, heavy gateways that could be raised or lowered as needed). Notches made at the top of the castle walls, called crenellations, offered protection to men armed with crossbows. Caerphilly and Beaumaris castles each made large-scale use of water as defence, notably with their moats. A moat is a deep ditch filled with water that was built to surround and protect a castle. These elaborate defensive systems only became redundant, or useless, with the invention of gunpowder in the sixteenth century.



H1.5.3 A fifteenth-century miniature showing the Siege of Mortagne, near Bordeaux, France, in 1377

Sieges

The defence systems of castles were so effective that attempts to assault or lay siege were both expensive and long. Siege towers originated during the Crusader wars and could be wheeled up to a castle in order to help soldiers breach or climb over the castle walls. The enemy could try to mine or tunnel under the stone walls of a castle but this also took time.

Giant throwing machines such as the mangonel and trebuchet (both a type of catapult) allowed armies to bombard the walls with large rocks or terracotta pots filled with Greek fire. Greek fire was another weapon brought back from the Crusades. It was a flammable mixture that could not be extinguished with water.

Activities

Remembering and understanding

1 Identify four ways in which castle defences changed over time.

2 Explain the importance of castles in the Middle Ages.

Applying and analysing

3 Look carefully at Source H1.5.3 and interpret what the soldiers are doing in this scene. Compare this with the activities shown in Source H1.5.2.

Evaluating and creating

4 Use your answer from Question 1 to help you create a flow chart of the key events in the development of castles in the Middle Ages.

H1.6 Origins and spread of the Black Death

The Black Death

In the mid fourteenth century, a terrible disease, the Black Death, swept across Asia, Europe and regions of Africa. The effect on the local populations and communities was devastating. Historians estimate that about 60 per cent of the population of Europe perished. In some regions across Asia and Africa, that figure was much higher, while other regions were barely affected. Historians conservatively (meaning at the lower end of the scale) estimated the death toll from the Black Death at 75 million. It was not the first or last time this dreaded plague spread across the populated world, but the fourteenth-century Black Death is recognised as one of the deadliest outbreaks.

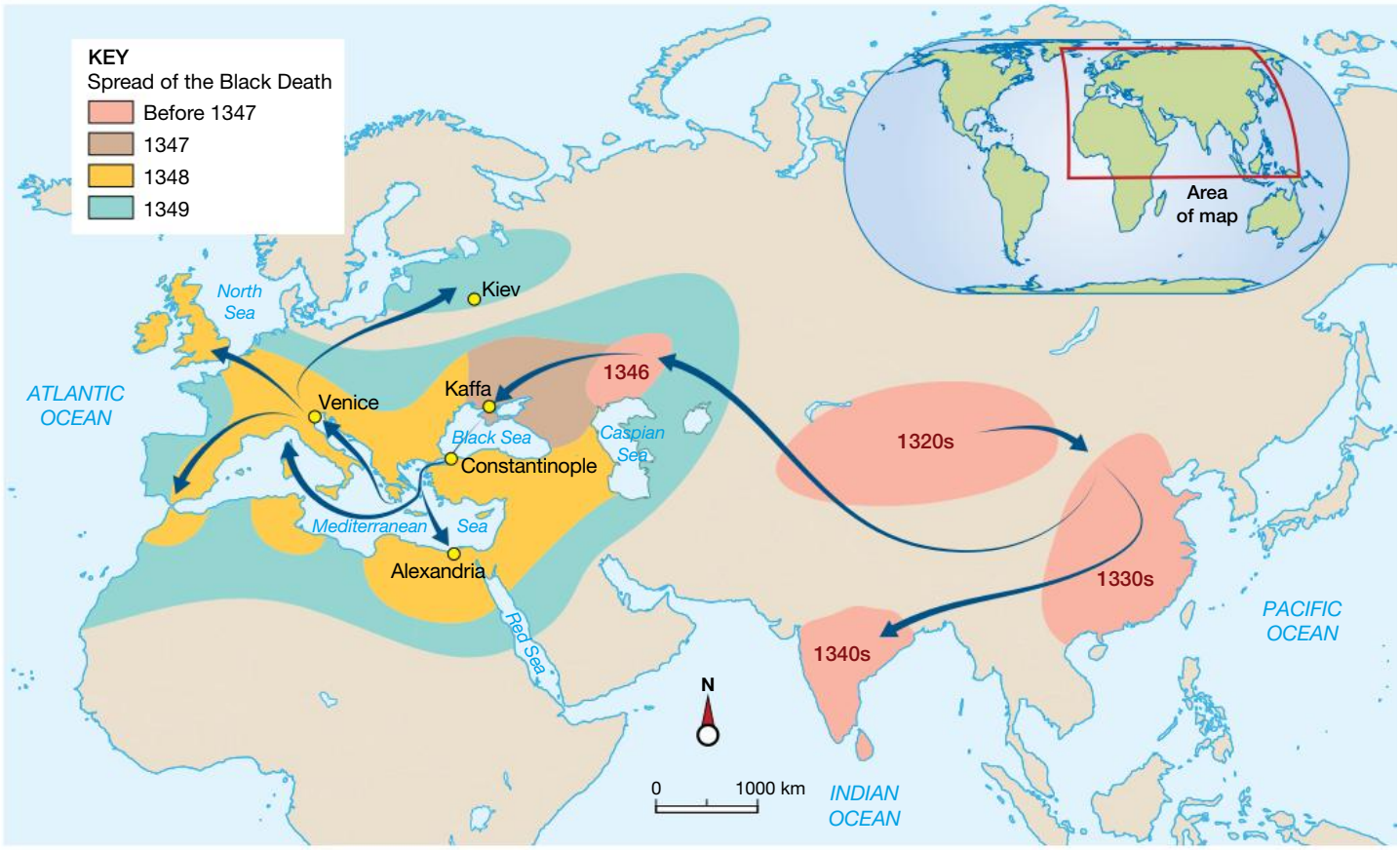
Expanding trade routes

Trade between the East (Asia) and the West (Europe) increased in the twelfth and thirteenth centuries. There was a network of interconnecting routes that traders used. Some were overland routes, others were sea routes. Sometimes goods were transported first by land and then by sea from Asia to Europe. Merchants trading in Asia were mainly Italians. From European seaports, goods were distributed throughout Europe and northern Africa.

Silk, spices and other goods were not the only items to move along the Silk Road between Asia and Europe. Rats also hid among the trade goods or climbed ropes that tied ships to docks to get on board merchant ships. Merchants unintentionally transported rats and the fleas they carried from Asia into Europe and Africa. These fleas were the carriers of the Black Death.

Origins of the Black Death

The Black Death is believed to have originated in the Gobi Desert of Asia in the 1320s. From there it spread westwards to China where it emerged in the 1330s. The records of this are poor, but some sources do reveal a decline in the Chinese population. From there, the plague slowly moved westwards.



H1.6.1 Origins of the Black Death in Asia and its spread to Africa and Europe

Outbreak and spread of the Black Death

Theories as to how the Black Death spread

Historians have different explanations as to how and why the Black Death reached Europe and Africa. The reasons for the spread of the Black Death are unclear and we will never really know the exact route it took. Some historians believe it was spread throughout the east by Mongol nomadic horsemen, who covered a vast area from China to India and the Middle East. Other historians believe it was changed environmental conditions that led to infected rats moving from their usual habitats towards Western Europe. However, all historians agree that trade between Asia and Europe had a major impact on the spread of the Black Death in the fourteenth century.

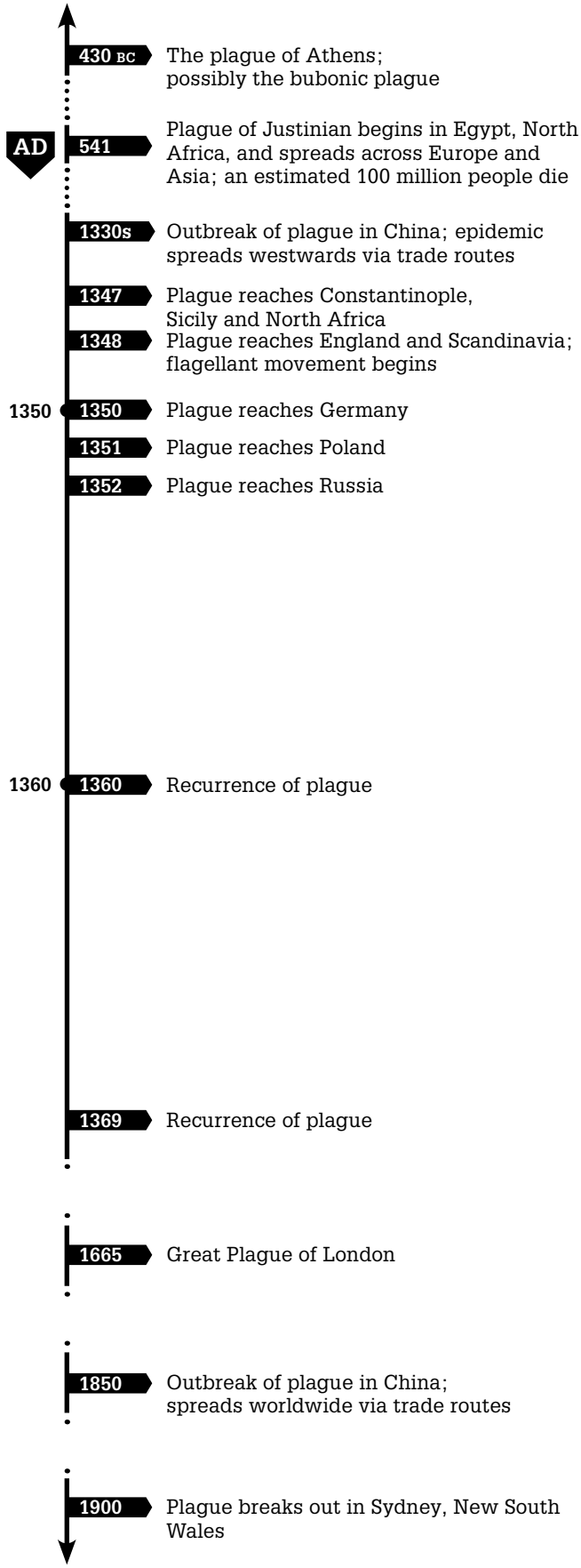
Spread by trade

Historical records show that a group of Italian traders arrived in Sicily from China in October 1347. Among the goods they carried were rats with fleas carrying *Yersinia pestis* **bacteria**. This was one of the first outbreaks in Europe. It was recorded in Sicily that when a merchant fleet arrived in the Sicilian port of Messina in October 1347, its crew were nearly all dying or already dead and were described as having 'sickness clinging to their very bones'. Although the ship was not allowed to stay, infected rats managed to get to land when the ropes from the ship were first tied to the docks. The disease spread quickly. By early November 1347, Sicily was stricken with the disease.

Other evidence points to Kaffa as the place of one of the early outbreaks of the Black Death. Kaffa, located on the Black Sea, in present-day Ethiopia, was the last trading post on the Silk Road. Mongols attacked Kaffa in 1346. Italian merchants were held under siege in the town. When the Black Death broke out among the Mongols, they hurled diseased corpses over the city walls into the town. The Italians fled to Constantinople, arriving in May 1347. Plague soon broke out.

> In October 1347 ... twelve Genoese galleys, fleeing from the divine vengeance which Our Lord had sent upon them for their sins, put into the port of Messina. The Genoese carried such a disease in their bodies that if anyone so much as spoke with one of them he was infected with the deadly illness and could not avoid death.

H1.6.2 A description of the Black Death arriving in Sicily, in R. Horrox, *The Black Death*, Manchester University Press, 1994



H1.6.3 A timeline showing major outbreaks of the plague

The Black Death spreads further into Europe and Africa

Italy

By December 1347, the Black Death had reached southern Italy. At about the same time, reports began to arrive from the major trading ports of Pisa and Genoa of outbreaks of the disease with about 40 per cent of the population dying. From there it moved to the more heavily urbanised (densely settled) areas of central Italy. It also had devastating effects on the commercial cities of Florence, Siena and Venice. Although ships were quarantined (kept separate for a period of 40 days), this measure was too late to stop the spread of the disease into Venice. It is estimated that 60 per cent of the population of Venice died.

France

By January 1348, the Black Death was reported in Marseilles, a major port in the south of France, where the mortality rate was also thought to be about 60 per cent. It quickly spread throughout France, including Avignon where the Pope lived, and Paris. Many areas of northern France were already in very poor condition due to the Hundred Years War with England and the plague spread very rapidly in these areas. It then spread to Belgium, the Netherlands, Scandinavia and even Iceland and Greenland. Historians believe that a combination of plague and poor climatic conditions wiped out the whole population of Greenland.

England

England was also severely affected. Historians believe that the plague was brought to England aboard French and Italian ships in September 1348. It was reported that in London, England's largest town and major trading centre, there were outbreaks by late 1348. Despite the fact that most people lived in the countryside, regular travel between town and country helped spread the disease throughout most of England.

North Africa

Seaports on Africa's Mediterranean coast were also affected. Alexandria, in Egypt, was one of the first to become infected in 1347. By 1348, the Black Death had spread to other port cities and it then moved southwards so that the whole of northern Africa experienced outbreaks.

Reasons for the Black Death's rapid spread

For the Black Death to break out in such a major fashion, a series of events and circumstances had to coincide (happen at the same time).

- Fleas are only active at temperatures of 15 to 20 degrees Celsius, with 90 to 95 per cent humidity, which is why most outbreaks only occurred in late summer and early autumn.
- The population of Europe was not in a healthy state, as poor harvests and bad weather had led to crop failures in many parts of Europe at the time.
- A booming European population had led to overcrowding in some areas and greater numbers of people living in towns and cities. This made it easier for the disease to spread quickly.
- The speed of land transport along main roads was about 2 kilometres per day; however, ships could travel 40 kilometres in a day. Sea travel moved rats and fleas quickly over vast distances.



H1.6.4 A recreation of an English town during the Black Death

Spotlight

Eyam Village

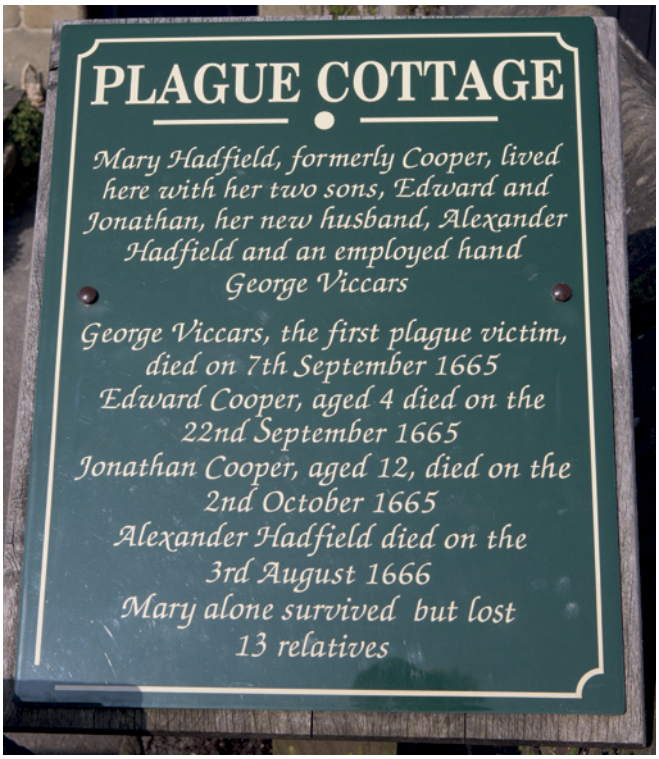
In September 1665, cloth was delivered from London to the village tailor in Eyam in the Peak District of England. The tailor's assistant, George Viccars, who had opened the delivery, quickly fell ill from the Black Death and suffered a horrible death. The tailor and his stepsons also contracted the disease and died. The tailor's wife, Mary Hadfield, was the only person in the household to survive. Within 14 months the Black Death had spread through the village of approximately 800 people, causing over 260 deaths.

Soon after the plague arrived, the local people led by the local rector (priest) agreed to quarantine themselves inside the village in order to prevent the disease spreading to other communities. This meant that no one was allowed in and, more importantly, no one was allowed to leave. Large stones were placed at a distance around the town's boundary. Coins, cleaned with vinegar because this was seen as an effective disinfectant, were left on the stones to pay merchants in the local area for food and other supplies deposited at the boundary.

Today, Eyam Village has become a tourist attraction because of this unique story. Many of the buildings look as they did in 1665 and 1666 during the quarantine period—even some of the boundary stones are still in place. A museum and plaques around the town tell the story of the villagers and commemorate their act of sacrifice.



H1.6.5 The 'plague cottages' in Eyam



H1.6.6 A sign outside one of the 'plague cottages'

Activities

Remembering and understanding

1 Outline how trade helped to spread the Black Death.

2 What do Sources H1.6.1 to H1.6.3 tell us about how the plague arrived in Europe?

Applying and analysing

3 a What do the sources in this unit tell us about the effect of the plague on the towns and cities it reached?

b Why do you think the Black Death would have affected urban areas more than rural areas?

4 Once the Black Death arrived in a certain location, why would it have been difficult to limit its spread to other places?

5 Why do you think historians cannot clearly explain how and why the Black Death reached Europe and Africa?

H1.7 The causes of the Black Death

Bacteria, fleas and rats

The Black Death was caused by a type of bacteria called *Yersinia pestis*. These bacteria live in the digestive system (the system through which food passes) of fleas, particularly the fleas that inhabit the fur of rats. These bacteria can multiply rapidly in the flea's stomach, causing a blockage. When the flea feeds or bites, these bacteria are regurgitated (brought back up) from its stomach and injected into its victims. The fleas live on rodents, a class of small mammal including rats, mice, squirrels and hamsters. In Europe, the *Rattus rattus* or black rat was the most important carrier.

Black rats tend to live close to humans and where food waste is found. They are very good at climbing into the rafters (wooden beams) of houses. The thatched roofs of peasants' homes were ideal habitats for them.

Other rodents such as marmots, squirrels and prairie dogs could also carry the infected fleas. Although it was not their preferred place to live, if desperate, the fleas could also live on most other animals, including humans.

Forms of Black Death and their symptoms

There are three forms of the Black Death. The most common is the bubonic plague, which is transmitted by fleas. Bubonic plague is not contagious between humans, meaning it does not spread from one person to another. It had a 60 per cent death rate and killed victims in 5 to 7 days. If the infection reached the lungs, another form of the Black Death came about, known as the pneumonic plague. This form usually occurred if the disease was caught in winter. It had a 90 to 100 per cent death rate and killed victims in about a week. The most lethal form, with a 100 per cent death rate, was septicaemic plague.

Bubonic plague

When a flea bit a human for food, it deposited the bacteria into the human's bloodstream. The bacteria could multiply very rapidly and within 3 to 6 days the first symptoms began to appear in the human. The first symptom was generally a pustule (a swelling on the skin that contains pus or fluid carrying dead cells) at the place where the bite happened. This was quickly followed by swellings in the armpits, groin or neck, depending on where the flea had bitten. If it bit higher on the body, swelling would usually start near the armpits. If the bite was lower, swelling would often begin in the groin.



H1.7.1 A woodcut illustration of the black rat, *Rattus rattus*, from Conrad Gessner's 1551 *Historiae Animalium*. Gessner was a sixteenth-century naturalist who died from the plague.

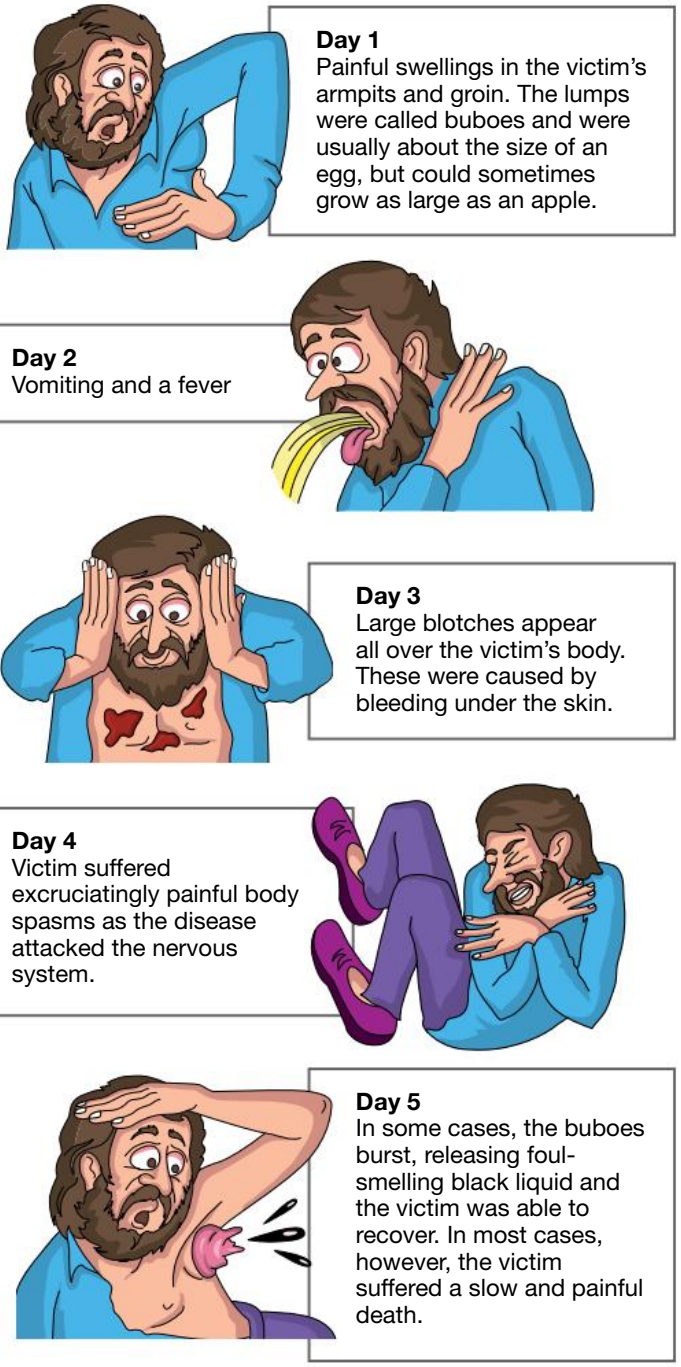
These swellings were known as **buboes** and this is where the bubonic plague gets its name. Buboes were swollen lymph nodes around the armpits or groin, usually full of pus and sometimes the size of an apple. After this, the sufferer began to bleed under the skin, causing large purplish blotches to appear. Sometimes this bleeding affected the nervous system, leading to uncontrollable movements and psychological disorders.

> ... it first betrayed itself by the emergence of certain tumours in the groin or the armpits, some of which grew as large as a common apple, others as an egg, some more, some less, which the common folk called *gavoccioli*. From the two said parts of the body this deadly *gavocciolo* soon began to ... spread itself in all directions ... after which the form of the malady began to change, black spots ... making their appearance in many cases on the arm or the thigh or elsewhere ... [T]he *gavocciolo* ... was an infallible token of approaching death.

H1.7.2 A description of the plague in *The Decameron* by Giovanni Boccaccio, a collection of 100 stories, begun c. 1350, completed in 1351–53

Pneumonic plague

This type of plague, which affected the lungs, had an incubation period (the time between catching a disease and showing symptoms) of 2 to 3 days and a much higher mortality rate than the bubonic plague. After the incubation period, the victim experienced a rapid drop in body temperature followed by a severe cough. Unfortunately, the deadly bacteria were carried in the tiny droplets produced by a coughing victim, which could then be breathed in by anyone nearby. This made the pneumonic plague very contagious.



H1.7.3 The stages of the bubonic plague



H1.7.4 A physician lancing (cutting) a bubo on the neck of a victim of the plague, from a fourteenth-century fresco in France

Septicaemic plague

Septicaemic plague occurred when the *Yersinia pestis* bacteria entered the bloodstream and attacked the immune system. It caused high fever, exhaustion and stomach pain. It led to multiple organ failure and death was inevitable.

Did you know?

Black Death researchers have extracted DNA from the remains of fourteenth-century plague victims to learn more about the plague. These experts have found that the fourteenth-century plague strain was no more virulent than the plague virus that is still around today. The quick spread of the fourteenth-century plague has led them to suggest that the plague was not in fact bubonic (spread by fleas on rats), but was pneumonic and spread from human to human by coughs and sneezes.

Activities

Remembering and understanding

1 List the three types of plague.
2 Examine Source H1.7.2. What type of plague does Boccaccio describe?

Applying and analysing

3 Use the information and sources in this unit to create an AVD that explains:
   a how the Black Death spread to humans
   b the symptoms and details of each form of the Black Death.
4 Examine Source H1.7.3. Draw a series of simple diagrams to illustrate the stages of the bubonic plague.

H1.8 Treatments for, and responses to, the Black Death

Attempts to prevent the Black Death

It is evident from the sources available that medieval doctors had no idea about the scientific causes of the Black Death or how to treat it. Without proper knowledge about its actual causes, it was thought that the best hope was to prevent it from occurring. The belief that the plague was carried on foul air (referred to as miasma) meant the people of the time went to great lengths to keep this foul air away from them. It was considered unhealthy to be near the sea or marshes as it was believed the miasma came from there. A lot of time and effort were put into keeping these poisonous airs away. People would:

- burn dry and richly scented woods to sweeten the air
- place sweet-smelling herbs like rosemary and flowers around the house
- sprinkle rosewater over floors
- avoid physical activity so as not to breathe in more air
- avoid hot baths as the pores of the skin open and 'let in' poisoned air.

Other preventative measures involved focusing on what was eaten. A fig with breakfast was recommended, and pills of aloe, myrrh and saffron were popular. Another favourite suggestion was 10-year-old treacle blended with chopped-up snakes and wine! Other ideas included not eating fish or meat unless it was roasted. It was also suggested that a person should avoid regular bathing.

> ... it is recommended that fires be lit in homes and in places where people are living, and that men rest quietly. Also, fires of any kind of fragrant plant be set up, and the house and the city be cleansed of foul matter [i.e. excrement], and to counteract the foulness, fruits and spices ... should be at one's disposal.

H1.8.1 One suggested method of preventing the Black Death

Did you know?

One recommended cure for the Black Death was powdered emeralds. It was believed that this remedy was so powerful that if a toad looked at you after you had taken it, its eyes would crack!

Treatments for the Black Death

Bleeding

Victims of plague were treated with a range of remedies, none of which were particularly effective. The main treatment was bloodletting (literally, to let blood out of veins) to get rid of the foul or poisonous airs that had entered the body and were affecting the body's balance. This treatment only weakened the patient further.

Other remedies

Other remedies included giving the patient soothing potions to drink. One of the most popular was a blend of apple syrup, rosewater, lemon and peppermint. Buboes were often cut open to let the poison escape; this usually only succeeded in spreading the disease further. Leeches (bloodsucking worms) were sometimes also applied to patients.



H1.8.2 Doctors using leeches to heal a patient, c. fourteenth century

Responses to the Black Death

The flagellants

Due to deep religious beliefs, the Black Death was considered a punishment from God. People believed that if they showed regret for their sins, God's anger could be made less worse. One group thought that flagellation would achieve this. Flagellation was the whipping or scourging of oneself with a stick with several pieces of rope or strips of leather (called thongs) attached to the end. Sometimes these leather thongs also had metal studs attached to the ends. **Flagellants** would rhythmically beat their backs or breasts with these scourges to show God that they were atoning or making up for their sins. They hoped that God would take away the plague. While flagellants existed before, they became a significant movement during the Black Death.

Some flagellants went on pilgrimages from town to town. Pilgrimages could involve 300 to 400 flagellants. They would perform their scourging ceremony in the town square, beating themselves into a frenzy. Townspeople watched and encouraged them to whip themselves even harder. It is quite possible that the flagellants had the effect of spreading the disease, as walking from town to town often helped to spread the plague.



H1.8.3 Flagellants in Doornik (Tournai), Belgium, in 1349

Scapegoats

Many people looked for a scapegoat, which is a word that refers to someone to blame for the trouble they were experiencing. As a non-Christian group in a Christian Europe, the Jews were an easy target. Jews began to be blamed for the disease, with people claiming that the Jews had poisoned the water supplies of towns. As the Black Death spread through Europe in 1348, massacres of Jews began. In April 1348, in France, forty Jews were killed in Toulon. Nine hundred Jews in Strasbourg were burnt alive in February 1349, even before the plague arrived. In Erfurt, Germany, in March 1349, an estimated 1000 to 3000 Jews were massacred. Some Jews burnt their homes and themselves before the lynching groups arrived.



H1.8.4 The burning of Jews in the Nuremberg Massacre, Germany, in 1349

Activities

Remembering and understanding

1 Using the sources in this unit, list the methods that were used by medieval people to fight the plague.

2 a What was the flagellant movement?

b Who did flagellants blame for the outbreak of the Black Death?

Applying and analysing

3 Using your list of methods from Question 1, rank each method from the most helpful to the least helpful. Give reasons for the rankings you have given.

4 Why do you think people would have initially supported the flagellants?

Evaluating and creating

5 Imagine you are a Jewish person living in a European Jewish community during the period of the Black Death in the fourteenth century. Recount your observations and experiences in a personal diary. Entries should cover about 6 months and should be written in the first person. Include a minimum of five entries.

H1.9 The impact of the plague

Impact on society

A **pandemic** or epidemic that spread across continents and affected many countries, such as the Black Death, was bound to have both long-term and short-term impacts on societies in Europe, Asia and Africa. Some impacts were immediate, such as the disruption to daily life through the great loss of life. Other impacts emerged gradually over a longer period, permanently transforming societies.

> After the pestilence, many buildings ... in all cities, towns and villages had collapsed ... in the absence of inhabitants. Likewise, many small villages were completely deserted ... all those who lived in them were dead ... and the land everywhere remain[s] completely uncultivated ... before the pestilence, when there were plenty of priests, one could hire [one] for five marks, [now] ... there was scarcely anyone who wanted a position for twenty marks.

H1.9.1 A contemporary account of England after the Black Death by historian and chronicler Henry Knighton, 1350

Immediate effects of the Black Death

Population decrease

One of the most obvious impacts of the Black Death was the decrease in population. Historians estimate population losses of 35 to 50 per cent in Europe, with some even putting the figure as high as 60 per cent. It took 150 years for the population of Europe to reach the level that it had been before the plague broke out. Asian and African regions experienced similar death tolls.

China's population of 120 million in 1200 had fallen to 65 million in 1393, although famine and Mongol invasions also contributed to this depopulation. Towns in central Asia along the Silk Road all experienced population decreases, estimated to range between 30 to 70 per cent. The death rate was equally high in many regions of northern Africa. Worst affected were the seaports in regular contact, through trade, with Europe and Asia. In total, the world population decreased by an estimated 75 to 100 million.



H1.9.2 A fourteenth-century Venetian miniature depicting victims of the Black Death



H1.9.3 Archaeologists work on the site of London's Crossrail Project in March 2013, after project workers discovered a mass burial site dating back to the Black Death in the fourteenth century.

Labour shortages

Compared with pre-plague days, the worst affected areas looked very different. Many towns and villages were deserted or had few survivors. In London, streets were filthy, despite an order from King Edward III to clean them up, as few street cleaners survived the plague. Many shops and businesses remained closed. Farms were generally untended (not looked after), which meant crop and livestock produce was very small and food was scarce. The severe shortage of workers resulting from the millions of deaths greatly delayed any signs of an economic recovery after the Black Death.

Did you know?

The bubonic plague didn't disappear after the Middle Ages, and outbreaks continued into the twentieth century. It reached Australia in 1900, brought by infected fleas carried by rats on ships arriving in Sydney from overseas. Over 300 Sydneysiders contracted the disease and 103 lost their lives. There were as many as twelve outbreaks of the plague in Australia between 1900 and 1925, including in Queensland and South Australia.

Burial pits

Large pits were dug to bury the enormous number of dead after cemeteries were quickly filled. The dead were put out in the street and collected in carts every morning. Recent excavations in central London for a new railway link revealed plague skeletons in a mass pit. Historical records from 1348 refer to a mass grave of about 50 000 plague victims somewhere near this excavation site. The skeletons were in a relatively shallow pit a mere 7 metres below the present-day ground surface.

Did you know?

Recent studies of skeletal remains by anthropologists of post–Black Death people suggest that the standard of living, especially diet, improved in the period after the plague. Mortality rates dropped and people were generally healthier.



H1.9.4 A fragment of an illumination from the fifteenth century showing Pope Gregory the Great leading a procession to pray for the end of the plague. Cardinals, monks, a hermit and local people follow him. In the foreground, a child and a monk have fallen to the disease, highlighting that no one was safe, not even the clergy and religious.

Religion and the clergy

The large numbers of clergy, monks and nuns who died of the Black Death led some people to question the behaviour of religious people. Since it was believed that the Black Death was a punishment from God, then many people concluded that religious people must have sinned. There was disappointment that the Church had failed to stop the plague. The loss of faith in the Church led to a decline in its power and status in society.

Long-term effects of the Black Death

Weakening of the feudal system

The Black Death weakened the feudal system in Western Europe. The severe shortage of agricultural workers meant they were in demand. Workers became more mobile and moved to manors where they would be offered better conditions. In order to retain workers, landlords were forced to pay better wages. This often involved the agricultural worker simply paying the lord rent, instead of having to fulfil labour duties. Many peasants became prosperous during this time, earning up to five times more than before the Black Death. For lords, there was a doubling in the costs of operating the manor, compared with the period before the Black Death.

To keep costs down, lords sometimes switched to less labour-intensive forms of farming (systems that required fewer human workers), such as raising animals, rather than growing crops such as wheat.

Peasant uprisings

The shortages of labour disrupted the feudal system, which threatened political and economic organisation. The English parliament passed the 'Statute of Labourers' in 1351. This meant that the law now said that labourers could not move from one place of work to another for better wages and employers were not allowed to offer higher wages to entice workers. Similar laws were passed in Germany, Italy and France. These measures greatly affected the poorer classes and it is not surprising that they quickly became very unpopular.

The Peasants' Revolt

In 1381, a revolt broke out among the English peasants, known as the Peasants' Revolt. This was in protest against the legislation, taxes and the fact that serfs—who were still tied to the land—were not free to work where they wished. Led by Wat Tyler, peasants marched to London with demands for reduced taxes and an end to the serf system. While the revolt was quickly put down and its leader beheaded, it did make the government reluctant to increase taxes any more. It also showed that peasants had the will and power to challenge the feudal system.



H1.9.5 The Peasants' Revolt of 1381 at Smithfield, London. King Richard II met the rebels and agreed to their demands. Violence broke out and their leader, Wat Tyler, was killed.

Social mobility

The severe labour shortages, the peasant uprisings and the weakening of the feudal system broke down the social structure. Peasants became upwardly mobile. This means they could finally move between classes. Where they had been at the lowest level of society before the Black Death, their improved pay helped them achieve a higher status as they gained wealth. New job opportunities also arose. Due to the large number of deaths across all levels of society, survivors could move into positions in the Church, crafts and government. On the other hand, many wealthy people suffered financially because the cost of running their estates greatly increased with high labour costs as the feudal system broke down.

Medical knowledge

The plague and the wide-ranging efforts to find a cure and stop it spreading meant that by the end of this period there was a much greater awareness of the importance of public health and of the need to keep cities cleaner and provide hospitals. Changes in the study of medicine also took place, leading to a greater expansion of medical knowledge. Medical textbooks began to be written in the common language rather than in Latin, which meant many more people gained access to medical knowledge.

Skills builder

Identifying continuity and change

Work in pairs to conduct research into the changes in people's social and economic situations as a result of the Black Death. Focus on the changes experienced by lords of large manors and by peasant workers. One partner could investigate the lord of the manor and the other partner could investigate peasant workers. Use the information to compare the changes in the social and economic circumstances of these two groups in medieval society. Extend your investigation by considering which aspects of life, if any, continued relatively unchanged by the Black Death.

Information to be researched for each group in society could be written in a table, with one column labelled 'Before the Black Death' and the other labelled 'After the Black Death'. Notes may include daily life, social position, work, clothes, wealth, marriage.

Use the information to create a poster that clearly displays the social and economic positions of lords and peasants before and after the Black Death. Include clear headings and pictures to highlight the ideas of continuity and change.

Activities

Remembering and understanding

1 Why do you think historians cannot agree on the numbers who died during the Black Death outbreak in 1347–48?
2 Recall learnings from earlier units in this chapter to describe the feudal system.
3 How was the feudal system weakened by the Black Death?

Applying and analysing

4 Read Source H1.9.1. What effect did the Black Death have on the countryside?
5 Create a list of the positive and negative effects of the Black Death. With a partner, rank them in order of the most to the least important. Justify your ranking.
6 Draw a social pyramid of England before the Black Death occurred. Explain how this social pyramid changed after the Black Death.

Evaluating and creating

7 The Black Death of the mid fourteenth century was not the only time the plague spread through parts of Europe, Africa and Asia. Research the Great Plague of London, which occurred in 1665–66. Prepare a report that describes conditions in London during the plague and discusses its impact on the city.

H1.10 Significant individuals

Charlemagne (742–814)

Charlemagne (Charles the Great) and his brother, Carloman, inherited vast domains (large areas of land) when their father, Pepin the Short, died in 768. These lands included France and western Germany. Charlemagne outlived his brother and spent the rest of his military career creating a single, centralised state. He extended his rule into Italy, northern Spain, northern Europe and as far east as the Danube River in central Europe.



H1.10.1 The Carolingian Empire, c. 800

The *Vita Karoli Magni*

Charlemagne was considered to be a wise and capable ruler. His biographer, Einhard, wrote the *Vita Karoli Magni* ('Life of Charles the Great') in the ninth century. He describes Charlemagne as tall and fair.

Einhard also wrote that Charlemagne was fluent in foreign languages and an eloquent (clear and effective) speaker, and that he was pious (very religious) and generous to the poor.



H1.10.2 Charlemagne eating with the poor, a miniature from *The Great Chronicles of France*, fourteenth century

Charlemagne's achievements and legacy

Charlemagne introduced administrative reforms such as establishing key representatives in each of the regions that he governed and holding a yearly general assembly at his court in Aachen, Germany. He standardised weights, measures and customs dues (taxes on imported goods), which means he made them consistent (or the same) across different areas. This improved the way that people could do business. During his reign, Charlemagne encouraged the reintroduction of classical art and education for all. He contributed to the spread of Christianity throughout Western Europe. The Pope crowned him emperor on Christmas Day, 800. After he died in 814, his empire fell apart under his successors.

> This King, who showed himself so great in extending his empire and subduing foreign nations, and was constantly occupied with plans to that end, undertook also very many works calculated to adorn and benefit his kingdom, and brought several of them to completion.

H1.10.3 Extract from *Einhard: The Life of Charlemagne*, Book 17

Eleanor of Aquitaine (1122–1204)

Eleanor of Aquitaine lived an extraordinary life. She was highly intelligent, literate, charismatic and beautiful. Aquitaine refers to a traditional region in France.

> [Eleanor was] an incomparable woman; beautiful yet gracious, strong-willed yet kind, unassuming yet sagacious [wise] even now [at 75 years old] unwearied of any task and provoking wonder at her stamina.

H1.10.4 Extract from the *Chronicle of the Deeds of Richard I*, by Richard Devizes

At the age of fifteen, Eleanor inherited her father's lands and feudal relationships, becoming the immensely wealthy and powerful Countess of Poitou and Duchess of Aquitaine. She was first married to King Louis VII of France and then to King Henry II of England.

Courtly love and politics

As a young woman in Aquitaine, Eleanor patronised (supported) troubadours who performed music, recited poetry and promoted the ideals of courtly love. She pursued her love of culture throughout her life. Later, her court in Poitiers was renowned for its artistic and intellectual achievements.

She actively participated in the political developments of the twelfth century. As Louis's queen, she was involved in a brutal war over territory with the Count of Toulouse.



H1.10.5 Eleanor of Aquitaine marrying Louis VII in 1137 (left scene) and Louis VII departing on the Second Crusade in 1147

She held power in her ancestral (family) lands and kept control of her rebellious vassals in Aquitaine. She accompanied Louis VII on the Second Crusade to Jerusalem. In her fifties, and remarried, she encouraged her sons to rebel against their father, Henry II, in a war for the English crown and was imprisoned for years. Following Henry's death, she claimed the throne for her son Richard the Lionheart and governed for many years while he was on Crusade. On his death in 1199, she secured the throne for her youngest son, John. Eleanor lived very long for the Middle Ages, dying at the age of eighty-two in France.

Activities

Remembering and understanding

1. Explain who Charlemagne was and identify his achievements.
2. Explain why Eleanor of Aquitaine stands out as an exceptional woman for her times.

Applying and analysing

3. Examine Sources H1.10.2 and H1.10.3. Create a one- or two-sentence summary of Charlemagne's character in your own words.

Evaluating and creating

4. Use Sources H1.10.4 and H1.10.5 to enable you to draw an annotated portrait of Eleanor of Aquitaine.
5. There are many interesting personalities from the medieval period. Choose one of the following and conduct some research using the internet or your school library:
   - William the Conquerer
   - Frederick Barbarossa
   - Alexander Nevsky
   - The Black Prince
   - Joan of Arc
   - Christine de Pisan
   - Sultan Mehmed II.

   First, record key facts in dot-point form. Identify the key reasons why in your judgement this person made a significant contribution to their times. Then choose a creative IT format to present your ideas. You might choose to use a social medium or an app if you prefer to rely on a visual presentation. Finally, present your work to the class.

H1.11 The influence of the medieval European world

A rich legacy

The Middle Ages has left a rich legacy (gift from the past) that can be seen in many aspects of modern Western culture. Cathedrals, castles and universities remind us that this was an innovative time—a time of new ideas, methods and technology. Other aspects of modern life have foundations in medieval ideas, innovations and culture including art, politics and law.

The printing press

The invention of movable metal type by the early 1450s improved the production of printed books. Johannes Gutenberg (1400–1468) in the German town of Mainz perfected the system of printing. Metal letters replaced wooden letters so they could be used repeatedly without affecting the print quality.

Texts of all kinds could be mass produced. Gutenberg's printing press revolutionised learning and the spread of information. It contributed to the publication of works of poetry, history, romantic fiction as well as works of religious or philosophical importance. Mass-produced books with illustrations and diagrams were available to medical students and to society on a wide scale.

The development of parliaments

An awareness of politics developed during this period. Many writers held views on how to rule and the nature of politics in society. To improve government, the monarchies in France and England began to rely on a professional body of bureaucrats (government workers) and lawyers trained in the universities. Gradually, assemblies of lords, bishops and commoners were granted limited rights in the making of laws. These assemblies were the origins of modern parliaments. The royal court also became permanent in cities such as London and Paris. Previously, the court travelled around with the king.

The Magna Carta

The **Magna Carta** is a document signed by King John of England in the summer of 1215. He was under pressure from nobles who rebelled against him because he had abused his customary feudal rights as lord of all England. King John had also alienated (meaning that he lost the trust and support of) the Church and the rising class of merchants who were being taxed heavily in order to fund the king's wars and government bureaucracies. The Magna Carta meant that the king of England was subject to the law. Representative government and common law developed from this important document.

H1.11.1 Johannes Gutenberg in his workshop



Knowledge and universities

Educational studies in the Middle Ages were divided into seven liberal arts: arithmetic, geometry, astronomy, music, logic, rhetoric (the art of public speaking and arguing) and grammar. The culture of scholarly work was based on the careful logical analysis of major and important texts including the Bible and the philosophical works of Aristotle. Thomas Aquinas was the best known of the scholastic thinkers of the thirteenth century.

Universities overtook monasteries as places of learning in the twelfth century. The University of Paris had a reputation for excellence in philosophy and theology; Bologna became the centre of legal studies; and other smaller universities developed in France, Italy, Spain and England. Features of today's university life were developed by the thirteenth century: lectures, examinations, degrees, students and academic teachers and researchers. Kings and princes across Europe financed (paid for) universities and colleges in order to produce graduates who would serve the Crown and help administrate. Many of these first universities still exist today.

Gothic Revival

The Romantic movement of the eighteenth and nineteenth centuries revived, meaning it brought back, important concepts from the Middle Ages. The Romantic poets, artists and architects found inspiration in medieval poetry, art and visible ruins.

Literature

Historical novels set in the Middle Ages were fashionable. The highly popular novel *Ivanhoe* (1819) by Sir Walter Scott recreated the Middle Ages, but with a critical view of feudal tyranny, the futility of the Crusades and the shortcomings of chivalry.



H1.11.2 Gothic Revival in southern Germany: the famous Neuschwanstein castle in Bavaria was built by King Ludwig II in the nineteenth century.

Architecture

Until the eighteenth century, people considered **Gothic** architecture old-fashioned and tasteless, and preferred Roman domes and curved arches. The Romantics' Gothic Revival celebrated pointed arches and flying buttresses (curved structures on the outside of a building to help support its walls). A German architect rediscovered the medieval plans of Cologne Cathedral and completed it in 1880. Work had originally begun in 1248. In France, the nineteenth-century architect Viollet-le-Duc worked to restore and preserve France's medieval heritage such as the walled city of Carcassonne, and the Notre-Dame and the Sainte-Chapelle in Paris. In London, the Big Ben clock tower reflects a medieval fantasy of the nineteenth-century Victorian period.

Paintings depicting English abbeys, castles and cathedrals were popular. Fireplaces and furniture were fashioned to look medieval.

Victorian Gothic was imitated (or copied) in colonies of the British Empire, including Melbourne, where a neo-Gothic (or new Gothic) style was applied to many buildings. This included churches such as St Patrick's and St Paul's, as well as commercial buildings such as the ANZ Gothic Bank.

Activities

Remembering and understanding

1 What was the impact of the invention of the printing press? How did the use of metal letters and moveable type improve on this invention?

2 What was the impact of the Magna Carta on the power of the king of England?

Applying and analysing

3 Choose two legacies of medieval Europe that you think are the most important. Justify your ideas to a partner.

Evaluating and creating

4 Use Source H1.11.2 and the information in the text to design your own Gothic castle or an item of furniture that has Gothic features.

LS H1C


قضاء عسکر باجل و بفرغ
چو اصحاب فتوی و ارباب شرع

The Ottoman Empire

H2

A tribal leader from Anatolia, Osman Bey, dreamed of a tree sprouting from his navel and spreading its branches around the world. A holy man said this was a sign that Osman and his descendants would rule a mighty empire. This they did. The Ottoman Empire spread rapidly to Europe, the Middle East and North Africa. It was remarkable for its **tolerance** of different cultural groups. The empire lasted six centuries, from around 1300 until 1922 AD.

OVERVIEW QUESTIONS

H2A How was the Ottoman Empire formed and how did it grow in power and influence?

H2B How did people's way of life change in the Ottoman Empire over time?

H2C What caused the Ottoman Empire to become powerful and why did it eventually decline?

LS Before you begin

GLOSSARY

accession the occasion on which someone takes a position of authority, such as a king or a sultan

bastion a projecting part of a fort that allows for defensive fire in several directions

breach to break through the wall or defence of the opponent

bureaucracy the system of appointed state officials who provided administrative support to the sultan

fratricide the deliberate or intentional killing of one's brother or sister

grand vizier the most senior and most powerful Ottoman official, who made sure the sultan's orders were carried out

harem the part of the palace where the wives, concubines (mistresses), female relatives and children of the sultan lived

jizya a 10 per cent tax that all non-Muslims paid

külliye a complex or group of buildings with a mosque at its centre

millet a system for organising non-Muslim groups into faith-based communities; *millets* were allowed to have separate legal courts to hear cases of personal law, and ran their own schools and welfare systems

patriarch the oldest, most powerful or most respected man in a family or organisation

siege a military operation whereby enemy forces cut off essential supplies to force surrender

subjugate to bring under control, especially by force

tolerance a willingness to accept another person's beliefs or way of life even if you don't agree with them

tribute a payment to a ruling force as a sign of submission or loyalty

tughra the calligraphic (artistically handwritten) emblem or signature of an Ottoman sultan

H2.0.1 *Enthronement of Suleiman the Magnificent*, painting by Arifi, 1558, Turkish school, Topkapı Palace Museum, Istanbul, Turkey

Timeline

The Ottoman Empire

The Ottoman Empire, like so many others, extended over great territory and wielded enormous influence over many subjects. Yet it established religious tolerance in a way that few other empires, before or after, have been able to. What was the secret to the Ottoman success?



Osman I, founder of the Ottoman Empire

KEY EVENTS

1258
Osman Bey, founder of the Ottoman Empire, is born

1299
Osman I crowns himself sultan (king)

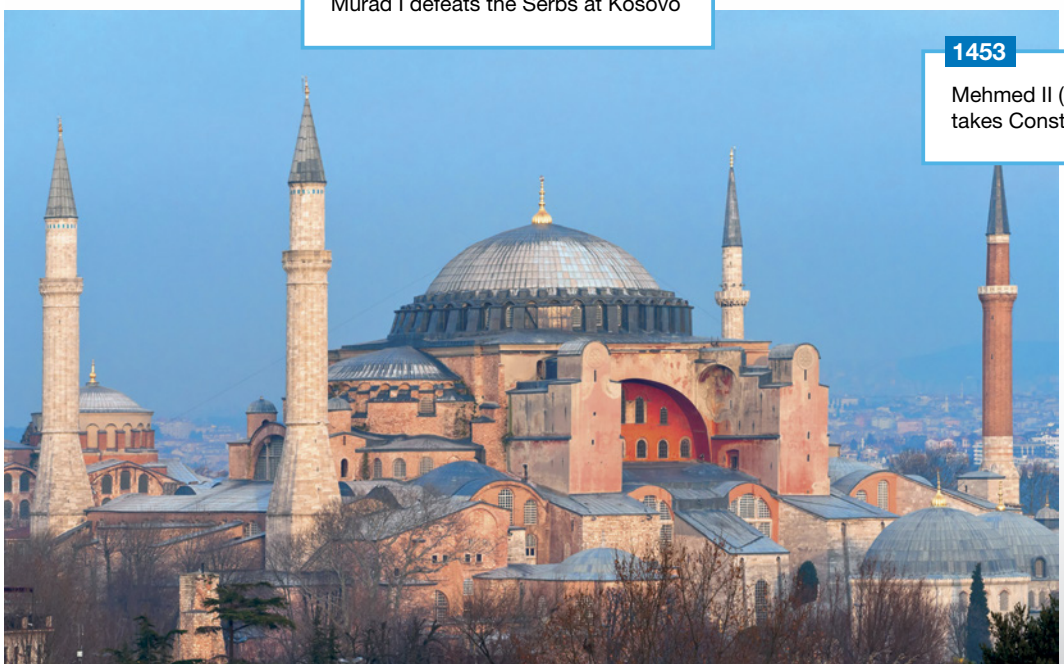
1459
Construction of the Topkapı Palace begins

1100 1200 1300 1400 1490

OTTOMAN EMPIRE EXPANSION

1389
Murad I defeats the Serbs at Kosovo

1453
Mehmed II ('the Conqueror') takes Constantinople



The Hagia Sophia in Istanbul, Turkey



A modern illustration showing Suleiman the Magnificent (on the right) riding into battle

1517
Selim I ('the Grim') takes Syria and Egypt

1521
Suleiman I ('the Magnificent') takes Belgrade

1529
First **siege** of Vienna

1566
Suleiman I dies

1603
Ahmed I breaks with law of **fratricide**

1683
Second siege of Vienna; the Ottoman army is defeated

1500 1600 1700 AD

A girl dressed in traditional Anatolian Ottoman clothing



H2.1 The growth of the Ottoman Empire

A powerful empire

The Ottoman Empire was one of the most powerful and enduring (long-lasting) empires in world history. It grew out of the country now known as Turkey and came to dominate large parts of south-eastern Europe, including Greece and the Balkans, as well as the Middle East and North Africa. With Constantinople (modern Istanbul) as its capital, the empire controlled the border between Asia and Europe—and between the Muslim east and the Christian west—for more than 600 years.

Osman Bey

The Ottoman Empire began with Osman I (1258–1326), who became *bey* (chief) of one of the many small kingdoms called *beyliks* that covered Turkey. Osman became *bey* after his father's death in 1281, when he was just 23 years old.

His *beylik* was located on the border of the Byzantine Empire, which was in decline at the time. The Byzantine Empire had reached its greatest territorial extent in the 500s AD, and a 'peak' of political, economic and cultural integration in the ninth and tenth centuries. Incursions westwards by the Mongols from Central Asia had also caused a steady flow of refugees into Osman's territory. This population growth was used by Osman to strengthen his kingdom.



H2.1.2 Osman I, founder of the Ottoman Empire

H2.1.1 The rise and decline of the Ottoman Empire



An empire is born

A power struggle between Osman and his neighbouring *beyliks* ended in 1299, when Osman crowned himself sultan (king) of what later became known as the Ottoman Empire.

The word 'Ottoman' comes from the sixteenth-century Italian word *ottomano*, which came from the name Osman. Gradually, Osman's forces pushed the Byzantines westwards along the Turkish peninsula. This resulted in the capture of Bursa in 1326, now the fourth most populous city in Turkey. The **siege** of Bursa lasted several years. Osman lived just long enough to hear of its fall, but was 88 years old and on his deathbed when this happened.

Crossing into Europe

After the death of Osman I, more victories followed under the leadership of new sultans, resulting in much of Greece and the Balkans coming under Ottoman rule. However, Constantinople was a major obstacle to Ottoman expansion in Europe.

Constantinople

Constantinople was founded by the Roman emperor Constantine (272–337 AD) after he converted to Christianity and later became the capital city of the Byzantine Empire. Its fearsome defensive walls were over 22 kilometres in length and reinforced by more than 400 strong points such as towers, **bastions** and fortresses. These factors made it difficult to conquer. Its position—blocking the 'neck' of land joining Europe and Asia—also meant it was important to conquer. Its conquest in 1453 by Sultan Mehmed II (1432–1481), or Mehmed the Conqueror, opened the way for the Ottoman Empire to become one of the mightiest in history.



H2.1.3 Constantinople, c. 1895

Triumph

When Sultan Selim I (1470–1520) and his troops occupied Syria and Egypt in 1517, he referred to himself as a 'world conqueror'. It was his own son, Suleiman (1494–1566), who eclipsed (meaning he did better than) him. Europeans gave Suleiman the title 'the Magnificent'. His rule brought the Ottomans to the peak of their power. Suleiman was also known throughout the Islamic world as 'Suleiman the Lawgiver' because he completely reconstructed the Ottoman legal system during his reign.

Decline

Suleiman's reign ended in 1566 and he was replaced by a series of weaker sultans, meaning the Ottoman Empire began a slow, drawn-out decline. It was for this reason that by the turn of the twentieth century the Ottoman Empire had earned a reputation as 'the sick man of Europe' (see Source H2.1.4). Nevertheless, the Ottoman Empire continued into the early decades of the twentieth century, and managed to defeat British, Australian and New Zealand soldiers in the Gallipoli campaign of World War I (1914–18) before its collapse in 1922.

> [The Ottoman Empire] has become like an old body, crazed through with many vices, which remain when the youth and strength is decayed.

H2.1.4 A quote by English diplomat Sir Thomas Roe in 1621

Activities

Remembering and understanding

1. Who was Osman Bey, and why was he important to the Ottoman Empire?
2. Look at Source H2.1.1. Describe, in your own words, the territorial extent of the Ottoman Empire at its height.

Applying and analysing

3. Discuss the importance of Constantinople to the Ottomans.
4. Examine the main idea in Sir Thomas Roe's analysis of Ottoman decline (see Source H2.1.4). What was it? Simplify his analysis by rewriting it in your own words.

LS H2A

H2.2 Key features of the empire

Political features

The status of the sultan

Osman I and his son Orhan (1281–1362) ate with their men and shod their own horses. When music was played to honour their defeated ancestors, the Shepherd Kings, they stood up out of respect. These things indicate that the early sultans were still in touch with traditional, nomadic customs. However, as the Ottoman Empire grew, its rulers shed most of these traditions.

Dining alone

The fifth Ottoman sultan, Mehmed I (1390–1421) announced one day, 'It is my will that the Sultan dines alone'. Thereafter, sultans only shared a meal with their soldiers twice a year. Sultans were also expected to move slowly and silently, to draw attention to their grandeur or importance. This shift alienated the Ottoman sultan from his people, meaning that it made him more distant from them. Eventually, this was one of the factors that undermined the empire and caused it to collapse.



H2.2.1 A reception at the court of Sultan Selim III (1761–1808) at the Topkapı Palace, late eighteenth century

Did you know?

The sultan's horse, which he rode each week to Friday prayers, would be suspended from straps the night before the journey. This was to ensure that the horse walked slowly along the route, showing 'a halting gravity'.

Fratricide

Fratricide was common in the royal family. It was first recorded in 1389, when Bayezid I (1354–1403) had his brother strangled to prevent him from succeeding to the throne after their father was killed in battle. Fratricide soon became approved practice, because fewer rivalries meant less fighting and this led to more stable rule. Historians estimate that, over a period of 150 years, eighty of Osman's descendants were killed by their relatives. Perhaps the single worst instance was in 1595 when, on succeeding to the throne, Mehmed III (1568–1603) had all of his nineteen siblings murdered, including the infants.

Locking away rivals

Fratricide ended with the **accession** of poet and lover of architecture Ahmed I (1590–1617) in 1603. Sultan Ahmed was unwilling to have his brother and grandmother killed, so had them placed under house arrest instead. This led to an unusual system being established where large numbers of succeeding sultans' brothers, cousins and uncles were shut away indefinitely, sometimes for decades. They were locked in rooms called *kafes* (cages) in the Topkapı Palace, where they amused themselves with court rituals and games. Though it was advantageous to have potential rivals for the throne locked up, it also meant that when heirs were plucked from the *kafes*—often after decades of confinement—they lacked the experience to rule. Some also showed obvious signs of mental illness as a result of their captivity.

The influence of the harem

Ottoman political life was influenced by the royal **harem**. The harem was a group of women, including the sultan's wives and daughters, who lived at the Ottoman court. An example of the power of the harem can be found in Selim II's (1524–1574) favourite consort (wife), Nurbanu, who co-ruled the empire with her son, Murad III, for 9 years after her husband's death in 1574. Royal women also left their mark on Ottoman history by patronising (offering their support to) significant architectural and charitable projects.



H2.2.2 *The Ottoman Fleet Blocking the Port of Marseilles in 1454*, Nasuh Al-Silahi, c. sixteenth century

The Ottoman bureaucracy

Aside from the sultans, the Ottoman state was otherwise run by a large and well-trained **bureaucracy**. The **grand vizier** was the most senior and powerful Ottoman official, whose job it was to ensure the sultan's orders were carried out. At the height of the empire, grand viziers were usually Janissaries, slaves who had been born as non-Muslims. Being a grand vizier was almost always a job for life, because if they were dismissed from their position, in about 90 per cent of cases they were also killed.

The *Ilmiye*

The *ilmiye*, a body of scholars, was also important in the Ottoman bureaucracy. Eight *madrasas* (colleges for Islamic instruction) were established during the reign of Mehmed I (1390–1421) to train religious officials, teachers, *qadis* (judges) and court scribes. *Qadis* were particularly important as they enforced both Islamic law (*shari'ah*) and the *Qanun* (laws) of Suleiman I.

The importance of the Janissaries

The Janissaries (from the Ottoman Turkish word meaning 'new soldier') were a group like no other in history—they were equally slaves, elite soldiers and managers of the Ottoman Empire. Formed by Sultan Murad I (1326–1389) in the mid 1300s to replace unreliable tribal warriors, the Janissaries were the world's first professional army (see Source H2.2.3).

Devsirme

From the late 1300s, Janissaries were recruited using a system known as *devsirme* (blood tax). Under *devsirme*, boys aged between ten and twelve were kidnapped from Christian villages—mainly in Greece and the Balkans—and taken to Ottoman farms where they worked hard and learnt Turkish. The boys then underwent formal conversion to Islam, the religion of the Ottoman state. Then they became the sultan's servants, or slaves, for life. Most Janissaries became soldiers. As soldiers, they lived in barracks run according to strict rules. They underwent comprehensive training, turning them into one of the world's most fearsome fighting forces. Janissaries who showed academic promise were educated and became managers of government business.



H2.2.3 A mounted Janissary band or *mehter* during Imperial Festival, Turkish miniature from Vehbi's *Book of Festivals*, c. 1720

The benefits of slavery

Many Christian families accepted their sons' enslavement by the Ottomans because it gave them opportunities that they might not have had otherwise. Boys were usually taken from small villages where life was hard and education non-existent (see Source H2.2.4). Initially, Janissaries lived together in barracks and were not allowed to marry until they had finished their training. At that time they usually married women who had been schooled in the harem. Janissaries spent much of their leisure time engaged in sporting activities such as horseriding, javelin throwing, archery and wrestling.

> What could rival the experience of being drawn from a life of drudgery and obscurity into a world of exhilarating novelty, from a narrow parochial society into the cosmopolitan one of empire, from poverty to all the possibilities of wealth ...?

H2.2.4 From J. Goodman, *Lords of the Horizons: A History of the Ottoman Empire*, 1999

The power and significance of the Janissaries

Sultan Mehmed II (1432–1481) took the role of grand vizier away from the Ottoman nobility and gave it to the Janissaries. This system of exclusion was critical to the empire's success because:

- government officials were appointed on merit (ability) rather than because of their wealth, resulting in a competent army and government
- the children of Janissaries could not become Janissaries themselves, since Janissary children were born Muslim, and Muslims could not become slaves. This had the effect of reducing corruption, because officials did not have any family members in government
- the lack of a hereditary nobility with political power consolidated or reinforced the power of the sultans.

The decline of the Janissaries

Eventually, the Janissaries took steps to protect their power, with disastrous consequences for the empire. The Janissaries abolished the rule that only non-Muslim slaves could become Janissaries, opening their ranks to their own sons and the sons of the Ottoman nobility.

These new Janissaries were not subject to physical tests to determine their suitability as soldiers. Most then avoided rigorous (thorough) training, which made the Janissaries a less effective fighting force.

Economic features

Most Ottoman subjects earned their living from farming, which generated up to 40 per cent of the empire's tax revenue. Since Constantinople was situated at the crossroads between Europe and Asia, custom dues (extra charges) on imports and exports carried by merchant caravans and ships were also important to the Ottoman economy.

Under Sultan Bayezid II (1447–1512), the Ottomans built a powerful navy to control piracy and protect merchant shipping. Wheat, spices and lumber (raw wood taken from forests) were commonly shipped items. Ottoman bazaars or markets sold items such as cotton and yarn from Greece; linen from Egypt; glass from Hebron (modern Palestinian territories); rhubarb and porcelain from China; and furs, birds of prey and amber from the Grand Duchy of Moscow (now part of the Russian Federation).

The Ottomans closely monitored trade. For example, they required merchants and sea captains to be licensed. They also appointed *qadis* to patrol the bazaars, looking for cheats. Taxes were paid on almost every transaction (sale).

Activities

Remembering and understanding

1. Identify one positive and one negative consequence of the practice of fratricide within the Ottoman ruling family.
2. In what ways was the grand vizier's role both important and dangerous?
3. a What was the *ilmiye*?
   b What role did it play in Ottoman society?

Applying and analysing

4. Explain why Sultan Bayezid II built a powerful navy.
5. Write a brief outline of how the life of a sultan changed during the time of the Ottoman Empire. Why do you think these changes occurred?

Evaluating and creating

6. a Create a storyboard that illustrates the main steps in becoming an elite Janissary soldier.
   b Briefly describe two ways that the Janissary system helped strengthen the Ottoman Empire.
7. Assess the importance of the location of Constantinople for the economy of the Ottoman Empire.

H2.3 Everyday life

Community life

Cities

Community life in the cities of the Ottoman Empire was shaped by ***külliyes***. These were complexes of buildings centred on a mosque, which provided a range of public services including schools, kitchens and baths. *Hammams* or Turkish baths and coffee houses were also common and more than just places to wash and drink coffee. Visitors came to the baths to socialise and discuss business and politics. As well as tea and coffee, coffee houses provided music and poetry readings.



H2.3.1 An illustration of a *hammam* or Turkish bath, from 'Khusray and Shirin' by Elyas Nezami, c. 1550

Markets

Also important in the life of the cities were the markets where many goods for everyday life could be bought. The running of the markets was strictly supervised by the *muhtasib*. He was an official who, accompanied by armed guards, toured the market daily to ensure good behaviour by all. The *muhtasib* also made sure that the merchants were not cheating their customers.

Did you know?

Merchants in the Ottoman Empire had to sell their goods according to strict rules set by the courts. Any merchant who broke these rules could be punished by either being nailed to the doors of their shops or being beaten on the soles of their feet.

Townships

Community life in townships typically sprang up around caravanserais (roadside inns). Caravanserais were found roughly every 40 kilometres on the main overland trade routes. In return for money or traded goods, caravanserais provided water, food and fodder for animals. They typically consisted of a high wall with wide gates that could admit heavily loaded animals, and an open courtyard. Along the inner walls were stalls where merchants, travellers and servants could shelter.

Women

The traditional image of Ottoman women as submissive and powerless is not completely accurate—women were not powerless victims. For example, Ottoman women, both royal and ordinary, had total control over inherited property (land passed on by families) and could borrow and lend money. This enabled many women from more privileged families to become business partners in commercial enterprises.

Less privileged women also played a role in the Ottoman economy, particularly in the textile industry. Silk winding and cotton spinning were considered women's work and were done at home. But women were also heavily involved in cotton weaving—to the extent that male-only weaving guilds complained to the sultan about the threat to their livelihoods. Women also worked as food vendors, operated public baths and acted as slave brokers (people who buy and sell slaves on behalf of others).

With the Ottoman Empire so often at war, all Muslim males had to make themselves available for the army. When husbands and fathers were conscripted (called up to the army), rural women had to run the family farm.



H2.3.2 A market in Constantinople, c. 1580

Women and the law

Ottoman law allowed women to divorce abusive husbands or husbands who did not take care of them financially. But this law only applied to Ottoman women who were Muslims. As a result, some non-Muslim women in the empire converted to Islam in order to ask for a divorce from a Muslim court. However, in keeping with the empire's tolerance of other faiths, non-Muslims were able to have cases heard according to their own laws in some other matters (see Unit H2.6).

The fact that Ottoman men were allowed to have up to four wives, while women could have just one husband, suggests that women, in some ways, held an inferior position. While it is true that this law favoured men, in reality it tended only to be wealthy men who had multiple wives. Overall, about 95 per cent of Ottoman men had only one wife.

> As to women, as many, if not more than men, are to be seen in the streets [i.e. going about their daily activities, etc.] … I think I never saw a country where women may enjoy so much liberty, and free from all reproach, as in Turkey … The Turks in their conduct towards our sex are an example to all other nations … and I repeat it, sir, I think no women have so much liberty, safe from apprehension, as the Turkish—and I think them in their manner of living, capable of being the happiest creatures breathing.

H2.3.3 Extract from Lady Elizabeth Craven's *A Journey Through the Crimea to Constantinople*, 1789, which also included scathing accounts of harems and *hammams*

Activities

Remembering and understanding

1 What was:
   - **a** a *külliye*?
   - **b** a caravanserai?

2 In what ways were baths and coffee houses 'more than just places to wash and drink coffee'?

Applying and analysing

3 Examine Sources H2.3.1 and H2.3.2. With a partner discuss the aspects of everyday life represented in these sources.

4 In your own words, describe what Lady Elizabeth Craven observed about the position of women in Constantinople in Source H2.3.3. What opinion does she form, based on these observations?

5 Construct a PMI chart to analyse the position of women in the Ottoman Empire. Overall, was their position to be admired?

H2.4 Architecture and art

A centre of power

Sultan Mehmed II conquered the great city of Constantinople in 1453. He quickly set about transforming it into a centre of power from which his orders could be carried to all corners of his growing empire. Constantinople also became the cultural centre of the Ottoman Empire, which can be seen in its art and architecture.

Architecture

Byzantine influence

Much of the Ottomans' architectural style was borrowed from the Byzantines. The Byzantines were another powerful group of people with their own empire, although it was now in decline. Their use of ornamental domes and colourful mosaics was greatly admired by the Ottomans. This can be seen in the case of Constantinople's Hagia Sophia (which means 'Holy Wisdom' in Greek). Completed in 537 AD, the Hagia Sophia served as a Christian cathedral for over 900 years, until Constantinople fell.

Although the Ottomans turned Hagia Sophia into a mosque, little was done to alter its appearance apart from the addition of four minarets (tall and narrow towers) from which the Muslim faithful were called to prayer.

The Topkapı Palace

Built for Mehmed II from 1459, the Topkapı Palace would be the primary or main residence of the Ottoman sultans until 1856. The Topkapı was not a palace of the European kind, which aimed to awe visitors with its external appearance. Instead, in keeping with Islamic design principles, the Topkapı presented a modest or rather plain face to the world. It was only inside that visitors encountered a seemingly endless set of lavishly decorated rooms, galleries and courtyards.

Some foreigners were still unimpressed, but the palace was designed for a purpose. Its maze of compounds housed all the departments of government, including the treasury and the armoury. As visitors walked deeper into the palace, the closer they came to the centre of power.

Noisy crowds pouring through the Imperial Gate of Topkapı were greeted by the heads of newly executed criminals, displayed in niches (small holes) carved into the gateposts. Then, as visitors approached the Central Gate, which led to the Second Courtyard, they saw marble pillars topped with more severed heads of government officials who had been executed. Those of high-ranking officials were stuffed with cotton while those of lesser officials were stuffed with straw.



H2.4.1 Hagia Sophia has been a place of cultural importance for Christians and Muslims alike.



H2.4.2 The exterior of the Topkapı Palace



H2.4.3 The interior of the Topkapı Palace

At each gate, visitors were screened (checked), so the deeper they went, the less crowded and quieter it became until a select few were granted access to the silence of the sultan's chambers.

> No man speaks unless ordered to, [there is] no talking to one another, neither [does] any person dare so much as to sneeze or cough.

H2.4.4 A contemporary observation about the sultan's chambers in the Topkapı Palace

Mosques

Across Constantinople and throughout their empire, the Ottomans built a series of mosques and *külliyes*. By the fifteenth and sixteenth centuries, Ottoman architecture was gaining (achieving) a character of its own. It featured clean lines, massive domes that created vast inner spaces, and harmony (or architectural balance) between inner and outer spaces as well as light and shade. These qualities of clean, simple design are believed to be the result of many Ottoman architects having started their careers as engineers in the army, where their design by necessity had to be clean and simple.



H2.4.5 The Süleimaniye Mosque in modern Istanbul, built by and named after Sultan Suleiman I. Built between 1550 and 1557, the Süleimaniye was the fourth imperial mosque built in Constantinople, on one of the seven hills dominating the Golden Horn (the inlet of water on the Bosphorus River, which divides the city of Istanbul).

Art

Tughras

Art was also important to the sultans of the Ottoman Empire. The emblems or symbols of the Ottoman sultans, called ***tughras***, are thought to derive (come) from the early Ottoman rulers, who were illiterate (couldn't read or write). They would sign their names by dipping their thumb and two fingers in ink and pressing them onto paper. *Tughras* acted as the sultan's seal or signature for all official documents and letters; they were also stamped on coins that were made during the sultan's reign.



H2.4.6 Sultan Osman III's *tughra*, eighteenth century

Carpet weaving

The weaving of rugs and carpets had long been an important art for the Turkish people and this continued into the period of the Ottoman Empire. Ottoman court rugs and carpets were woven using silk thread and displayed detailed floral emblems and designs. Most popular were flowers such as roses, carnations, tulips and hyacinths. Each rug and carpet was a work of art in itself.



H2.4.7 A Turkish rug seller, c. nineteenth century

Miniatures

First produced in the mid fifteenth century, Ottoman miniature paintings are remarkable for their use of rich and sometimes clashing colours. Most miniatures were unsigned because they were typically produced by teams of painters, with a head painter drawing the main image with thin brushes, and assistants and apprentices filling in the rest.



H2.4.8 *Prince Playing Polo*, a miniature from *Divan-I Nevai*, collected poems by Ali Sir Nevai, Ottoman school, c. sixteenth century

Did you know?

According to court records, twenty-nine 'master' miniaturists and twelve apprentices worked at the court of Suleiman I.

Ceramics

During the latter part of the reign of Mehmed II (1451–1481), Ottoman ceramics reached a technical and artistic high. This occurred because the elite (the wealthiest and most powerful) of Mehmed's court began to demand luxurious and beautiful objects for their homes. These ceramics were known as *çini* and were originally intended for the Ottoman market only. However, they were soon exported to countries such as Italy where they were highly prized and quickly imitated or copied. The ceramics are characterised by their decorative floral patterns and vibrant colours, such as cobalt blue, turquoise, emerald green and bright red.



H2.4.9 A sultan being entertained, sixteenth-century Turkish manuscript

LS H2B

Activities

Remembering and understanding

1 a List three key features of Ottoman architecture in the Topkapı Palace.
   b Draw or photocopy Sources H2.4.2 and H2.4.3 and annotate the key features in each source.
2 a What was the original purpose of the Hagia Sophia?
   b What did it become?
   c What was added to the building by the Ottomans and why?

Applying and analysing

3 a Why would some foreign visitors have been unimpressed with the Topkapı Palace?
   b Use a Y-chart with the section headings 'Looks like', 'Feels like' and 'Sounds like' to explore what a visitor would have experienced on visiting the palace.
4 Examine Source H2.4.6.
   a Why were *tughras* so important?
   b In what ways is a *tughra* as distinctive as a signature we might use on documents today?
   c Demonstrate your unique 'signature' by sketching your own *tughra*.
5 What inference(s) (educated guesses) can you make about Ottoman society from the scenes portrayed in Sources H2.4.8 and H2.4.9?

Evaluating and creating

6 You have been asked by Turkey's Ministry of Culture and Tourism to produce a new digital or print guide to the Topkapı Palace. Consider including information about:
   - the construction and layout, including the treasuries, harem and *kafes* (cages)
   - notable sultans, grand viziers and ambassadors who lived in, worked in or visited the palace
   - other members of the court, and their roles.

   Work either individually, in pairs or in a small group. If you choose to produce a digital guide, consider a website or audio content that could be played on a portable device.
7 Using Sources H2.4.8 and H2.4.9 as a guide, illustrate an aspect of your daily life in the style of an Ottoman miniature.

H2.5 An expanding empire

The Battle of Kosovo

Osman I began to expand his empire after uniting the *beyliks* of Turkey by invading the weakened neighbouring Byzantine Empire. The Byzantine city of Bursa fell to the Ottomans in 1326, providing the Ottoman Empire with a new capital. In the following decades, the Ottomans extended their control over Byzantine territory, crossing the Bosphorus Strait into Eastern Europe and taking possession of parts of the Balkans. This process reached a climax in the decisive Battle of Kosovo on 15 June 1389.

Slaughter on Blackbird's Field

The Byzantine army was led by the Serbian Prince Lazar and numbered up to 30 000 men. Facing the Byzantines were 40 000 Ottoman troops, led by Sultan Murad I. The battle, taking place on what was locally known as Blackbird Field, raged for 8 hours, until one of Murad's sons, Bayezid (1354–1403), led a counterattack that broke the Byzantine forces. By the end of the battle, both sides had lost most of their armies. Unlike the Ottomans, who had reinforcements to call on, the Byzantines could not replace their soldiers and had also lost their leader, Prince Lazar, in the battle. As a fighting force, they were finished.

The rise of Bayezid

Bayezid I, who succeeded his father in 1389, exploited the victory at Kosovo by appointing Prince Lazar's son as ruler over the conquered region, on the condition that Serbia pay **tribute** (a regular payment as a sign of its submission) and provide soldiers to support future Ottoman campaigns. Victory at Kosovo meant the Ottomans obtained a long-term presence in the Balkans—they were there for so long that large Muslim communities exist in the region today.

The significance of Constantinople

Constantinople was the capital of the Byzantine Empire. It was also an important city because it was located at the boundary between mostly Christian Europe and the mainly Muslim Middle East and Asia. For centuries, the Ottomans had dreamed of its capture, but it took many years and a headstrong 21-year-old sultan to achieve this. When Mehmed II became sultan in 1451, the Byzantine Empire had shrunk to a few square kilometres beyond Constantinople's walls. Additionally, the city's population had drained away, its brightest and best drawn to thriving Mediterranean states like Venice. Fewer than 5000 men could be mustered for its defence. Yet the city's walls remained strong. Capturing Constantinople was still a difficult task.



H2.5.1 A portrait of Bayezid I by Cristofano dell'Altissimo, c. 1552–1562

The fall of Constantinople

To attack the walls of Constantinople, Mehmed used a 9-metre-long cannon, which was considered an extremely powerful weapon then. The cannon was built by a Transylvanian inventor, who received bids from both the Ottomans and the Byzantines to buy it. Mehmed outbid the Byzantines and the gun was dragged by thirty oxen to Constantinople.

The cannon could only fire seven times a day, because its stone missiles, weighing between 544 and 590 kilograms each, could not fit into the cannon until it had cooled down after each shot. After a 6-week bombardment, the city walls were finally **breached** in May 1453. It was the first time gunpowder had overcome a major fortification, and was a taste of wars to come.

After taking control of the city, the Ottomans rebuilt Constantinople, and for the next 500 years it was the empire's capital, sitting astride (on each side of) the Bosphorus Strait. Today, named Istanbul, it is the largest city in Turkey.



H2.5.2 *Entrée de Mehmed II dans Constantinople* (*Entry of Mehmed II to Constantinople*), a nineteenth-century painting by Jean-Joseph Benjamin-Constant

The siege of Belgrade

The conquest of Constantinople allowed Mehmed II to **subjugate** (to bring under control, especially by force) the entire Greek-speaking world. Next, he set his sights north, to an island at the point where the Sava and Danube rivers met. This location, known as the White City, or Belgrade, was at the eastern border of the Kingdom of Hungary. Mehmed II's forces besieged Belgrade, and on 13 August 1456 his famous cannon smashed its walls.

The defence of Belgrade

The Ottoman army's best fighters poured through the smoking gaps in Belgrade's walls, over dead bodies, expecting to face a fierce counterattack. However, the streets of the citadel were empty. The soldiers fanned out, marking doors of houses suitable for future looting. Then the Hungarians sprang their trap: horns rang out and hidden defenders emerged from basements and doorways, attacking the Ottomans, most of whom had become separated from their units and commanders in the city's alleyways.

Defenders on the walls dropped logs of tar-soaked wood and set them alight, trapping the Ottomans inside the city and preventing the entry of Ottoman reinforcements (extra soldiers). Reinforcements outside the walls then came under attack by a back-up army mainly made up of pike-wielding (spear-carrying) peasants. Some accounts claim Mehmed himself entered the battle, killing a Hungarian knight before being shot in the leg by an arrow.

At dusk, Belgrade's defenders fell back to their citadel, preparing for another Ottoman attack. Instead, the Ottoman forces retreated, along with 170 carts piled with wounded men. The Kingdom of Hungary's border was stabilised, and Ottoman expansion into Europe temporarily halted. It was not until 1521 that the Ottomans, led by Suleiman I (1494–1566), finally seized Belgrade.

Did you know?

- Ottoman forces advanced while striking drums (both kettledrums and bass drums), shaking castanets and bells, clashing cymbals, striking triangles, playing trumpets and a Turkish version of the oboe, and yelling war cries. This Janissary music influenced European classical musicians such as Wolfgang Amadeus Mozart (1756–1791) and Ludwig van Beethoven (1770–1827).

The siege of Vienna

After Belgrade was seized by Suleiman I in 1521, the Ottoman forces set their sights on Vienna, another key city in the Hungarian kingdom. Suleiman I's forces were defeated in their attempt to capture the city in 1529. The second attempt on the city was made in 1683 during the reign of Mehmed IV (1642–1693). Mehmed IV did not lead the siege, but handed this responsibility to his grand vizier, Kara Mustafa, who, after 15 months of preparation, assembled an army of about 140 000 men. Although this force vastly outnumbered Vienna's defenders, the preparation time taken by Kara Mustafa gave Hungarian King Leopold I (1640–1705) the opportunity to organise and improve Vienna's defences. He also had time to gain extra troops from the Pope and to form an alliance with the Poles, all of which helped him prepare to defend Vienna.

Weakening of Vienna

When Ottoman forces arrived in Vienna they found houses outside the city walls razed (destroyed to ground level), giving the Hungarian defenders a clear field of fire for their cannons against the invaders. Instead of a frontal assault, the Ottomans were forced to dig tunnels to place barrels of gunpowder directly under Vienna's walls and detonate them. This caused several sections of the wall to collapse, allowing the Ottomans to seize parts of the city. But the process took months, allowing a relief force under the command of the King of Poland to arrive just before the city fell. Kara Mustafa then made the critical mistake of dividing his force, sending some against the relief army and retaining others for a final assault on the city.

Battle of Vienna

The Battle of Vienna eventually took place on 11 and 12 September 1683. It raged for 12 hours, during which time the Ottomans managed to light the fuse on a massive powder keg of explosives under the city wall. According to some sources, it was put out only at the last moment, by a Viennese miner who broke into the Ottoman tunnel from a tunnel of his own. The decisive moment of the battle occurred when the Poles launched one of the largest cavalry charges in history, numbering approximately 20 000 horses and men. Having failed to repel the relief army or capture the city, the Ottomans fled. For his failure, Kara Mustafa was executed 6 weeks later, strangled with a silk rope.



H2.5.3 Attack on Vienna, Austria, 27 September 1529, by the army of Suleiman the Magnificent, from the Ottoman manuscript *Hunername*, 1588

An end to the Ottoman expansion

Defeat at Vienna marked the end to the expansion of the Ottoman Empire. Territory in Hungary was gradually lost and Ottoman power in Greece was successfully challenged by the Venetian navy, which attacked Athens in 1687. This resulted in the partial destruction of the Parthenon, a famous temple on the Athenian Acropolis. In the two and a half centuries that followed, the Ottoman Empire continued to decline as corruption in both the royal court and among the Janissaries led to a loss of military power and leadership. In the early nineteenth century, the great French general Napoleon conquered much of what had been Ottoman territory. The empire finally collapsed in 1922 due to defeats in the Balkan Wars (1912–13) and World War I (1914–18).



H2.5.4 King John III Sobieski leads Polish forces, driving back the Ottoman Turks from Vienna, 1683

Activities

Remembering and understanding

1 a Why did the Byzantines lose the Battle of Kosovo?
  b How did Sultan Bayezid exploit the victory at Kosovo?
  c What did this victory mean for the Ottomans?
2 Why was the capture of Constantinople an important development in the expansion of the Ottoman Empire?

Applying and analysing

3 Explain how gunpowder played a significant part in Ottoman victories from 1453 onwards.
4 Discuss which event you think was the key turning point in the failed Ottoman attack on Vienna. In your answer, explain the other factors that contributed to Ottoman defeat.

Evaluating and creating

5 Create a storyboard or flow chart showing the sequence of events leading up to the fall of Constantinople.
6 Create a map or design and make a 3-D model of one of the key sieges or battles of the Ottoman period: Kosovo, Constantinople, Belgrade or Vienna. Annotate (add captions to) the map or model with key information relating to preparation, troops, tactics and weapons. Use arrows, colours or symbols to show how the siege or battle unfolded and identify key individuals and turning points.
7 Write a one-page diary entry dated 14 August 1456 from the perspective of one of Belgrade's defenders. How might the defenders have recalled the critical events of the initial failed Ottoman attack?

H2.6 A tolerant society

An Islamic empire

As the Ottoman Empire grew, many different people, with different traditions and religions, came under Islamic Ottoman rule. The word 'Islam' comes from Arabic, and means 'submission to the will of God'. 'God' in Arabic is known as Allah. For Muslims, this is the same God as the God of Jews and Christians. Islam considers itself to be a part of what is sometimes called the 'Abrahamic tradition'. This is a religious tradition born from the **patriarch** Abraham and his descendants, Isaac and Ishmael. Islam therefore accepts both Judaism and Christianity as legitimate (lawful) religions, and acknowledges significant figures such as Jesus and Moses as prophets of God. This goes some way to explaining why the Ottoman Empire was tolerant of other faith traditions.

The Qur'an and Sunnah

Islam consists of a set of basic beliefs and duties, and a body of principles. These principles are derived from the Qur'an, a book organised into 114 chapters. Muslims believe that the Qur'an is the word of God as it was revealed to Muhammad, who received these revelations over a 22-year period, beginning in 610 AD.

Muslims also rely on the many reliably transmitted reports (*hadeeth*) about what Muhammad and his closest companions said and did. These are collectively known as the Sunnah. They were recorded in the early centuries of the Islamic caliphate, the form of government established after the death of Muhammad in 632.

Taxpayers, not converts

It is said the Ottomans wanted taxpayers, not converts (people who changed their religion), with the one cruel exception being the Janissaries. The Ottomans believed that people forced to change their religion were unlikely to be productive and law-abiding citizens.

The Ottomans still hoped that non-Muslim subjects would willingly convert to Islam. One way of winning converts was to improve the lives of non-Muslims. For example, the Ottomans required Christian Balkan peasants to work only 3 days every year for their local overlord and pay a 10 per cent tax, called the ***jizya***. These conditions were not as bad as those imposed by previous overlords. Even to devout (very committed) Christians, Ottoman rule seemed like liberation. Those subject to the *jizya* were also exempted from (didn't have to do) military service.



H2.6.1 Spain's King Ferdinand and Queen Isabella being petitioned (asked) for mercy by Jews about to be expelled, 1492

The Jews

Although they were often subject to persecution throughout history, at times under Ottoman rule Jews enjoyed relative peace and freedom. In 1492, Bayezid II heard that the King of Spain was expelling Jews from his lands (meaning that they were being forced to leave). Bayezid II instructed his governors to take in the Jewish people. Bayezid's motives were practical as well as humanitarian, as Spanish Jews were skilled in a range of trades and this would benefit the Ottoman Empire.

> They say Ferdinand is a wise monarch … How could he be, he who impoverishes his country to enrich mine!

H2.6.2 Bayezid II describes King Ferdinand of Spain.



H2.6.3 An illustration of people from the Ottoman Empire, including a man from Adrianople (centre) and a veiled woman from Salonika (right).

The *millet* system

The Ottoman ***millet*** system organised non-Muslim groups into faith-based communities. These groups were permitted to have separate legal courts to hear cases of personal law. It was designed to protect their rights. Jews, Orthodox Christians and Armenian Christians and other Christians all had *millets* of their own. *Millets* also had a considerable amount of administrative decision-making power. Even though there were often restrictions on where the members could live or work, they ran their own schools and welfare systems.

Activities

Remembering and understanding

1 Identify at least four key features of Islam, the religion of the Ottoman state.
2 Outline the key points of the *millet* system.

Applying and analysing

3 Examine Source H2.6.1.
   a Identify the different people portrayed in the painting and the religious or cultural groups they would have belonged to. What are the visual cues that allow you to know this?
   b Prepare a list of points that you think the Jewish people may have presented to King Ferdinand in protest against their expulsion from Spain.
4 In Source H2.6.2, Bayezid II talks about King Ferdinand of Spain.
   a What was it that Bayezid saw would 'enrich' his empire?
   b Do you think that this way of seeing a group of people is a good thing or a bad thing? Explain your answer.
5 a Examine Source H2.6.3 and describe the characteristics of the different types of cultural dress.
   b Draw a Venn diagram comparing the dress of the Ottoman woman (left) and the veiled Salonika woman (right).
   c Could this source help to demonstrate the operation or principles of the *millet* system? Explain how.
6 With a partner discuss the benefits or otherwise of the *millet* system and of the tolerant governance of the Ottoman Empire.

LS H2C

H2.7 The strength and influence of the empire

Significant individuals

The power of the Ottoman Empire reached its peak during the rule of two sultans who were father and son. Both showed, in their different ways, great political skill and military ability.

Selim I

Selim I (1465–1520), also known as 'Selim the Grim', was an unusual combination of characteristics. He was a fiery-tempered warrior, a poet and student of science, as well as an aesthete (a person who appreciates art and beauty) who ate simple meals off wooden plates. Selim came to power on 25 April 1512, after his father Bayezid II abdicated. Unusually in the blood-soaked history of Ottoman rulers, Bayezid II was not killed but was allowed to retire.

Cruel and generous

Selim was ruthless and sometimes cruel. He is said to have laughingly told one of his high-ranking officials that the official would be killed, but that it would not happen until he had found a suitable replacement. Selim also recognised and rewarded good performance, resulting in a strong government where the price of incompetence (not doing your job very well) was death.

Selim paid his Janissaries well, but spent very little on himself. His ambition and sound (effective) budgeting helped triple the size of the Ottoman Empire during his reign. By the time he died in 1520, the empire covered more than 20 million square kilometres, equivalent to almost three times the size of Australia.

Suleiman the Magnificent

Selim's son Suleiman I (1494–1566) had no brothers at the time of his father's death, so his accession was unusually peaceful. Suleiman ruled the Ottoman Empire for 46 years. This was a 'golden age' during which the empire reached its peak of military and political power.

Europeans named Suleiman 'the Magnificent' for the size of his empire and the opulence of his palaces. Ottomans, on the other hand, knew him as 'the Lawgiver' because of the order he brought.



H2.7.1 A portrait of Suleiman I

> '[Suleiman] has the reputation of being very just,' an envoy noted, 'and when he has been accurately informed of the facts of the case he never wrongs any man'.

H2.7.2 A quote from C. Finkel, *Osman's Dream: The History of the Ottoman Empire*, 2005

The *Qanun*

Suleiman created a single legal code, the *Qanun* ('law' in Arabic). He did this by collecting all the judgements that had been issued by the nine sultans who came before him. He eliminated duplication (removed double-ups) and made choices about what the law would be when previous judgements contradicted one another. Suleiman was also careful to ensure that what remained was consistent with the laws and principles of the Qur'an and Sunnah.

During his reign, Suleiman also expanded the empire further into Europe, capturing Belgrade in 1521 and besieging Vienna in 1529.

The lasting influence of the Ottoman Empire

Like many great empires of the past, the Ottoman Empire has had a significant impact on the societies that followed it. Its legacy is as diverse as cartography, medicine and the spread of the Islamic religion across continents.

Cartography

A great advance by the Ottomans was in cartography, which is the art of map-making. One of the most famous Ottoman cartographers was the sailor Piri Reis (1470–1554), who served as a naval commander until he was executed for losing too many battles. In 1517, Piri Reis presented Selim I with one of the most detailed and accurate world maps in existence at the time. Piri Reis drew this map himself based on his own experience combined with charts and maps he had obtained from the Middle East, Portugal and Spain.



H2.7.3 A surviving fragment of the Piri Reis world map, 1513

Medicine

The Ottomans led the European powers in many areas of public health, including hospitals and facilities for public hygiene. Medical men such as doctors and dentists practised medical procedures that were rarely seen in other European countries and had an excellent understanding of the workings of the human body. Their knowledge soon began to spread across their conquered lands and elsewhere.



H2.7.4 An anatomical diagram showing heart and intestines, Ottoman manuscript

Muslim influence in Europe today

One of the strongest legacies of the Ottoman Empire is the significant number of Muslim people who still live in parts of Europe that were once under Ottoman rule. The area of Europe now known as the Balkans (including Albania, Bosnia and Herzegovina, Bulgaria, Greece, Macedonia, Montenegro and Serbia) contains large Muslim populations.

Skills builder

Identifying continuity and change

When making sense of the past it is useful to be able to identify periods of time when change occurred in society. Recognising when things continued unchanged is equally important. To help identify continuity and change, it is necessary to focus on the significance of events, ideas, people and groups. Pay careful attention to the 'turning points' that fundamentally caused change. As you do this, incorporate historical language (e.g. 'rapid', 'unprecedented', 'widespread', 'far-reaching', 'significant') that helps you to describe the speed and the extent of change.

Practise your ability to identify continuity and change by investigating the reign of Suleiman I (1494–1566). This period is often described as the golden age of the Ottoman Empire. Is this viewpoint justified? Identify the events, ideas, people and groups that were important during this time. Analyse the significance of continuity and change within the Ottoman Empire during this period.

Activities

Remembering and understanding

1 In what ways was Selim I both cruel and generous? Give examples of each.
2 List three significant ways the Ottoman Empire has influenced the world today.

Applying and analysing

3 Compare and contrast the rule of Selim I and Suleiman I. As father and son, what did they have in common and how did they differ? What were the strengths of each sultan? Use a Venn diagram or a PMI chart to organise your ideas.
4 Examine Sources H2.7.3 and H2.7.4. How do these sources support the theory that the Ottomans had advanced knowledge in these areas?



Japan under the shoguns

3

In 1603 AD (CE), after centuries of war and civil disorder, control over Japan fell to the most powerful warlord of all, Tokugawa Ieyasu. He was the first in a long line of Tokugawa shoguns who ruled Japan for over 250 years. During this period, Japanese society was organised into strict classes. Japan itself was closed to all foreign influence. Nevertheless, important cultural and economic changes began to occur that would forever change Japan.

OVERVIEW QUESTIONS

- **3A** Why did the shogunate gain power in Japan at the expense of the emperor?
- **3B** How were the people of Japan treated under shogun rule?
- **3C** Why was Japan isolated from the rest of the world?
- **3D** Why did the shogunate rule end?

LS Before you begin

3.0.1 Minamoto Yorimoto, Japan's first shogun, who came to power in 1185

GLOSSARY

alternate attendance a system that forced the daimyo (lord), their armies and families to live in Edo with the shogun every second year

bakufu the shogun's military government

buke shohatto a strict code of regulations aimed at weakening the daimyo (lords) (introduced by Tokugawa Ieyasu)

bushido 'way of the warrior'; the code that all samurai lived by

conscription forced military service

daimyo feudal lords who controlled major regions during the rule of the shogun

feudal system a system of landownership in which a ruler claims ownership of all lands but rewards loyal nobles with control of a domain

jito land stewards who made sure everyone using the land paid their rent

kami 'spirits' in the Shinto religion said to inhabit (live in) all natural features

rangaku 'Dutch learning'; ideas about Western science and medicine that came to Japan through the few Dutch permitted to live in Japan

regent a person who acts on behalf of a ruler because they are either too young, or physically or mentally unable to rule

ronin masterless and unemployed samurai

sakoku a policy of isolation from foreigners (no political or economic relationships with other countries) during the time of shogun rule

samurai the noble warrior class

Shinto Japan's oldest religion

shoen rural districts

shogun a military ruler of Japan with full authority

shogunate a period of rule by shoguns

shugo protectors who were responsible for ensuring law and order of an area

siege a military operation whereby enemy forces cut off essential supplies to force surrender

Timeline

Japan under the shoguns

Consisting of a long string of over 1000 islands, Japan's four main islands by population are Honshu, Kyushu, Hokkaido and Shikoku. Historically Japan is a land of fierce conflict, great art and unique cultural practices. This was greatly encouraged by 200 years of isolation from the rest of the world from the middle of the seventeenth century to the middle of the nineteenth century.



Three members of the shogun bodyguards in traditional clothes, portrayed in front of a tea house. The young soldiers, armed with long swords, are posing beside a waitress who is seen serving the tea.

710
First permanent capital in Nara

794
Emperor Kammu establishes his capital in Heian (today Kyoto)

1185
Minamoto Yoritomo becomes Japan's first shogun

AD 700 800 900 1000 1100 1200 1300 1400 1500

American navy commodore Matthew Perry arrives in Japan on 7 August 1853. This opens trade between Japan and the western world. Woodblock print, nineteenth century, held at the British Museum



1274
Kublai Khan launches the first Mongol invasion of Japan

1281
Mongol invasion of Japan ends in Mongols' defeat

1338
Ashikagu Takauji is proclaimed shogun



Portuguese merchants bearing gifts in Nagasaki, a detail from a Japanese screen, c. 1600

1633 System of alternate attendance is introduced

1603 Tokugawa leyasu becomes shogun

1600 Battle of Sekigahara

1837 Osaka Rebellion

1853 Commodore Perry arrives

1854 Treaty of Kanagawa is signed

1855 Nagasaki Naval Training Centre established

1510 1600 1700 1800 1900 2000 AD

1543 Portuguese traders arrive in Japan

1545 Portuguese traders return

1638 The Shimabara rebellion lasts for 4 months

1657 Fire destroys a large part of Edo

1720 The ban on foreign books is temporarily lifted

1867 The last shogun, Tokugawa Yoshinobu, is overthrown

1868 Emperor Mutsuhito is proclaimed the Meiji emperor



Yoshitsune Falls, a woodblock print by Katsushika Hokusai, 1833

3.1 Japan before the shoguns

Geographical influences on Japan

Japan is located on the edge of a continental plate and is a land of mountains, volcanoes and earthquakes. Since Japan is made up of over 1000 islands and more than 80 per cent of the country is made up of mountains, travelling from place to place was difficult. Japan's rivers are also short and therefore not suitable for inland transport.

As a result, for much of its early history the people of Japan rarely travelled beyond the area where they were born.

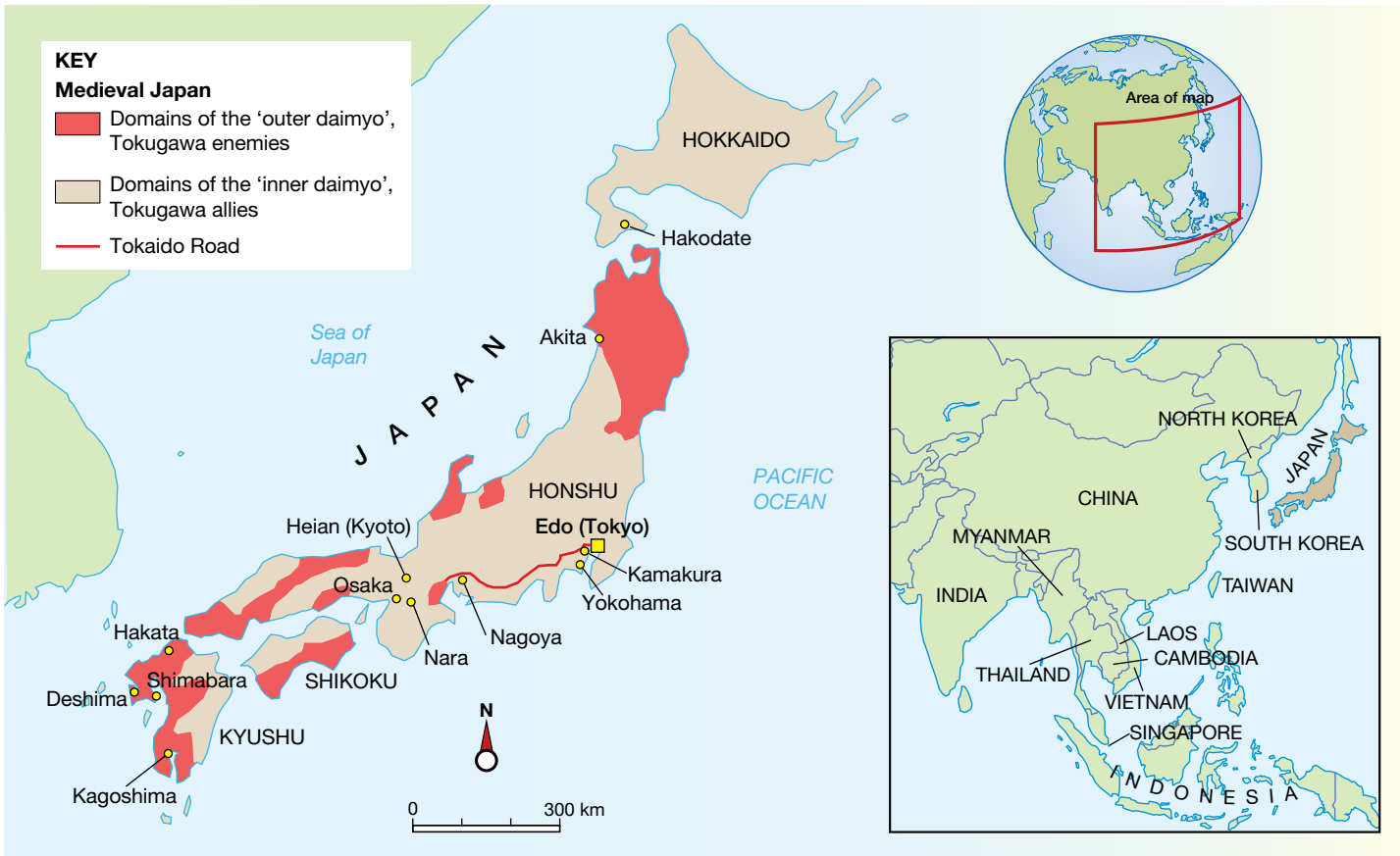
Did you know?

Geographical features are also important in **Shinto**, the main religion of Japan. Followers of Shinto believe that natural elements such as mountains, rivers, lakes and waves contain spirits, or ***kami***, which are to be worshipped.

The Nara period (710–794)

An imperial capital city

Early Japan was ruled by an emperor. The emperor was mainly a figurehead, a leader with little political authority. The main reason for this was because he lacked an imperial capital city. It was believed to bring bad luck if an emperor continued to rule from the city of the previous emperor. This made it difficult for any emperor to control much territory, as each new emperor had to spend time establishing a new centre of power. However, in 710, the empress Gemmei established the first permanent capital at Nara. This was modelled on the Chinese city of Chang'an and was an early example of Chinese influence in Japan. The period that each emperor ruled was named after him or sometimes the city that he ruled from, such as the Nara period from 710 to 794.



3.1.1 Medieval Japan

Power of the emperor

A fixed capital allowed for a stronger government and more time for cultural pursuits. It was during the Nara period that the first books were produced in Japan. Written laws known as the Taiho codes also helped the emperor to extend his power. The Taiho codes divided Japan into provinces, which were under the control of a governor who was appointed by the emperor. Another important development at this time was the growing influence of Buddhism.

Did you know?

- The ancient capital of Nara did not have external defensive walls because Japan was isolated and therefore, it was thought, safe from foreign invasion.

The Heian period (794–1185)

Heian

Nara remained the capital until 794, when the emperor Kammu decided to move his capital to Heian (present-day Kyoto). His reasons for doing so are not clear, but it is thought that he was concerned with the growing influence of the powerful Buddhist priests in Nara. Not only was Heian centrally located, it also lacked Buddhist influence. Japanese emperors would continue to live in Heian for over 1000 years, and this is known as the Heian period.

The Fujiwara clan

During the Heian period, Japanese emperors gradually lost their influence over government affairs. As their lifestyles became more luxurious, members of the imperial court preferred to pursue art, calligraphy (artistic handwriting using brushes and ink), poetry and even fashion rather than the affairs of government. Within this context, the powerful Fujiwara family gained control over imperial court politics. They achieved this by convincing several notable emperors to marry their daughters. As **regents** (people who govern in place of the emperor), the heads of the Fujiwara family were able to make important decisions, supposedly on behalf of the emperor. Over time, however, the Fujiwara began to determine who succeeded the emperor and even whether or not the emperor would remain on the throne.



3.1.2 A traditional street in present-day Kyoto, formerly known as Heian

Activities

Remembering and understanding

1. Outline two ways in which Japan's geography has influenced its society and culture.
2. What was significant about the establishment of the imperial capital at Nara in 710?
3. Identify one way in which Japan was influenced by China during the Nara period.

Applying and analysing

4. a. Interpret how the change of lifestyle of the imperial court affected the power of the emperor during the Heian period.
   b. Discuss the extent of the Fujiwara family's responsibility for the decline of the emperor's power during the Heian period.

3.2 The origins of the shogunate

Decline of the emperor

As the emperor's influence declined, control over the ***shoen*** (rural districts) fell to his appointed governors. These *shoen* governors were the heads of large noble clans and they had become very wealthy by claiming taxes that were owed to the emperor. They used this wealth to create their own private armies of **samurai**. These were warriors from other noble families who helped maintain law and order within the *shoen*. As their strength grew, so did their influence over the emperor.

The Genpei War

In 1159, the two most powerful clans, the Taira and Minamoto, began a battle against each other for control of Kyoto and influence over Emperor Nijo and the former emperor Go-Shirakawa, which lasted for over 25 years. Eventually, the leader of the Minamoto clan, Minamoto Yoshitomo, was killed in battle by the leader of the Taira clan, Taira Kiyomori. In 1180, Minamoto Yoshitomo's sons, Yoritomo and Yoshitune, led a rebellion (revolt) against Kiyomori. In 1185, the Minamoto clan finally defeated Kiyomori (and the Taira clan) in a naval battle off the coast of Kyushu.

The Kamakura period (1185–1333)

The first shogun

Yoritomo's victory made him the most powerful warlord in Japan. He allowed the emperor to remain on the throne but stripped him of all authority. In 1192, Yoritomo took the title of *seii tai-shogun* (meaning 'great barbarian-conquering supreme general') or *shogun* for short. He became the head of a new military government known as the ***bakufu*** with Kamakura as its capital. To reward his loyal generals, Yoritomo appointed them as either ***jito*** (stewards) or ***shugo*** (protectors) of all conquered territory. He guaranteed their loyalty by allowing them to keep some of the taxes they collected on his behalf.

Yoritomo built a power structure that continued for generations, known as the Kamakura shogunate (named for the location where it was based). Yoritomo appointed his successors and made the title of **shogun** hereditary (meaning that it was passed down from father to son or adopted heir), ensuring that his legacy and the shogunate power structure was protected.



3.2.1 A Japanese woodblock print showing Minamoto Yoritomo releasing cranes on the beach near his castle in Kamakura. This action of setting captured animals free was believed to gain him Buddhist merit, which means to be worthy of reward in the next life.

Mongol invasions

In 1271, the Mongol leader Kublai Khan conquered China. In 1274, he turned his attention to Japan and sent an invasion force of 900 ships and 40 000 men. The Mongols were defeated by the shogun's forces, but they returned in 1281 with a much larger fleet of 4400 ships and 140 000 men. Yet again they were defeated and lost almost half their men. This was mainly because a series of typhoons (severe tropical storms) destroyed the Mongol ships.



3.2.2 A Japanese painting depicting battle between Japanese troops and Mongol invaders, created c. 1640–1680

Civil war

The enormous cost of fighting the Mongols had resulted in higher taxes for peasants (farmers who produce small-scale crops) and a lack of rewards for warriors. As a result, a large uprising against the **shogunate** occurred. In 1318, a new emperor, Go-Daigo, came to the throne wanting to re-establish imperial control. Despite being banished to the Oki islands, Go-Daigo built a sizeable army, which became a serious threat to the Kamakura shogunate. The shogun sent one of his best generals, Ashikaga Takauji, to put down the rebellion but, instead, he turned traitor and sided with the emperor. In 1333, the rebels destroyed the shogun's base at Kamakura, forcing the shogun and his family to commit suicide.

The Muromachi period (1333–1568)

In 1338, Ashikaga Takauji proclaimed himself shogun. He chose the Muromachi district of Kyoto as the base for his new *bakufu* or government, and this became known as the Muromachi shogunate. Since they lacked sufficient wealth or lands, the Muromachi shoguns found it difficult to gain the loyalty of the *shugo* (protectors of the provinces).

Ashikaga Yoshimitsu

Under the rule of Ashikaga Yoshimitsu in the thirteenth century, the Muromachi shogunate regained some of its former power and prestige. He united the courts of the emperor and shogun and attempted to curb (control or limit) the growing power of the *shugo*. He did this by appointing many of them to his court, which required them to move to Kyoto where he could keep a close eye on them.

Activities

Remembering and understanding

1 Who was Japan's first shogun and how did he come to power?
2 What was the result of the two Mongol invasions of Japan in 1274 and 1281?

Applying and analysing

3 Use the dates and events mentioned in this unit to produce a timeline: 'The rise of the shogun'. Be sure to include the events that helped the shogun gain power and maintain it.
4 Using a graphic organiser of your own choice, show the similarities and differences between the Kamakura and Muromachi shogunates. Consider aspects such as how they came to power, how they ruled and what brought about the end of the Kamakura shogunate.

LS 3A

3.3 The unification of Japan

The period of the Warring States

As the *shugo* or regional protectors were forced to live in Kyoto, their lands became open to attack. This became known as the Warring States period, as powerful warlords fought each other to establish domains (meaning regions that they controlled) for themselves. This led to the rise of a new type of provincial leader, the **daimyo** or feudal lord, who ruled his domain with absolute authority. The shogun had very little control over the daimyo.

The arrival of Europeans

In September 1543, Portuguese traders were the first Europeans to arrive in Japan. Eager to open trade with Japan, more Portuguese merchants returned in 1545. Several of the daimyo in Kyushu (the southernmost of Japan's four main islands) opened their ports to Portuguese traders, because they wanted to buy firearms and other goods.

Other European merchants, along with Christian missionaries, soon followed. Unlike Kyushu, the rest of Japan remained afraid of foreign influence so refused to allow foreigners to trade or visit.

The three unifiers of Japan

After more than a century of civil war, three powerful daimyo were able to gradually restore order and bring the warring daimyo under control. The three daimyo were Oda Nobunaga, Toyotomi Hideyoshi and Tokugawa Ieyasu.

> The three of them [Nobunaga, Hideyoshi and Ieyasu] sat watching a nightingale, which refused to sing. 'If it does not sing, I will kill it', said Nobunaga. 'Let us make it sing', said Hideyoshi. 'No,' said Ieyasu, 'let us wait until it starts singing on its own'.

3.3.2 An extract from W.T. de Bary (ed.), *Sources of Japanese Tradition: From earliest times to 1600*, 2nd edn, Vol. 2, p. 10



3.3.1 A screen decoration by Kano Domi (1568–1600) showing Portuguese traders unloading goods in a Japanese port

Oda Nobunaga

Nobunaga rose from the position of a low-ranking samurai to become one of the most powerful daimyo of his day. In 1568, he captured Kyoto and made Ashikaga Yoshiaki the shogun. Yoshiaki was merely a figurehead (with no real power), however, and it was Nobunaga who made all the important decisions.

Nobunaga's motto, inscribed on his personal seal, was 'A unified realm under military rule'. He achieved this by being the first Japanese warlord to use large numbers of guns in battle. By the time of his assassination in 1582 by one of his most trusted generals, Nobunaga had conquered one-third of Japan.



3.3.3 One of Ieyasu's captains, Honda Tadatomo (wearing the horned helmet), leading an attack on the supporters of Hideyori in 1615, a detail from a folding screen created in 1754

Did you know?

Once he defeated an enemy, Nobunaga often ordered that captured warriors and civilians be buried alive. He is known to have once buried up to 20 000 of his enemies alive.

Toyotomi Hideyoshi

Hideyoshi rose from the humble rank of foot soldier in Nobunaga's army to become one of his leading generals. When Nobunaga was assassinated, it was Hideyoshi who avenged his death by killing his assassin and became Nobunaga's successor. Due to his peasant background, the emperor refused to make Hideyoshi shogun. However, as 'imperial regent' he had great power. In 1587, he conquered the island of Kyushu and ordered all Christian missionaries to leave Japan. By 1590, the rest of eastern Japan had come under his control. To reduce the chance of an uprising, Hideyoshi ordered a 'sword hunt', which banned commoners from owning or carrying swords or any other type of weapon.

Tokugawa Ieyasu

On his deathbed in 1598, Hideyoshi gathered Five Great Elders to swear that they would protect his only son and heir, Hideyori. Hideyori was only 5 years old and was not yet capable of governing. Shortly after Hideyoshi's death, however, the Five Great Elders divided into two hostile factions—one was led by Tokugawa Ieyasu and the other by Ishida Mitsunari. On 21 October 1600, the two largest armies Japan had ever seen met one another on the battlefield at Sekigahara. After a day of intense fighting, Ieyasu's Eastern Army won, but only after several leading generals of the Western Army had defected (abandoned their duty).

In 1603, Ieyasu was proclaimed shogun. In 1615, Ieyasu finally destroyed Hideyori's base at Osaka castle. This made him the strongest warlord throughout Japan, with practically all of the country under his control. Ieyasu and his successors were called the Tokugawa shoguns. Ieyasu was the first of fifteen Tokugawa shoguns who would rule Japan for the next 250 years.

Activities

Remembering and understanding

1. Who were the daimyo and how did their power grow?
2. Why did some daimyo open their ports to Portuguese traders?
3. Explain how Nobunaga, Hideyoshi and Ieyasu helped unify Japan.

Applying and analysing

4. Examine Source 3.3.2. Summarise the point it is making about each of the three 'unifiers of Japan'—Nobunaga, Hideyoshi and Ieyasu.

3.4 Political and social features of Tokugawa Japan

The power of the shogun

After becoming shogun in 1603, Tokugawa Ieyasu immediately ordered the arrest of all his defeated enemies and had them held captive at his base in Edo. He also made sure that the emperor was merely a ceremonial figure with no real power. Ieyasu made Edo (now Tokyo) his capital, from where he would establish control over the entire country.



3.4.1 A statue of Tokugawa Ieyasu at Toshogu Shrine in Nikko, Japan. Ieyasu's original tomb was enlarged into a spectacular shrine complex by his grandson Iemitsu in 1636. It is now part of a World Heritage site.

Controlling the daimyo

In all, there were about 250 daimyo throughout Japan. Each daimyo was permitted to control his own domain, but had to swear an oath of allegiance to the shogun. A loyal daimyo would be allowed to pass his lands on to his heir, but a disloyal daimyo could have his lands confiscated (taken by official power or force). As long as he followed the shogun's will, a daimyo could control and tax the commoners in his own domain as he saw fit.

Rewarding loyalty

To reward the daimyo who had fought with the Tokugawa and control those who had fought against them, Ieyasu created two classes of daimyo: the *fudai daimyo* and the *tozama daimyo*.

The *fudai daimyo*:

- were known as the 'inner daimyo' and there were 145 in total
- had fought with Ieyasu to help him become shogun
- had their lands close to Edo (in central Honshu) and were easier to control
- needed more land in order to become more prosperous
- were the most trusted and loyal daimyo.

The *tozama daimyo*:

- were known as the 'outer daimyo' and there were 97 in total
- were the main rivals of the Tokugawa
- had their lands in the south (mainly Kyushu) and were difficult to control
- were more prosperous due to foreign trade
- tended to be more sympathetic towards Christian missionaries.

The *buke shohatto*

One of the greatest challenges the Tokugawa faced was making sure that the daimyo could not form alliances against them. In 1615, Ieyasu introduced a strict code of regulations called the ***buke shohatto***. These aimed at weakening the daimyo, particularly the *tozama daimyo*, whose loyalty was questionable.

3.4.2 Excerpts from the *buke shohatto*, 1615

	Rule	Effect
Rule 5	No daimyo is to interact with people from other domains.	Removed opportunities to form alliances against the shogun.
Rule 6	No new castles are to be built without the shogun's approval.	Limited the defensive capabilities of the daimyo.
Rule 8	All daimyo marriages must be approved by the shogun.	Prevented potential family alliances against the shogun.
Rule 9	Daimyo must present themselves for service at Edo when summoned by the shogun.	The shogun could keep an eye on daimyo he did not trust.

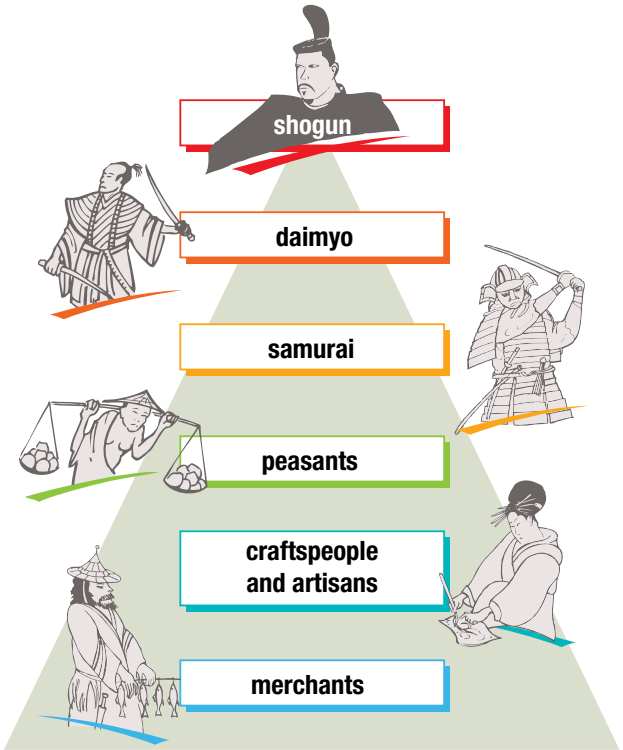
Alternate attendance

The strictest requirement the daimyo had to follow was the system of **alternate attendance**. Introduced in 1633, this forced the daimyo and their samurai armies to come to Edo every second year. The daimyo's wife and heir had to stay in Edo when the daimyo returned to his lands, so family members were effectively held hostage by the shogun.

Alternate attendance was incredibly expensive for the daimyo to maintain, because they had to build houses for their families and transport their armies long distances each year. Up to half their income could be spent on these huge and elaborate processions.

Revival of the feudal system

The Tokugawa family were the largest landholders, controlling 40 per cent of Japan. Their lands were rich in precious metals, which were used to mint currency (to make coins). At the same time, Ieyasu needed to maintain the loyalty of the *fudai daimyo* that had helped him become shogun. To prevent the daimyo from challenging him, Ieyasu had to control the whole of Japan. To achieve this, he revived the **feudal system** first introduced during the Heian period (794–1185). The feudal system was a strict structure of power and authority, with the shogun at the top, the daimyo next in importance, followed by samurai, then peasants, craftspeople and merchants underneath. Below the merchants were the outcasts of feudal Japan, known as the *eta*.



3.4.3 Social hierarchy under the Tokugawa

Samurai

'Samurai' means 'one who serves'. All daimyo and even the shogun belonged to the samurai class. Samurai were of noble birth and were the only people allowed to carry two swords. Most samurai served as the protectors of their daimyo and their lands, and were people of courage and self-discipline. They were expected to show great loyalty to their master and value honour above all else. Women could also be samurai, though they rarely fought in battle. A samurai could execute any commoner for even the smallest offence.

Under the Tokugawa shogunate, samurai fought fewer battles and became administrators of their daimyo's domain. With more time on their hands, samurai grew more interested in learning and the arts.



3.4.4 Samurai armour in the *do-maru* style appeared in the fourteenth century

Did you know?

The sword, or katana, was said to be the soul of the samurai. Katana were forged with great skill and thought to have their own spirit. Samurai tested the sharpness of their sword on the corpses of executed criminals. With a sharp katana, a samurai could cut through three corpses with one blow. The record was seven!



3.4.5 A samurai sword

Peasants

Peasants were farmers who produced crops such as rice, wheat, barley and tea. They were the largest group in society, making up about 90 per cent of the population. Peasants were considered to be the highest group of commoners, because their hard work was so important to everyone's survival. However, peasants were heavily taxed and, as a result, they sometimes rebelled against the daimyo.



3.4.6 Peasants cultivating rice during the Edo period, a woodblock by Katsushika Hokusai, c. nineteenth century

> The peasants should at no time forget their station in life. For peasants to engage in trade and for villages to have hairdressers is disrespectful. Henceforth, all luxuries should be avoided by the peasants. They are to live simply and devote themselves to farming.

3.4.7 An edict, or official order, issued by the shogun in 1788 for peasants, quoted in K. Henshall, *A History of Japan from Stone Age to Superpower*, 2012

Craftspeople and artisans

Craftspeople and artisans were those who performed a special skill or trade that was passed down from their parents. Important trades included swordsmiths, carpenters, tailors, innkeepers, cooks, weavers and fan-makers. Most craftspeople lived in towns or cities where entire streets were dedicated to their particular trade. Geisha (meaning 'artistic person') were male or female performers who recited poetry, played music or danced. Sometimes, they were also prostitutes (sex workers).

Merchants

Merchants were at the bottom of the social ladder because business and moneylending was not considered proper work. Instead, merchants relied on the skills of others to survive. Merchants were typically townspeople, as this is where wealthier people came to buy things. As cities grew in size during the Tokugawa period, so did the wealth of many merchants. Over time, they even began to dress and act like samurai.



3.4.8 A Japanese woodblock print by Utagawa Hiroshige (1797–1858) showing merchants engaged in business, with Mount Fuji in the background

Eta

Eta were social outcasts, mainly because they worked in occupations that handled the corpses of either dead people or animals. They were not part of the four-class system, but instead were below it. The word *eta* means 'much dirt'. Most *eta* were born 'untouchable' because of a crime committed by a grandparent or even great-grandparent. *Eta* lived in ghettos in the poorer outskirts of town, where they worked as leather producers, butchers, undertakers or sometimes as executioners.

Controlling the commoners

The Tokugawa shoguns were determined to restrict the movement of commoners. All people were required to remain in the domain in which they were born. This was because they wanted to check the size of the population in a domain so they could work out the tax it owed. It is also likely that they wanted to keep control over their people and stop any enemies or spies from entering their domain.

Other restrictions on movement included:

- checkpoints for officially approved travel documents
- a curfew that restricted people from travelling at night-time
- the destruction of most bridges
- the banning of wheeled transport
- the use of secret police to report any suspicious movements.

Activities

Remembering and understanding

1. Outline the differences between the *fudai daimyo* and *tozama daimyo*.
2. Carefully read the section 'Alternate attendance', then close your textbook and explain it to a friend. See how much of it you can remember. Test your friend's knowledge on any other section of this unit.
3. Answer true or false to the following statements.
   - a. Only samurai were allowed to carry two swords.
   - b. *Eta* means 'one who serves'.
   - c. Peasant work was considered insignificant.
   - d. Most craftspeople lived in towns.
   - e. Merchants were highly respected.
   - f. Commoners could not travel freely beyond their domain.

Applying and analysing

4. Use Source 3.4.2 as well as other information in this unit to write a detailed explanation titled 'How the Tokugawa maintained control of Japan'.
5. Using the information in this unit, explain how the status of the samurai and the merchants changed during this time.

Evaluating and creating

6. Research the differences between European and Japanese feudalism. Write a 300-word explanation of your findings. Structure your explanation as follows:
   - a. an introductory paragraph that defines feudalism and locates the places and periods of time being considered
   - b. body paragraphs that each provide details about one major difference between European and Japanese feudalism
   - c. a concluding paragraph that summarises the key points of your report.

LS 3B

3.5 Cultural features of Tokugawa society

Culture and religion

Shinto

Shinto is Japan's oldest religion and is not widely practised anywhere else in the world. The word *shinto* literally means 'way of the gods'. Followers of Shinto believe that all natural elements, including wind, water, fire and land features, have their own spirits. These are known as *kami* and are called on by people in times of need. It is believed that *kami* will only help if the individual is free from all impurity. The most important of the *kami* was Amaterasu, the sun goddess. The emperors of Japan were thought to be the descendents of Amaterasu. As such, the emperor was the religious head, or high priest of Shinto.

The Tokugawa shogun and Shinto

The Tokugawa shoguns had mixed feelings about Shinto. On the one hand, Shinto was a purely Japanese religion and was important for building a sense of national unity. On the other hand, Shinto revered the emperor, whom the shoguns had stripped of all political power. The shoguns therefore needed to keep the emperor as a figurehead whom they honoured in public.



3.5.1 A Shinto priest performing a cleansing ritual. Achieving purity through cleansing with water is important in Shinto.

Zen Buddhism

Buddhism came to Japan from China, via Korea, in the sixth century AD. Buddhists believe that, after dying, all living things are reborn or reincarnated into a new existence. By leading a good life, people could eventually escape the cycle of life and death and achieve nirvana. Nirvana is a state of nothingness in which there is no pain or suffering.



3.5.2 A Japanese Zen garden. The skills needed to produce Zen gardens like these can take years to acquire. The carefully raked pebbles represent the ocean and waves, and the mounds of earth are islands and mountains.

Samurai and Zen Buddhism

From the twelfth century onwards, Zen Buddhism became popular in Japan, especially among the warrior class, the samurai. Zen Buddhism stressed self-discipline in order to achieve *satori*, or enlightenment. 'Zen' means meditation, which was needed to empty the mind of all desires and worries. The concept of *mushin* or 'no mind' became an important way for samurai to free themselves of fear before battle. The idea was to be so well trained that a samurai could act instantly without thinking.

Zen Buddhism emphasised the importance of perfecting the proper technique. It also influenced the arts such as calligraphy and painting, which were to be done with swift yet perfect brushstrokes. These pastimes provided the samurai with a peaceful contrast to the violence of battle.

Confucianism

Confucius was a Chinese philosopher who taught that society could only function if people showed deep respect to their superiors. This included obeying without question one's ruler, father, husband (in the case of wives), older brother and teacher. In return, superiors were expected to show kindness to those below them. This two-way relationship was called 'filial piety'. The Tokugawa shoguns encouraged Confucianism, as this helped them to maintain their authority. The four-class system introduced by the Tokugawa shoguns had its origins in Confucianism.

Bushido

The word *bushi* in Japanese means 'warrior' and **bushido**, 'the way of the warrior'. Bushido was like the code of chivalry for medieval European knights. It was a set of principles and values that the samurai lived and died by.

For samurai, death was preferable to dishonour. Seppuku (meaning 'stabbing the stomach') was a form of ritual suicide for samurai who had failed to keep the code of bushido. Seppuku was usually performed if a samurai was captured in battle by his enemies.



3.5.3 A concept map showing the seven virtues of bushido

Activities

Remembering and understanding

1. Decide whether the following terms are connected with Shinto, Buddhism, Confucianism or bushido: *satori*, seppuku, *mushin*, nirvana, *bushi*, filial piety and *kami*.
2. Outline the two reasons why the samurai were attracted to Zen Buddhism.
3. Why did the Tokugawa shoguns encourage the spread of Confucianism?

Applying and analysing

4. Create a brochure that explains the main features of all the religions or belief systems mentioned in this unit.
5. Select one of the religious or philosophical ideas mentioned in this unit. Consider the ways in which it could be usefully applied to challenges faced in your school.

Evaluating and creating

6. Working in teams, investigate one of the following belief systems in Japanese history: Shinto, Zen Buddhism, bushido or Christianity. Produce a webpage that shows:
   - a how and when the belief system started in Japan
   - b the major features of the belief system
   - c why the belief system became important in Japan
   - d who were the key figures involved in the belief system in Japan
   - e how the belief system was organised in Japan
   - f whether or not the belief system was able to coexist with others.

   Illustrate your webpage with relevant high-resolution digital images. Make sure you provide a caption for each image so that users of your website know what it shows and where it came from.

3.6 Everyday life in Tokugawa society and economic features

Men

Japan at the time of the shoguns was a male-dominated society. Leaders were mainly males from the samurai class. Fathers and grandfathers were the heads of their family unit, and inheritance of wealth and property usually went to the eldest son. Husbands could have concubines (unmarried partners who lived in the same house as the wife).

Did you know?

Japanese men were allowed to divorce their wives for talking too fast. This was because wives were expected to be subservient to their husbands, according to Confucian tradition. A fast-talking wife did not obediently listen to what her husband was saying. The need for this rule shows that not all women conformed to the role, or behaved in the way expected of them.

A woman, who is angry with her husband about some trifling matter, leaves home and goes somewhere to hide. She is certain that he will rush about looking for her; but he does nothing of the kind and shows the most infuriating indifference. Since she cannot stay away for ever, she swallows her pride and returns.

3.6.1 An extract from *The Pillow Book*, written by Sei Shonagon, c. 1002

Women

Japanese women had very little economic independence from their fathers and husbands. Upon marriage, the bride's family was expected to provide a dowry (payment) to the new husband. If the family was wealthy, the dowry could be in the form of money and land. If they were poor, it could be furniture, clothes, rice or tea. If the wife died before her husband, her family was entitled to receive the dowry back. For this reason, most men married the younger sister of their deceased wife. Women could seek a divorce from their husbands, but they risked losing their dowry.

Women from wealthier samurai families had a much higher status. It was not uncommon for such women to be placed in charge of their husband's land while he was away fighting. Wives of rich merchants were also well off and often helped to manage the family wealth.

Children

In Shinto, children are seen as gifts of the gods. When they turned three, five and seven, children were taken to the local shrine where their parents promised to take good care of them. As far back as the sixteenth century, Portuguese missionaries observed that Japanese parents rarely hit their children.

Up until the age of seven, all children were looked after by their mother. From the age of seven, boys and girls were separated and began training for adulthood. In many ways, they were seen as adults in the making. Both boys and girls from samurai families were taught to read and write, while peasant children went to work in the fields with their parents. In the eighteenth century, the literacy rate in Japan was 30 per cent, which was much higher than most parts of Europe at the time.



3.6.2 A nineteenth-century painting by Ando Hiroshige showing children gathering clams on the beach



3.6.3 A block print of the Shin-Yoshiwara pleasure district of Edo (present-day Tokyo), by Toyaharu Utagawa, 1775

Economic growth

Rural production

A long period of peace and stability under the Tokugawa led to better food production, and with it an increase in the birth rate. It is estimated that between 1600 and 1730, rice production doubled. Commercial crops such as cotton, tea, hemp, sugar, indigo and tobacco also expanded. This produced higher standards of living for peasants, with some becoming wealthy enough to hire landless peasants to work their fields. However, this growth in population, combined with crop failure and a greater demand on food resources, also resulted in food shortages. In 1837, famine and taxes led to a peasant rebellion in Osaka. It was quickly suppressed (stopped), but not before fire destroyed over 3000 houses in the town and businesses were destroyed.

Towns, transport and trade

Although the Tokugawa shoguns had tried to restrict the movement of peasants, the system of alternate attendance in fact led to greater movement of people throughout Japan. Huge processions of samurai armies across the country required the building of new roads, bridges and rest houses. This made the transport of goods between villages, towns and cities much easier, resulting in a better supply of food.

The destination of these processions was of course Edo, the capital of the Tokugawa shoguns. By the end of the eighteenth century, Edo had become the largest city in the world with a population of over one million. Osaka and Kyoto grew to about 500 000 people around this time.

Growth of the merchant class

As travel between towns increased, merchants saw an opportunity to set up stalls, tea houses, textile shops and restaurants. Over time, landownership became less important for creating wealth. New economic opportunities meant that individuals could become wealthy without inheriting land or relying on a good harvest. Despite the threat of severe punishments, many peasants made their way to the cities to sell their surpluses (extra produce).

Activities

Remembering and understanding

1. Describe the relationship between husbands and wives during the Tokugawa period.
2. How were children treated and why was this so?

Applying and analysing

3. Create a T-chart to compare and contrast the roles of women in Japan under the shoguns with today.
4. Using the information in the section 'Economic growth' write a one-paragraph response to the statement that 'Tokugawa Japan was a society undergoing great change'.

3.7 Control of foreign trade

Growing distrust of foreigners

European traders

By the middle of the sixteenth century, European traders from Spain and Portugal had begun arriving in the southern island of Kyushu. Among the most popular items they sold were guns. Tokugawa shoguns feared that the daimyo in the south might arm themselves with guns and cannons, and attempt to overthrow them.

The Christian daimyo

Tokugawa Ieyasu wanted a monopoly (exclusive control) over all foreign trade. However, the English, Spanish and Dutch did not agree. Instead, they preferred to deal with the southern daimyo who had converted to Christianity. Most of these were 'outer' daimyo who were the main rivals of the ruling Tokugawa family. Ieyasu therefore came to see the growth of Christianity in the south as a challenge to his authority.

Persecution of Christians

By the late sixteenth century, Japanese Christians were being persecuted. Those suspected of being Christians were required to renounce (formally state they no longer believed in) their faith by treading on a copper plate with an image of the Christian cross. Those who refused were tortured. Other punishments included crucifixion, beheading by sword, or being thrown into boiling water.



3.7.1 Crucifixion of Catholic priests in Nagasaki, 1597

The Shimabara rebellion

In 1638, Christians living in the Shimabara peninsula rose up in rebellion against the local daimyo. Most of the rebels were peasants, though some were also masterless samurai who had become angry at being overtaxed. Within weeks they numbered about 35 000 and had seized Hara castle, from which they displayed banners with Christian symbols.

When Hara castle eventually fell to shogunate troops, all the rebels including women and children were massacred.

Sakoku, or the 'closed country' policy

The Shimabara rebellion of 1638 had shown what a problem Christianity in the south had become. To put down the rebellion, the shogun, Tokugawa Iemitsu, had sent a 125 000-strong army to destroy Hara castle. The shogunate was only able to defeat the rebels with the support of foreigners, the Dutch. This made Iemitsu grow more fearful of foreigners, especially if they should decide to support his rivals. Within a year of the Shimabara rebellion, the Tokugawa shogunate had introduced its policy of ***sakoku***, or the 'closed country'.

The main features of the 'closed country' policy:

- All foreigners, except the Dutch, were expelled from Japan.
- A few Dutch merchants were restricted to the small island of Deshima.
- Foreigners who tried to enter Japan were killed.
- All Japanese were banned from travelling overseas.
- Shipbuilding was made illegal.
- Importing foreign books was, at first, prohibited.
- Christianity was forbidden.

Foreigners at Deshima

During the period of the 'closed country' policy, the only Europeans allowed to remain in Japan were a few employees of the Dutch East India Company. To limit their contact with the Japanese, the Dutch traders were confined to a small artificial island called Deshima. This was virtually a prison that was kept constantly under guard. Deshima was only 180 metres long and 60 metres wide and was surrounded with high walls. Only nineteen Dutch people were permitted on the island at any one time.



3.7.2 A plan of Deshima, from *Illustrations of Japan: Anecdotes of the Reigning Dynasty of the Shoguns*, 1882

'Dutch learning'

In 1720, the ban on foreign books was lifted. This allowed a few well-educated samurai to learn Dutch and begin exploring Western science and medicine. 'Dutch learning' was called ***rangaku***. In 1745, a Dutch–Japanese dictionary was produced. This proved important for later translations of Dutch science texts into Japanese.

> It is really surprising that Dutch learning has gained such a great popularity lately ... we never expected that it would come into such a great vogue [fashion].

3.7.3 Sugita Gempaku was a Japanese physician interested in Dutch learning. This extract is from his book *Beginning of Dutch Learning in Japan*, published in 1774.

Engelbert Kaempfer's diaries

Engelbert Kaempfer (1651–1716) was a German doctor who lived on Deshima and worked for the Dutch East India Company. On two occasions he was part of the annual expedition that travelled to Edo to pay homage to the shogun. On his travels he kept a detailed diary of everything he saw. On leaving Japan in 1692, Kaempfer smuggled many Japanese books and maps, which he later used to write his book *The History of Japan*. Kaempfer's observations are the only European perspective we have of Japan under the shoguns at the turn of the eighteenth century.

> The behaviour of the Japanese, from the meanest [poorest] countryman to the greatest Prince or Lord, is such that the whole empire might be called a School of Civility and good manners.

3.7.4 An extract from Engelbert Kaempfer's *The History of Japan*, Book 4, Chapter 6, 1692

Activities

Remembering and understanding

1. What can Source 3.7.1 tell us about attempts by the shogunate to stop the spread of Christianity in Japan?
2. What unique or special information does Source 3.7.2 provide about Deshima that helps us build a better understanding of the place?

Applying and analysing

3. How can Source 3.7.3 and the information about 'Dutch learning' be used to show the changing nature of the 'closed country' policy over time?
4. Explain what Engelbert Kaempfer was saying about the Japanese in Source 3.7.4. Why should we accept his views?

LS 3C

3.8 Land use under the Tokugawa

Problem of deforestation

A period of peace and stability had resulted in a growing population, which needed to be housed. At the same time, the development of trade and commerce caused a movement of people to cities such as Edo.

Edo grew rapidly during the Tokugawa era, particularly in the first half of the 1600s, and by 1800 it had become the largest city in the world. Other cities such as Osaka and Yokohama also experienced a sharp increase in population during this early period. This rapid growth put a huge strain on natural resources, and there was a shortage of timber by 1650. Construction of houses, castles, monuments, temples and shrines, all made from local wood, resulted in deforestation throughout Japan. Japan had few available fossil fuels such as coal or oil. Its isolation from other countries meant that there were no other reliable sources of fuel or construction materials. By 1670, Japan's old-growth forests, except for those in the northern Island of Hokkaido, had been completely logged.

Impacts of deforestation

Deforestation had a number of negative impacts on the people and environment of Japan:

- Wood became expensive. Only the wealthy could afford it.
- Peasants became angry, as they needed wood for heating and cooking.
- Logging led to soil erosion, which caused flooding and silting of rivers.
- In 1657, fire almost destroyed Edo. There was little wood available for rebuilding.

Responses of the shogunate to deforestation

Deforestation was a major concern for the Tokugawa rulers. Since their 'closed country' policy had isolated Japan from the rest of the world, the country had to be self-sufficient.

The Tokugawa family controlled about a quarter of Japan's land. The rest was divided into about 300 domains, each ruled over by a daimyo lord. This made it easier to enforce rules about land use.

In dealing with deforestation, if was necessary to:

- slow the rate of deforestation
- plant new forests (this is called reforestation).

Slowing the rate of deforestation

To slow the rate of deforestation, strict rules were introduced about who could cut trees down, when and for how much. With less pasture land available, people looked for food sources that did not require grazing animals. Fish came to replace meat as the main food source in Japan. Other measures included:

- A supervisor of forests was appointed to ensure that peasants did not simply cut down trees as they wished.
- Peasants needed a logging licence and were restricted from using the land of their absent daimyo.
- Checkpoints were set up on highways to inspect wood shipments and make sure all rules were being obeyed.
- Scarce trees such as cedar and oak were off-limits to peasants. Only the government could use them.
- It was prohibited to use scarce wood for making signboards.



3.8.1 Typical eighteenth-century Edo houses

Did you know?

One of the oldest living trees in the world is on Yakushima Island in Japan. The *sugi* tree (sometimes called Japanese cedar) is about 3000 years old. It was one of the few old-growth trees to escape deforestation and survived thanks to the ban on logging introduced by the Tokugawa shogunate.



3.8.2 Cedar trees on Yakushima Island

Reforestation

In 1666, Tokugawa Iemitsu issued a proclamation (an official announcement) urging all peasants to plant tree seedlings. The study of forest management (called 'silviculture') was also encouraged. This helped people to plant and cultivate new trees correctly. Plantation forestry was also introduced. Rather than relying on forest that grew naturally, plantation forestry used a section of land set aside for fast-growing plantations of trees that could be used for wood. Plantation forestry made sure that old-growth forests were not destroyed. These measures meant that by 1800 the problem of deforestation had been reversed.



3.8.3 A cedar tree plantation in Japan today

Skills builder

Cause and effect

Historians study cause and effect to see why events happen. Sometimes historical causes can build up over months, years or even decades. In other situations, causes can be short term, with change occurring in a very short space of time.

Once a historian decides on the cause or causes of an event, they then study the effects. This means working out what impact the event had on society.

Deciding on cause and effect often involves considering a range of possibilities and then deciding which one is the most likely.

ACTIVITIES

1. By 1650, Japan's forests started to disappear. Why did this happen?
2. What impact did the disappearance of the forests have on the people?
3. Do you think some people would have been more greatly affected than others? Why?

Activities

Remembering and understanding

1. Define these terms: deforestation, reforestation, silviculture, plantation forestry.
2. What types of things did people need wood for?
3. What advantage did the Tokugawa shogunate have in dealing with the problem of deforestation throughout Japan?

Applying and analysing

4. Create a concept map showing the reasons for deforestation in Japan by the seventeenth century.

3.9 The decline and the legacy of the Tokugawa shogunate

The decline of the shogunate

Internal pressures

By the nineteenth century, centuries of peace brought about a decline in the importance of the samurai class. This was because there were fewer wars for them to fight and fewer ways for them to gain power and wealth. At the same time, the merchants had grown in wealth and influence. The shogun's government, the *bakufu*, became heavily indebted to these merchants. To help pay this debt, it reduced the salaries of the samurai and increased taxes on peasants. Many samurai became unemployed. These ***ronin***, or masterless samurai, moved to Kyoto where they gave their support to the emperor.

External pressures

Due to the development of the steamship, more European ships began entering Japanese waters. US whaling ships (which hunted whales) in the North Pacific Ocean needed a base to refuel and Japan seemed the perfect location. However, under the 'closed country' policy, even foreign sailors who became shipwrecked in Japan were imprisoned. In 1842, the shogunate grew even more fearful of foreign intrusion when the British navy destroyed the Chinese fleet and then forced China to open its doors to trade and missionaries.

The end of isolation

Commodore Perry's arrival

On 2 July 1853, four black steamships entered the Japanese port of Yokohama. These were US ships led by Commodore Matthew Perry, who had been sent to establish trade with Japan. Perry's 'black ships' were heavily armed and carried a crew of about 1000. Perry stated that he would return in several months' time and that he expected a positive answer from the shogun.

Response of the shogunate

After Perry left, Tokugawa Iesada sought the advice of the leading daimyo and the emperor about what he should do. This was seen as a major sign of weakness, since the shogun had never before consulted anyone outside of his own family. The advice given to him was to expel the foreigners, but this was something that he feared would lead to a foreign invasion.

When Perry returned early the following year, Iesada signed the treaty of Kanagawa with the United States. This opened two ports to US trade and allowed them to set up a diplomatic post in Japan. Similar treaties were soon signed with other foreign powers. Since Japan was given very little in return, these treaties have been referred to as 'unequal treaties'.



3.9.1 A lithograph showing Commodore Perry meeting with imperial officials at Yokohama to sign the treaty of Kanagawa on 31 March 1854

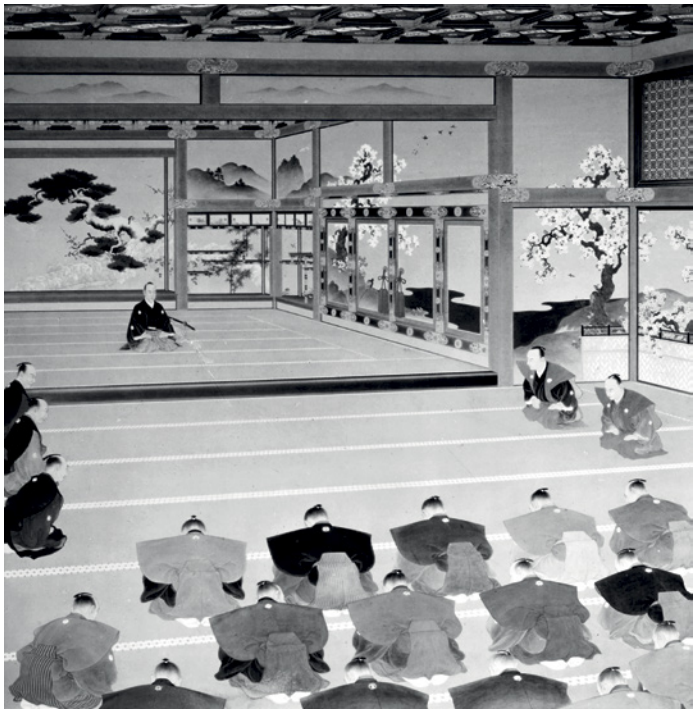
Nagasaki Naval Training Centre

As pressure grew on Japan to become more connected with the rest of the world, the shogunate became increasingly concerned at the power of Western nations. It realised it would need to develop more sophisticated weapons and technology. In 1855, the government established a naval training centre, with Royal Dutch Navy officers in charge of the education. The emphasis was on Western science and learning and modern-day naval training.

The end of the shogunate

Civil war

The signing of the unequal treaties led to further weakening of the shogunate. Many samurai were angry that the shogunate had so feebly given in to foreign demands. A movement called 'Revere Emperor, Expel the Barbarians' quickly grew. In 1867, the last shogun, Tokugawa Yoshinobu, was overthrown by an alliance of four powerful daimyo. The emperor was restored to power and his capital was moved from Kyoto to Edo, from where the Tokugawa shoguns had ruled since 1603.



3.9.2 Young Emperor Mutsuhito is paid homage at his restoration as Meiji emperor in 1868.

The Meiji Restoration

In 1868, 17-year-old Mutsuhito became emperor of Japan. He took the title of *Meiji*, meaning 'enlightened rule'. Mutsuhito's advisers thought that unless Japan developed modern technology, it would continue to be humiliated by foreigners. This began an era of rapid modernisation, known as the Meiji Restoration.

Reforms during the Meiji Restoration:

- Feudalism was ended. All daimyo were paid to give up their domains.
- A Japanese army was created based on Germany's army.
- A Japanese navy was created based on Britain's navy.
- **Conscription** was introduced and samurai were stripped of their status.
- The latest engineering practices were adopted from the United States.
- Education for boys and girls was made compulsory.
- A new constitution established a basic system of democracy.

Gas lamps, steam engines, horse-drawn carriages, cameras, telegrams, lightning conductors, newspapers, schools, postal mail and steamboats

3.9.3 This list of ten modernisations was part of a popular Japanese school children's song in 1878 called 'The civilisation ball song'. Children bounced a ball as they recited each item.

Activities

Remembering and understanding

1. Define these terms: unequal treaties, Meiji, conscription, democracy.
2. Why did Mutsuhito and his advisers believe that it was necessary for Japan to modernise?

Applying and analysing

3. Do you think that the decline of the Tokugawa shogunate was due more to internal or external pressures? Discuss the reasons for your views with a partner, and then share these with the class.
4. Create a concept map showing the ways Japan was modernised during the Meiji Restoration.

Evaluating and creating

5. Write an essay response that answers one of the following questions.
   - a. How were the Tokugawa shoguns able to consolidate their power?
   - b. How did Japanese society change during the period of the Tokugawa shogunate?
   - c. What was the impact of the Tokugawa shogunate on Japan?

LS 3D

3.10 A significant individual

Tokugawa Ieyasu, shogun

Tokugawa Ieyasu was born in 1542, the son of a minor daimyo. He became the founder of a powerful dynasty, which ruled Japan from 1603 until 1868. The shogunate ended a long period of civil warfare in Japan. During this period of great unrest, the daimyos had been in constant conflict, with each daimyo ruling their own territory and commanding their own army.

Ieyasu was known by several names before he adopted the name Tokugawa Ieyasu in 1567. He did this so that he could claim that he was descended from a former emperor, who had ruled from 558 to 876.

After many years of fighting the warring families and developing great influence with the imperial court, Ieyasu defeated his strongest rival, Ishmida Mitsunari, at the Battle of Sekigahara in 1600. He was proclaimed shogun by the emperor in Kyoto in 1603 and immediately established a central government in Edo. Two years later, he gave the shogunate to his son. He was determined to ensure that his dynasty continued. By passing it to his son while still alive, he greatly reduced the potential for fighting to break out after his death. It was a clever move, and the result was just as he intended. The shogunate lasted until 1868.

Ieyasu was immensely rich, and in 1614 he began building a huge castle in Edo, a massive project that took 10 years to complete. Around the castle a busy town and port developed, and this became the centre of what would later be called the Edo period.



3.10.1 Ieyasu's castle at Edo

Ieyasu's rule

Ieyasu knew that he had to secure the support of other daimyo so that they would not challenge him. He did this by reintroducing feudalism and making regulations that restrained the actions of other powerful families. He distributed land to those daimyo who had supported him. However, they were strictly controlled and had to fulfil various obligations, such as attending the emperor's court every second year. He insisted that their wives and children remain at Edo when the daimyos returned to their properties. The constant travel between their lands and the court was time-consuming and expensive, and allowed Ieyasu to keep a close watch on any potential rivals. He was clever enough not to demand direct taxes from the daimyo, but they were expected to provide labour and raw materials for infrastructure and other building projects. Ieyasu also forbade peasants to own weapons, which made rebellion very difficult.

Ieyasu was interested in foreign affairs and encouraged foreign trade with the Dutch, Portuguese and English. He realised that this would give Japan access to firearms and opportunities to make money through selling goods. He connected with European rulers such as James I of England, with whom he exchanged gifts. He also allowed Christian missionaries to come into Japan, although by 1612 he started to discourage their activities and the practice of their religion. This was the beginning of what would eventually become Japan's isolationist policy.

Did you know?

Ieyasu married his first wife when he was 13 and fought his first battle at the age of 14 at the **siege** of Terabe.



3.10.2 Tokugawa Ieyasu

A man of contrasts

One of the reasons Ieyasu was so successful was that he lived for 73 years, which was a very long time in the sixteenth century. He did not become shogun until he was 60, after years of fighting and establishing alliances. By the time he was appointed shogun, he had a very strong base on which to build his dynasty. He was a man of conflicting behaviour, both kind and cruel. He was capable of great boldness, yet believed in the importance of patience when necessary. He showed great loyalty to his friends, but he was quite capable of switching alliances for political gain.

Although he won his position by fighting and defeating his enemies, Ieyasu did more than fight battles. He was considered a wise and cautious ruler who introduced stability after a long period of great unrest.

Find fault with yourself rather than with others.
Let your step be slow and steady, that you stumble not.
Patience means restraining one's inclinations.
Persuade yourself that imperfection and inconvenience are the natural lot of mortals, and there will be no room for discontent, neither for despair.

3.10.3 Ieyasu's words of wisdom

Activities

Remembering and understanding

1. What was happening in Japan before the establishment of the Tokugawa shogunate?
2. Why did Ieyasu pass the shogunate to his son?
3. Explain why Ieyasu insisted that the daimyo come regularly to the imperial court.

Applying and analysing

4. Why do you think Ieyasu wanted to claim a relationship with a former emperor?
5. What does Source 3.10.3 tell you about Ieyasu's personality?

Evaluating and creating

6. Create a book cover for a new biography of Tokugawa Ieyasu. Your cover should have the following features:
   - **a** a front cover with an imaginative title, a byline and a primary source image of the figure
   - **b** a back cover with a 150-word blurb about the historical significance of Ieyasu.



Angkor/Khmer Empire

H3

In 802 AD, Jayavarman II founded an empire that was to dominate the region of South-East Asia for the next six centuries. The Khmer kings established a strong religious cult, which served as the foundation of a sophisticated and complex civilisation, inspiring some of the world's most remarkable and beautiful temples. The reasons for the Khmer Empire's decline are still being debated.

OVERVIEW QUESTIONS

H3A How was the Khmer Empire established and how large did it become?

H3B How did people's way of life change in the Khmer Empire over time and what drove these changes?

H3C What is the legacy of the Khmer Empire?

LS Before you begin

GLOSSARY

Angkor the capital of the Khmer Empire; the name comes from the Sanskrit word *nagara*, meaning 'city'

Angkor Wat the temple built by Khmer king Suryavarman I dedicated to the Hindu god Vishnu

apsaras in Hindu mythology, divine or celestial nymph dancers of perfect beauty

baray a huge rectangular water reservoir

bas-relief a style of sculpture in which the carved figures stick out slightly from their background

bodhisattva a person of wisdom; one who is close to achieving enlightenment but delays this in order to help others

chakravartin a Khmer title meaning 'supreme king'

Cham inhabitants of Champa, a coastal region of modern Vietnam, and main enemies of the Khmers

corvée a compulsory period of work for peasants

devaraja a Sanskrit word meaning 'the god who is king'; the term refers to the cult of the god kings established by Khmer king Jayavarman II whereby kings were believed to be gods on Earth

enlightenment in Buddhism, a state of perfect knowledge

khnyum the Khmer word for 'slaves'

lidar a type of laser technology that uses infra-red light to detect distant objects and determine their position

naga a multiheaded cobra; a mythical protector of Angkor

neak ta spirits who live in the trees and hills; the Khmer people believed them to be guardians of the Earth

phnom the Khmer word for 'hill' or 'mountain'

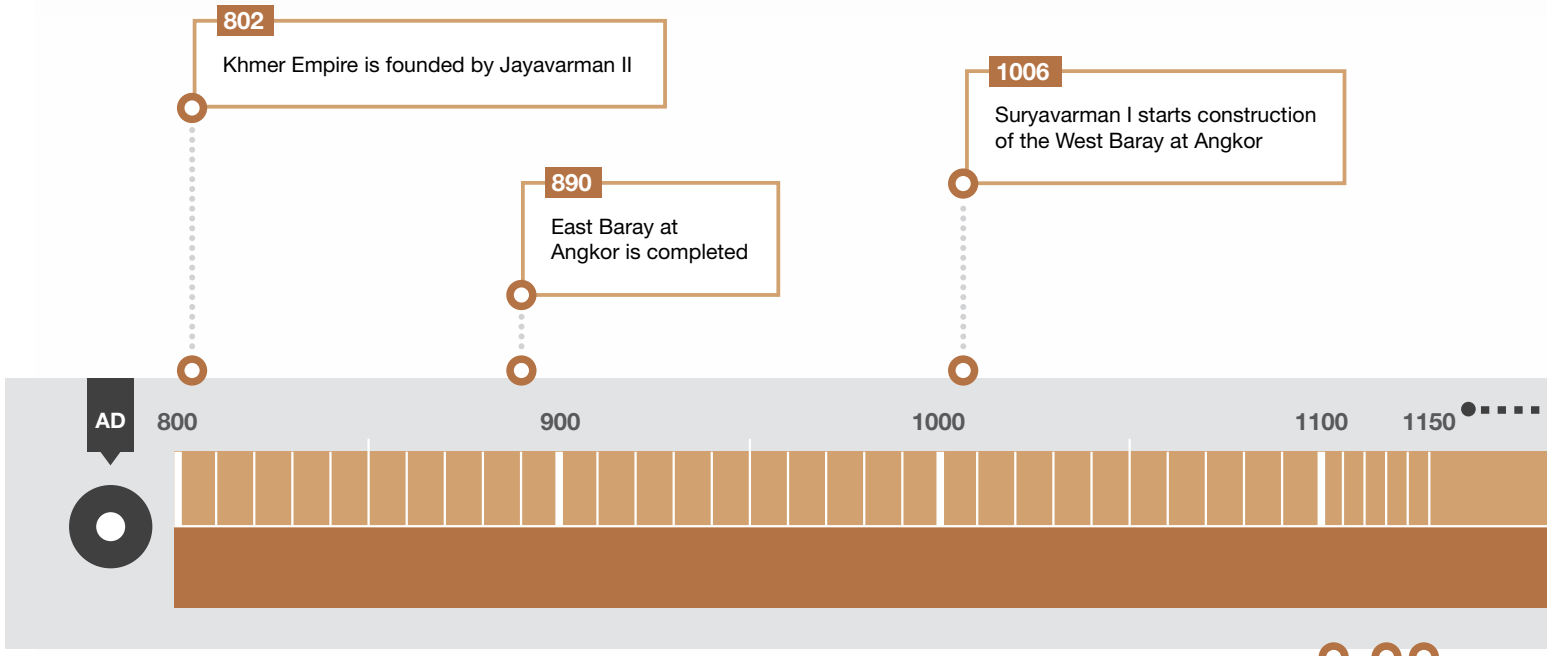
Sanskrit an Indian language used in Khmer inscriptions (inscriptions are often written records of great achievements or actions by important historical figures that have been carved onto stone monuments)

H3.0.1 Angkor Wat, Cambodia

Timeline

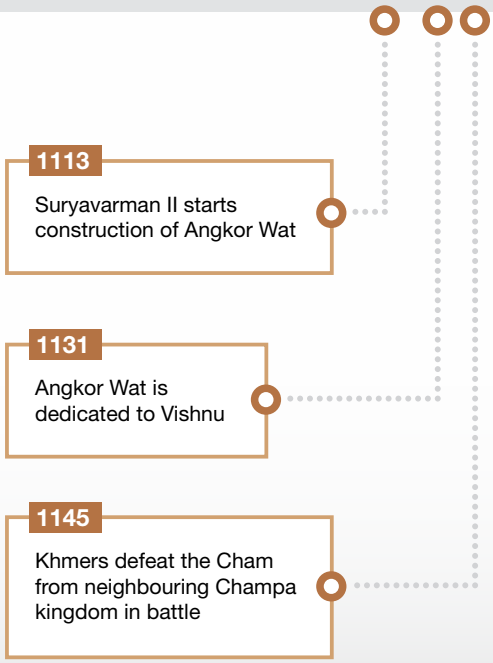
Angkor/Khmer Empire

Visit present-day Cambodia and you could be excused for thinking you had been transported back in time to the Khmer Empire, such is its legacy. From its impressive temples and irrigation systems to its impact on culture and religion, the Khmer civilisation has certainly left its historical mark.



Guardian statues at Angkor Thom, Cambodia







Traditional ways of life have changed little in some parts of Cambodia.

1190
Jayavarman VII defeats the Cham and introduces Buddhism

1218
Death of Jayavarman VII

1431
Khmer Empire is overrun by the Thais

1151 1200 1300 1400 1500 AD

1178
Champa launches a surprise attack on Angkor

1181
Jayavarman VII is crowned king; construction of Angkor Thom, the Bayon, Preah Khan and Ta Prohm begins

1296
Chinese diplomat Zhou Daguan visits Angkor



A modern scene from Siem Reap, Cambodia

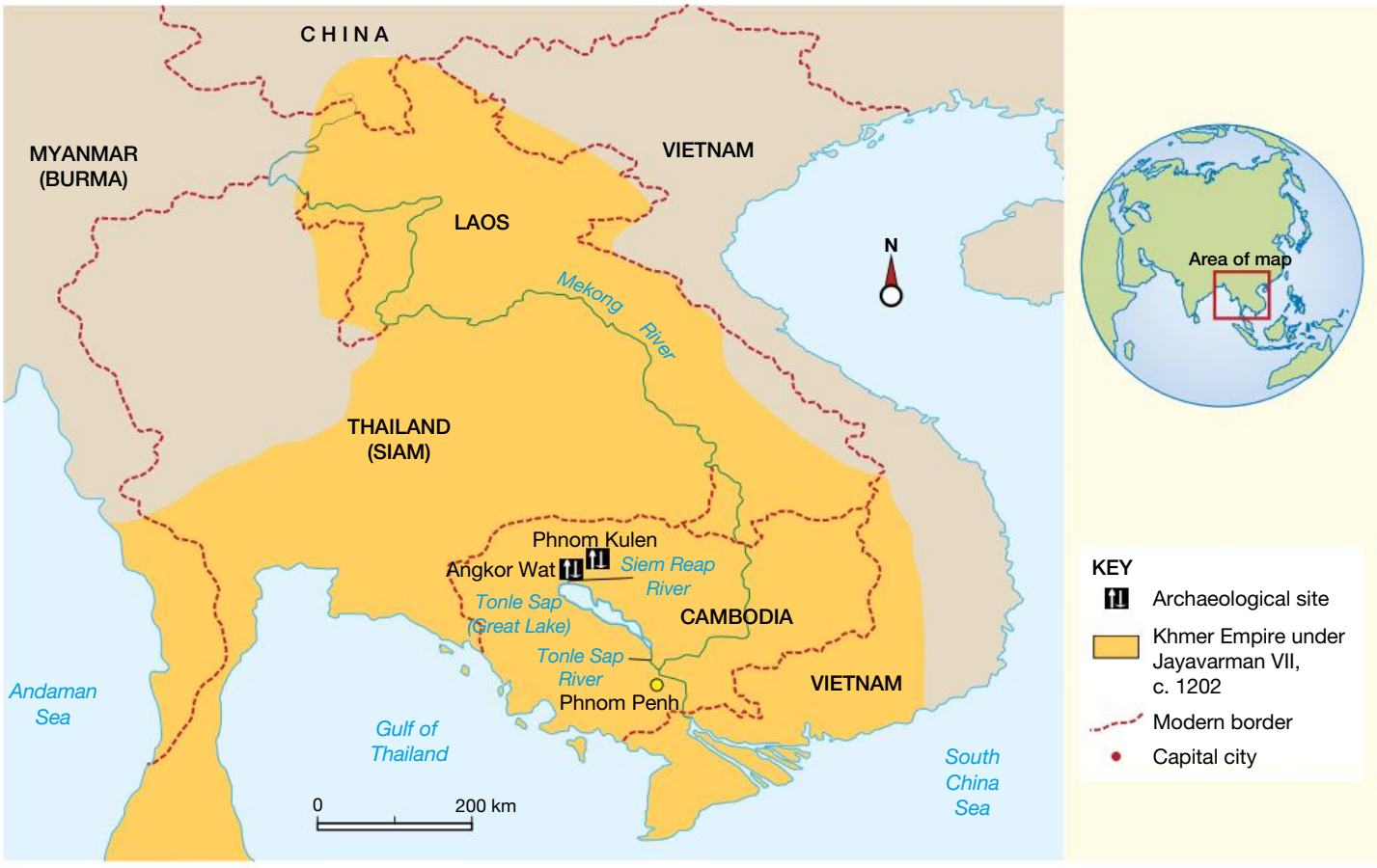
H3.1 Jayavarman II and the founding of the Khmer Empire

Beginnings of an empire

Jayavarman II was the founding ruler of the Khmer Empire, ascending the throne in 802. He did not become king of a peaceful and unified country, though. In fact, one of his first acts was to proclaim (publicly announce) independence from Java in order to rid his realm, present-day Cambodia, of a foreign enemy. There was also internal conflict, as Cambodia was then a group of independent kingdoms who were at constant war with each other. To secure peace, Jayavarman began a great campaign of military conquests and won the support of powerful people by providing land in exchange for loyalty. Once his position as leader was secure, he could concentrate on the business of empire building.

Establishing a capital

Jayavarman decided to move the capital north of **Phnom** Penh to an area known as **Angkor**, which means 'city'. Angkor lies in a basin that is bordered by the Tonle Sap, or Great Lake, to the south and Phnom Kulen in the north. It was a clever choice for a capital. It was an inland city so it was protected from naval attack and it was also close to a natural water source. This is where the concentration of the empire remained until its eventual collapse over 500 years later.



H3.1.1 The Khmer Empire at the height of its power



H3.1.2 The Mekong River flowing through Cambodia

By the eleventh century and at the height of its territorial power, the Khmers had moved well into central and north-western Thailand and also parts of Laos and China. In the south, the Khmers had claimed the lower parts of the Mekong, a major river, towards the South China Sea. Parts of Malaysia, Burma and Vietnam were also under their rule. It was home to almost one million people, making it the largest medieval empire.

The Mekong River

The Mekong River begins its descent towards the ocean in the Himalayan Mountains, flowing through the north-east region of Cambodia and feeding into the South China Sea. When the snow from the Himalayan Mountains thawed, it added a lot of water to the Mekong River, which the river could not hold. Consequently the extra water flowed into the Tonle Sap River, forcing it to change direction.

The Tonle Sap lake almost tripled in size, flooding the entire area. This large supply of water was the life source for the people of Angkor. Fish were attracted to the food provided by the flooded jungle, and when the water level fell it left fertile land ideal for rice production.

At the end of the monsoonal period, a festival was held called *Bon Om Tuk* to give thanks to the gods. In this way, the pattern of Khmer life revolved around the Great Lake. Innovative and hardworking farmers were able to develop techniques to maximise the production of fish and rice to support an entire civilisation.

Key sites of Angkor

In total there are well over 700 temples and monuments in the Angkor region. **Angkor Wat**, built by Suryavarman II (reigned 1113–1150), is perhaps the most spectacular and well known. It is in fact the largest religious temple ever built and attracts nearly a million tourists every year. Other key sites worthy of mention are:

- the golden city of Angkor Thom, which rivalled the grand medieval cities of Europe
- the smiling Bayon Temple with over 200 large faces carved onto 54 towers
- the sacred Phnom Kulen, a source of water and sandstone for building temples
- the enormous **barays** (reservoirs), which helped to sustain the vast water network.



H3.1.3 A modern artist's impression of the building of the temples at Angkor Wat



H3.1.4 The smiling faces of Bayon Temple at Angkor Thom, Cambodia



H3.1.5 Angkor Wat as it is today



H3.1.6 Angkor Wat temple reflected in the northern baray

Activities

Remembering and understanding

1. Where was the capital of the Khmer Empire located and why was it a clever choice?
2. Identify three modern countries that were part of the Khmer Empire.
3. Who was the first king of the Khmer Empire and how did he go about establishing his authority?
4. Outline the importance of the Mekong River and the Tonle Sap (Great Lake).

Applying and analysing

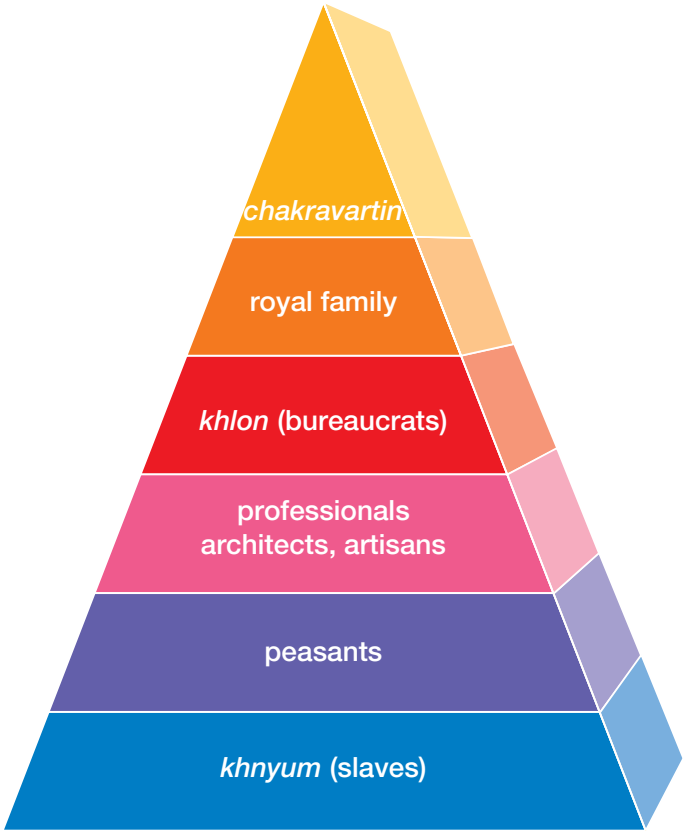
5. Explain why Angkor was a better location for an empire's capital than Phnom Penh.
6. Examine Source H3.1.3. What does this tell us about the importance of religion to the Khmer people?

LS H3A

H3.2 Key social groups

Khmer society

Khmer society was very rigid with little room for social mobility, or movement between social classes (see Source H3.2.1). Due to their belief in reincarnation (the idea that after you die you can be recreated or reborn as another being), it was accepted that social position was the result of a person's actions in a former life.



H3.2.1 Social structure in the Khmer Empire

The royal family

The king or ***chakravartin*** embodied the empire. He was:

- a god on Earth
- the supreme judge over life and death
- head of the army
- chief financial administrator
- chief diplomat of foreign relations.

Royal family members were important because they occupied key government positions, carried out rituals and ceremonies, and brought blessings to the king.

Bureaucrats

The king appointed bureaucrats to help him rule his vast empire. The Khmer Empire was divided into provinces (*praman* or *visaya*) and every province sectioned into villages (*sruk*).

The head of a province was known as the *khlon visaya*. He was responsible for three key areas:

- tax collection
- witnessing the purchase and sale of land
- setting land boundaries.

Professionals

The expert work of the professional artisans of the Khmer Empire is displayed in the legacy of the temples and the exquisite **bas-reliefs**, which are sculptures in which the figures are carved to be barely higher than the background. Temple maintenance and construction meant the artisans were in constant demand.

Architects completed designs, bronze specialists cast statues, master sculptors carved the reliefs and goldsmiths decorated them, potters manned the stoneware kilns, and boatbuilders were essential for the empire's survival by constructing fishing and naval vessels. Blacksmiths, weavers, traders and miners were also professionals. The king's glory depended on their expert knowledge and skill.

Peasants and workers

Most peasants lived in villages and were rice farmers. They were conscripted (called up) to occasional military service and performed **corvée** labour: a period of compulsory work for temple construction or maintenance. They also paid taxes to the king in the form of produce, such as rice, which was donated to the village temple. It was a life of dutiful service and hard work. However, the peasants believed that they were accumulating merit (building favour) with the gods through their service to the king.

Slaves

There were four types of slaves or ***khnyum***:

- legally obtained—people who were normally sold into slavery and legally purchased by others
- inherited
- religious—'slaves of the gods' who completed works at the temple once a fortnight. They were not necessarily born into slavery
- native—people who lived in the mountains.

A wealthy family might have had more than 100 slaves. It appears that the bulk of the population, officially or unofficially, were in some form of slavery. The Khmer language referred to slaves as 'dogs', 'foul-smelling' and 'hateful'.

> ... [slaves] are permitted to lie down or be seated only beneath the floor of the house. To perform their tasks they may go upstairs, but only after they have knelt, bowed to the ground, and joined their hands in reverence ... If they have committed some misdemeanour [a bad action], they bow their heads and take the blows without daring to make the least movement.

H3.2.2 A description of a slave or *khnyum* in *The Customs of Cambodia* by Chou Ta-kuan (Zhou Daguan), 1993

Women

Women were well regarded in Khmer society. They held high positions in government, with some known to have held the important post of judge. Both priestly succession (which determines the next priest in line) and property inheritance were passed through the female line. Women were also highly influential in the economy, as seen in their management of the daily markets. Chinese travellers sought Khmer wives because they had strong business sense.

Zhou Daguan, a Chinese diplomat who visited the Khmer Empire in the late thirteenth century, had a slightly different opinion and said that Khmer women aged rapidly because they married and had children too young. In his view, when they were twenty or thirty, Khmer women resembled Chinese women of forty or fifty.

The army

The Khmer army was composed of a regular corps led by generals, and the king conscripted men when necessary. Successful generals were rewarded with land, booty (items of value captured in war) and status. This ensured loyalty from the leaders within the military ranks. In addition, all officers were forced to swear an oath of allegiance to the king. They also enjoyed enhanced social standing through their connection to the king, who rarely engaged in combat himself, meaning that he let others do the fighting.



H3.2.3 A fighting unit of the Khmer army: the officer rides an elephant, and the soldiers march to the sound of a trumpet, gong and drums.

Warfare

Soldiers were commanded by an officer on horseback. They carried lances (spears), bows, sabres (a type of sword) and various sizes of daggers. They had two types of shields and a quilted jacket for protection.

A combat unit consisted of:

- foot soldiers
- three to four cavalrymen (soldiers on horses)
- one war elephant
- sometimes war chariots.

War elephants

Elephants were an important part of Khmer military strategy. In addition to their threatening size, they were useful in other ways:

- They held spear-wielding soldiers or carried ballistas (throwing devices, much like catapults).
- They dealt with the terrain, which refers to the type of ground being covered.
- They provided height for climbing over enemy walls.
- They helped to cross defensive moats.
- They carried the king to battle.



H3.2.4 Could the Khmer Empire at war have looked like this modern artistic impression?



H3.2.5 A bas-relief of the Angkor navy, from Bayon Temple

The navy

The navy played an important role in military conquests. Boats had a single deck and were between 17 and 25 metres long. They were decorated in the shape of the ***naga*** (the guardian of the water, a multiheaded cobra). The combat troops stood in the middle of the boat, which was propelled by between twenty and forty-two rowers.

Being on the water was a dangerous affair. Some reliefs depict men being bitten in half by hungry crocodiles.

Activities

Remembering and understanding

1 Outline some of the king's main responsibilities in the Khmer Empire.
2 Why was there little opportunity for social mobility in the Khmer Empire?

Applying and analysing

3 Use the information in this unit to create a social pyramid of Khmer society.
4 How were women regarded in Angkor society?
5 Examine Source H3.2.3. Identify features of the Khmer army that are shown in this source.

H3.3 Daily life

Cultural features

Life for most people living in Angkor under the Khmer kings was hard work. Everything revolved around worship of the gods and the glory of the king. The gap that existed between the rich and the poor was great. It was the peasants who toiled so that the king could receive the glory. Perhaps this is why Zhou Daguan, a famous Chinese visitor to the empire, described the Khmers as a 'coarse people, ugly and deeply sunburnt'.

Village and family life

Daily life for most people was busy with farming and household chores. Men tilled (dug or turned over) the earth with ploughs and hoes, and irrigated rice fields. They hunted, collected, raised farm animals and fished. Women were in charge of the home, looking after the children, pounding the rice, preparing meals and weaving garments. Khmer children were raised in a relaxed manner with simple toys. Most children did not attend school.

The Khmer married young; usually in their early teens. Parents would pray for their daughters: 'May you be desirable to men! May a hundred ... a thousand men ask for your hand in marriage.' When a man found the woman he would like to marry he would first send presents. The girl's family then chose a suitable day and a marriage broker delivered her to the groom's house.

Did you know?

Zhou Daguan was a Chinese diplomat who spent a year in Cambodia in 1296–97. While in Angkor, he made detailed observations about the Khmer people and their culture. His book *A Record of Cambodia—the Land and Its People* is the only written account that has survived and therefore is regarded by historians as a precious resource. In fact, the level of detail he provided led many people to believe he was a spy!

Food

The Khmer diet consisted largely of two staples (main items): rice and fish. A wide variety of fruit and vegetables were also available. They drank fermented alcoholic beverages made of sugar cane, rice or honey.

There were no kitchens in Khmer houses. Meals were prepared over a hearth (fire) using a ceramic pot. Rice was hulled with a mortar and pestle, and coconuts were used as ladles. The Khmer sat on rattan mats at mealtimes and used spoons formed by folding palm leaves. Food was always eaten with the right hand as the left was considered impure. After the meal the Khmer jiggled toothpicks, prayed, told stories and posed riddles.



H3.3.1 A Khmer kitchen: on the left a cook pours rice into a pot and on the right a pig is about to be cooked.

In comparison, the rich dined on pork and venison using gold and silver plates and utensils. Metal goblets held their wine and covers made from cloth protected their food from flies.

Housing and furniture

For the poor, houses were simple timber constructions; single storey with bamboo flooring and a thatched roof. Houses were on stilts, with a staircase leading up to the front door and always faced east in the direction of the god Shiva (the Hindu god of creation and destruction) and the sun.

The stilts protected the house against flooding and dampness; the area underneath the house provided storage. Families were also protected from ferocious jungle beasts such as boars, tigers and panthers. Walls were made of braided coconut tree leaves and the windows were covered by panels of moveable palm leaves. Very little furniture existed. There were no beds; just mats. Clothing and precious items were stored in chests. Tiles were not permitted as they would be seen to be imitating the wealthy.

The royal palaces were a long structure of one or two storeys with porches. The tiled roof was supported by decorated columns. Curtains blocked the sunlight and kept the air inside the palace cool.

There were golden window frames and ivory walls, and mirrors hung throughout. Fine golden ornaments and precious stones were placed in every corner. Pleasant fragrances filled the air within the palace.



H3.3.2 A stilt house on Tonle Sap Lake, Siem Reap. Much of the village housing in modern Cambodia is similar to how it was built during the time of the Khmer Empire.

Health and hygiene

Khmer houses did not have toilets. Families dug trenches to use as toilets and washed themselves in a nearby pond. The left hand was used for wiping as the right was reserved for food. The Khmer teased the Chinese when they first noticed them cleaning themselves with paper. The trenches were a common source of disease—mainly dysentery (a serious disease that affects the bowels)—as they drained into the canals and waterways from which the Khmer drew their water for drinking and cooking.

Due to the intense heat, bathing was a common pastime. The Khmer bathed three to four times a day and also at night. Every family had access to a pond, with men and women all bathing naked together.

Burial customs

Zhou Daguan made the following observations about burial:

- People were not buried; they were laid out on straw mats and marched to a secluded area outside the city.
- People followed behind with music and banners, scattering fried rice.
- If vultures, dogs and beasts devoured the corpse (dead body) quickly, it was said that the person had lived a good life.
- If the corpse was only partially eaten or not touched, it was thought that the person had committed some kind of misdeed.

Fashion

Men and women wore the same clothing, which was determined by the heat. Typically, a piece of cloth was wrapped around the waist. No top was worn. Only the king was allowed to wear fabric that was patterned all over; everyone else wore plain-coloured clothing.

Hair was worn in a simple bun. Everyone was barefoot and adorned with jewellery such as multiple bracelets and rings, which provided some style to what people wore. Sandalwood and musk were used for perfumes.

The economy

The Khmer economy was based on agriculture. For the Khmer, the production of surplus or extra rice was their major source of economic success. They had no formal currency, but instead relied on a barter economy. This meant that people negotiated what they considered to be a reasonable exchange for their goods. Everyone had to pay a tax to the king, except for religious workers, priests, monks and slaves. Goods and land were also taxed.

The Khmer economy further benefited from booty acquired through warfare and from international traders who introduced exotic items in exchange for Khmer staple goods.

The markets

An important part of Khmer life, the daily markets were a bustling hive of activity run by the local women. There were no individual stalls—goods were simply laid out on mats. Common items for sale were leaves, powders and medicine potions. Vegetables, meats, fruits, fish, fabrics, dishes, earthenware jars and other utensils could also be found. Some food sellers served soups, while others sold fish or bananas on skewers.

Jewels and charms were offered for good fortune. The markets were very noisy places. Men were often yelling out to place bets on cockfights or pig fights, fortune tellers were working and drunken men talked loudly.

Political and legal features

The political system in the Khmer Empire was an absolute monarchy, which meant that all power was held by the king—he decided everything. In Angkor, religion and politics went together. There was a central bureaucracy made up of loyal family members and officials who enforced the law.

It was the king's duty (*rajadharma*) to protect his subjects. An inscription from the reign of Yasovarman I (889–910) records that, 'The immortal duty of the king is to maintain the standard of law ... perform the rites for gods, and to punish criminals in accordance with the graveness of the crime.' He held an audience (formal meeting) twice daily to hear grievances that local courts could not resolve. The king's verdict was final. Yasovarman I was recorded as saying, 'I always found, all by myself, the right way in dealing with a lawsuit.'



H3.3.3 A bas-relief from Angkor Thom showing a cockfight at the marketplace

Crime and punishment

Most crime was associated with daily life. This included anything from land disputes to theft of cattle or produce, adultery, theft of temple property and murder. Punishments were harsh and designed to deter others from breaking the law. People were punished according to their rank in society—the higher the rank, the harsher the punishment. Men and women were punished in the same way. There were three categories of punishment: capital and corporal punishment, fines and divine trials.

Capital and corporal punishment

Capital punishment or execution was reserved for serious crimes such as stealing temple property or slaves. Methods included decapitation, strangulation, skewering (driving through with a stake), burning with red-hot irons and burying people alive.

Corporal punishments were used for lesser crimes such as refusing to pay temple taxes. Punishments included:

- maiming, such as cutting off ears, toes, nose and lips
- pressing legs, head or feet in a vice
- whipping the back with bamboo
- slapping the face
- branding (marking with a hot piece of metal) the chest, back or forehead.

Fines

A fine was normally paid for committing a minor offence to ensure that the criminal made up for what they had done. Because currency did not exist, people paid in the form of livestock, textiles, grains, gold or silver. A person's social status determined the amount to be paid, with the higher classes paying more than the commoners.

Divine trials

Divine trials were rare and only used when the evidence failed to provide a clear verdict. In a divine trial the people involved would be forced to undergo severe physical ordeals and had to miraculously survive them to prove their innocence.

> If an object is missing, and accusation brought against someone who denies the charge, oil is brought to boil in a kettle and the suspected person forced to plunge his hand into it. If he is truly guilty, the hand is cooked to shreds; if not, skin and bones are unharmed. Such is the amazing way of these barbarians.
>
> Again take the case of two men who are disputing over some unknown matter ... Each of the contestants is forced to be seated ... with his relatives standing guard ... They remain imprisoned two, three, or four days ... When allowed to emerge, one of them will be found to be suffering some illness—ulcers ... or fever. The other man will be in perfect health. Thus ... right or wrong [is] determined by ... celestial judgment. Thus is shown [the] supernatural strength of the god of this country.

H3.3.4 Examples of divine judgement in *The Customs of Cambodia* by Chou Ta-kuan Siem, 1993

Activities

Remembering and understanding

1. Describe why life was hard for the Khmer people.
2. In your own words, define monarchy.
3. Explain the purpose of punishment in Angkor society.

Applying and analysing

4. Examine Source H3.3.1. Discuss the aspects of Khmer food preparation and cookery demonstrated in this relief.
5. Source H3.3.2 is a modern Khmer dwelling. Create a Venn diagram to show the similarities and differences between typical housing of the Khmer Empire and this modern Khmer house.
6. In pairs, suggest a suitable punishment for each of the following crimes:
   - a. stealing a pot of rice from your neighbour
   - b. a peasant killing his daughter's husband
   - c. an official stealing a gold figurine from the king's temple
   - d. a woman accused of stealing a jug from the stall alongside her, which she denies doing. There are no witnesses.

Creating and evaluating

7. Illustrate the link between fashion and climate in Angkor times by developing a Khmer Fashion Guide for men and women.

H3.4 Power, wealth and trade in Angkor

The status and power of the king

In Khmer culture, the king was revered and worshipped as a living god. No one could look at him, approach him, or talk to him. When he appeared at court, people had to bow down so low that their foreheads should touch the ground. It was Jayavarman II who introduced this new social order when a Brahman priest performed the ceremony to declare Cambodia's independence from Java in 802. This was the most significant act in Khmer history as it meant that a Khmer king ruled in his own right.

The king as god on Earth

Hinduism was the religion that was followed by the majority of Khmers around this time. During the ceremony of independence, the Brahman priest used the **Sanskrit** word ***devaraja***, which means 'the god who is king'. A temple needed to be built in order to house the *linga*. The *linga* was a phallic image (an erect penis) carved into stone. It was believed to be the true essence of the Hindu god Shiva. When the Brahman priest carved the king's name into the *linga*, it created a union between the king and the god Shiva. Therefore the king became a god on Earth.

> This is the oath which we ... swear, all without exception, cutting our hands, offering our lives and our devotion gratefully ... to H.M. [His Majesty] Sri Suryavarmadeva. We will not revere another king, we shall never be hostile (to our king), and will not be accomplices of any enemy, we will not try to harm him in any way. All actions are the fruit of our thankful devotion. If there is war, we promise to fight and to risk life, with all our soul, in devotion towards our King. If all of us ... here ... do not keep this oath ... we ask that He inflict on us royal punishment of all sorts. If we hide ourselves in order not to keep this oath strictly, may we be reborn in the thirty second hell as long as the sun and moon shall last.

H3.4.1 The Oath of Allegiance: this oath was to be taken by all officials and commanders to Suryavarman I demonstrating the type of dedication that the Khmer kings demanded.

H3.4.2 King Suryavarman II is shown on his throne in this bas-relief from Angkor Wat. The king is depicted as much larger than his subjects, emphasising his power over them.



Reasons for the Khmer rise to prominence

In addition to relocating the capital to Angkor and the establishment of the *devaraja* cult, there were other factors that saw the Khmers rise to form such a powerful empire.

The link between the economy and temples

The *devaraja* cult cleverly linked religion to the success of the empire's economy. The king was expected to bring financial prosperity to the land; he did this by building temples. The system worked in the following way:

1 The king selected loyal people and gave them land.
2 Eventually a vast network of villages developed under the supervision of these loyal patrons.
3 The villagers provided donations, which were used to feed the labourers involved in building temples.

Therefore the economy and religion became dependent on each other:

- The landowners, by providing resources, received merit (favour) with the king.
- The king showed allegiance to the gods through his temples and he also had a way of providing food and resources for the builders.



H3.4.3 A monumental sculpture of the head of King Jayavarman VII as the god Lokiteshwara

Skills builder

Sequencing chronology

Placing events in order of time allows us to understand the sequence and flow of events. Doing this as we study the life of an influential individual can help us to analyse cause and effect—to understand why a person became a significant figure in history. Imagine that you are a reporter for the *Khmer Chronicles*. Your area of speciality is the Khmer kings. Choose one of the kings who ruled over the empire (such as Suryavarman I, Suryavarman II, Jayavarman II and Jayavarman VII). Your assignment is to create a four-page article on your chosen ruler's career. The editor is especially keen for you to form a judgement about the overall contribution that this king made to the empire. You will be required to conduct some research into the ruler's life.

You should use the following points to guide your research and present your article:

- Include the king's early history (e.g. birth and family connections).
- Explain how he came to rule.
- Describe how he showed his dedication to the *devaraja* cult.
- Consider whether or not the empire prospered under his rule and why.
- Rate his popularity and explain your rating.
- Identify some of his most successful accomplishments and some of the negative aspects of his rule.
- Explain how he died.
- Provide an image of him and any other images relevant to his rule.

Use ICT to present your findings in a magazine-style format. Include a suitable title and captions.



H3.4.4 The army of King Suryavarman II on the move, South Gallery, Angkor Wat

Wealth from agriculture

Rice production was a key source of wealth for the Khmers. Farmers had to produce enough to feed an entire empire. They harvested up to four crops a year, which primarily went to the city centre to feed those who were building and maintaining temples.

Wealth from trade

Trade was vital to the Khmer economy because there was no currency. Evidence shows that the Khmers were major traders in South-East Asia. In Angkor, the daily markets allowed everyone to benefit from this system; the government taxed the market stalls, while in return the people could bring their goods in exchange for much-needed items. This system helped to provide a diversity of food products. Staple goods such as rice, fish, salt and honey could all be obtained. The markets also attracted international traders. China, the biggest participant, primarily desired deerskin, buffalo and cattle. The Khmer people sought Chinese pottery and other exotic items.

Taxation

In order to build his empire, the king realised that he needed financial resources, or money. Therefore everything in Angkor was taxed. Priests, monks, religious functionaries and slaves didn't have to pay tax. The local temple was the collection point for taxes. Tax could be paid in different ways: with primary produce (agricultural goods), manufactured goods or labour. Some examples of payment include rice, livestock, ceramics, salt, wax or honey. Temples therefore became very powerful and wealthy institutions.

Military campaigns

Military campaigns also contributed to the success of the empire. The capture of foreign territory meant more resources for Angkor. Prisoners were used for labour and treasures were used to decorate the temples. Furthermore, the Khmer people developed a strong and impressive reputation, which helped to deter enemy invasions.

Activities

Remembering and understanding

1. In your own words, describe the *devaraja* cult introduced by Jayavarman II in 802.
2. Explain the importance of the *linga* to Khmer kings.
3. Demonstrate why temples were the basis for economic growth in the Khmer Empire.

Applying and analysing

4. Read Source H3.4.1.
   - a. What does this source reveal about the position of the king?
   - b. Consider how the king was viewed in Khmer culture. Do we hold the same regard and expectation of our leaders today? Demonstrate your findings in a Venn diagram.
5. What do you consider to be the most important reason to explain the rise of the Khmers? Provide evidence for your reason.

H3.5 Cultural achievements: Temples

Angkor

The Khmer capital of Angkor is a site that has long captured the world's attention. Motivated by their spiritual beliefs and a desire to enter the afterlife, the kings of Angkor inspired one of the world's most remarkable examples of religious building. Every king wanted to demonstrate his own sense of grandeur and power through his temples.

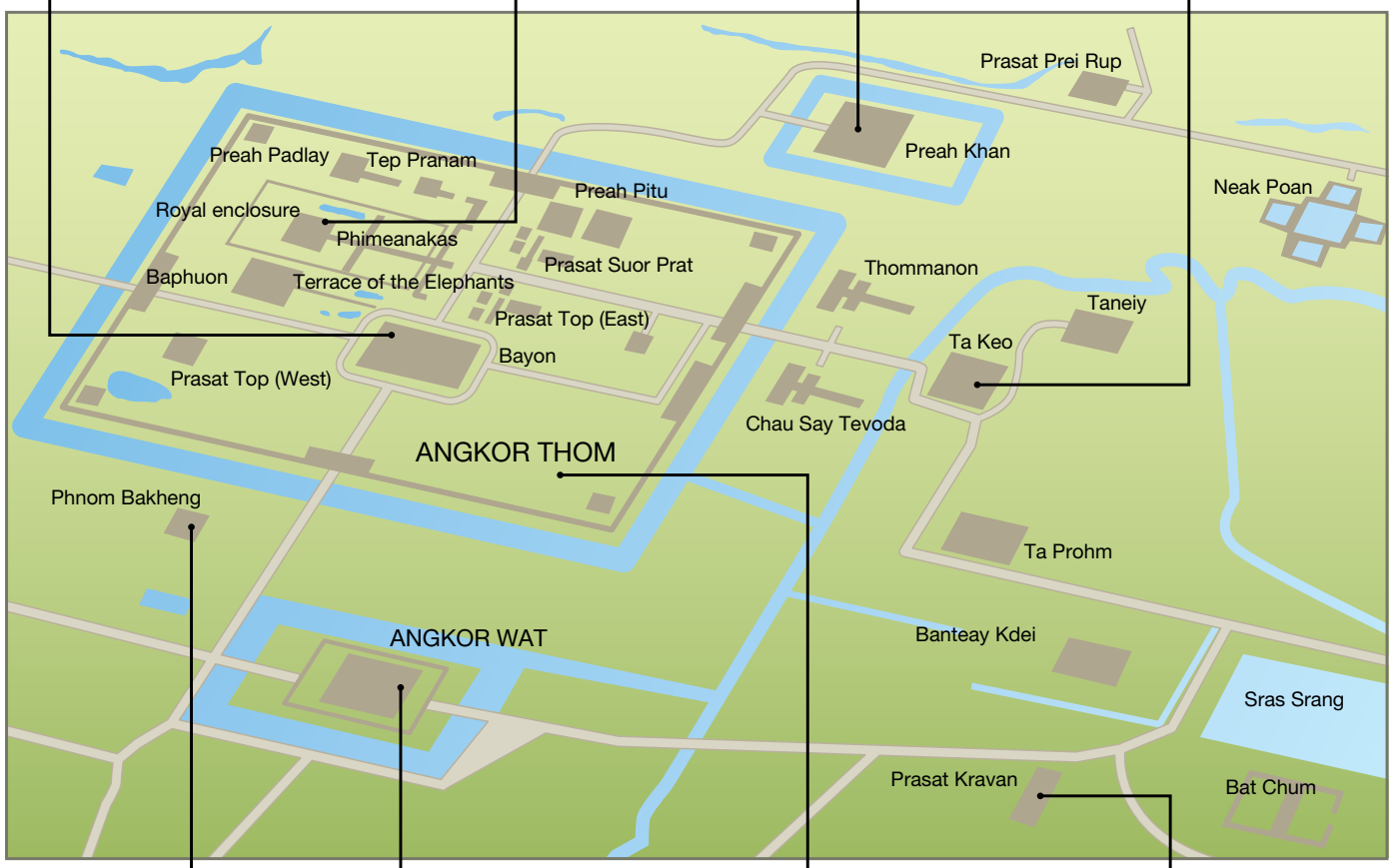
There was also pressure to outdo predecessors, meaning each king wanted to build more impressive temples than the king before him. As a result, the site of Angkor is home to hundreds of unique temples and monuments, all reflecting the individual faith of the rulers who built them.

Bayon Temple
Built from the 1100s to early 1200s, the Bayon was a Buddhist and state temple of Jayavarman VII. It has 54 towers carved with more than 200 faces. It is also famous for its bas-reliefs of daily life, including childbirth and war.

Phimeanakas
This palace was built between 910 and 1100. It is where the king worshipped and slept.

Preah Khan
Jayavarman VII built this temple for his father in 1191. It was a Buddhist temple and possibly a Buddhist university.

Ta Keo
Built around 1000, it was the first sandstone temple, but was never completed.



Phnom Bakheng
This was the first temple pyramid built and was finished in 912.

Angkor Wat
This was a city in its own right and, remarkably, it was likely built in only approximately 30 years.

Angkor Thom
Built in the late 12th century, Angkor Thom was home to about one million people. It incorporated the temples of previous cities and was the capital when the famous Chinese diplomat Zhou Daguan came to visit. It was the last and largest capital.

Prasat Kravan
Built by high court officials in 921, Prasat Kravan is renowned for its brick bas-reliefs.

H3.5.1 A plan showing the location of key sites in the city of Angkor



H3.5.2 Angkor Wat, main temple

Angkor Wat

Built between 1113 and 1150, Angkor Wat is the largest religious monument in the world. The great Khmer king Suryavarman II dedicated it as a temple to Vishnu, the Hindu god of compassion and the great protector.

The temple is a three-tiered pyramid surrounded by a large moat. It has a central tower standing 65 metres tall surrounded by four shorter towers.

The top tier is the inner sanctum, where the essence of the god Vishnu was believed to dwell or live. Only the most important priests and the king were allowed into this area.

Purpose

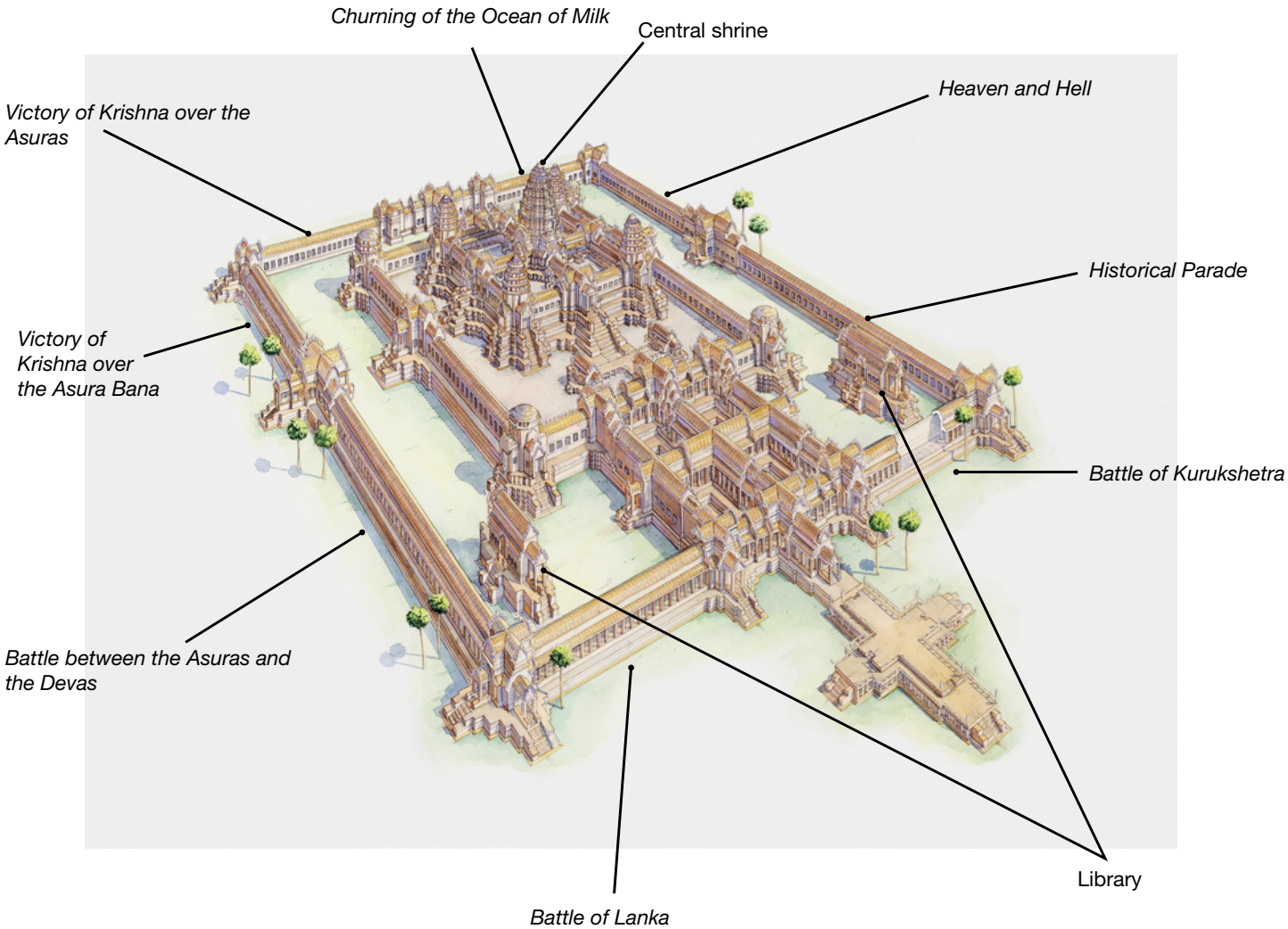
The primary purpose of Angkor Wat was to serve as a temple of worship to the god Vishnu. Its west-facing orientation (alignment) has raised suggestions that it could also have been a burial tomb for Suryavarman II. Some archaeologists believe it may have served as a solar observatory.

The process of building Angkor Wat

Angkor Wat had to be completed before Suryavarman II died or he would miss his opportunity to go to heaven. To build a temple of this magnitude required about 50 000 workers. It involved the following process:

1 Prepare the sacred site. Clear 500 acres of jungle, which was then purified by receiving the god's blessings. The chief priests dipped cords into coloured powder to 'lay patterns of heaven', tying or permanently linking the gods to the site. Offerings of gems and gold leaf were placed in a shaft at the building's central core, providing the temple's energy. A moat was constructed because the site was originally swampland.

2 Select and transport the materials. The temple was built using two types of stone: laterite (a red rock that forms in hot, wet climates) on the inside and sandstone on the outside. Bas-reliefs had to be carved into the walls of the temple. The smooth sandstone, ideal for the carvings, was located at Phnom Kulen, 30 kilometres away.



H3.5.3 The location of the bas-reliefs at Angkor Wat

Labourers had to chisel off the cliff face. Each block of sandstone weighed about 10 tonnes and had to be towed down the Tonle Sap by an elephant. About 300 to 400 blocks were transported per day.

3 Construct the temple. The stones were moved around the worksite by elephants and trolleys, or they were floated around the moat. Bamboo scaffolding assisted with placement on the higher levels. The Khmers did not use mortar to secure the stones; they used a razor joint. This technique involved each stone being rubbed against others using the abrasion technique. It meant the stones fitted perfectly on top of each other, providing a continuous surface on which to carve.

Bas-reliefs

Lining the walls of Angkor Wat are spectacular bas-reliefs. They are 700 metres of continuous carvings—the longest in the world. They are an artistic masterpiece, but they also help us to understand Khmer culture from a Khmer perspective. They reveal aspects of daily and religious life that would otherwise be lost.

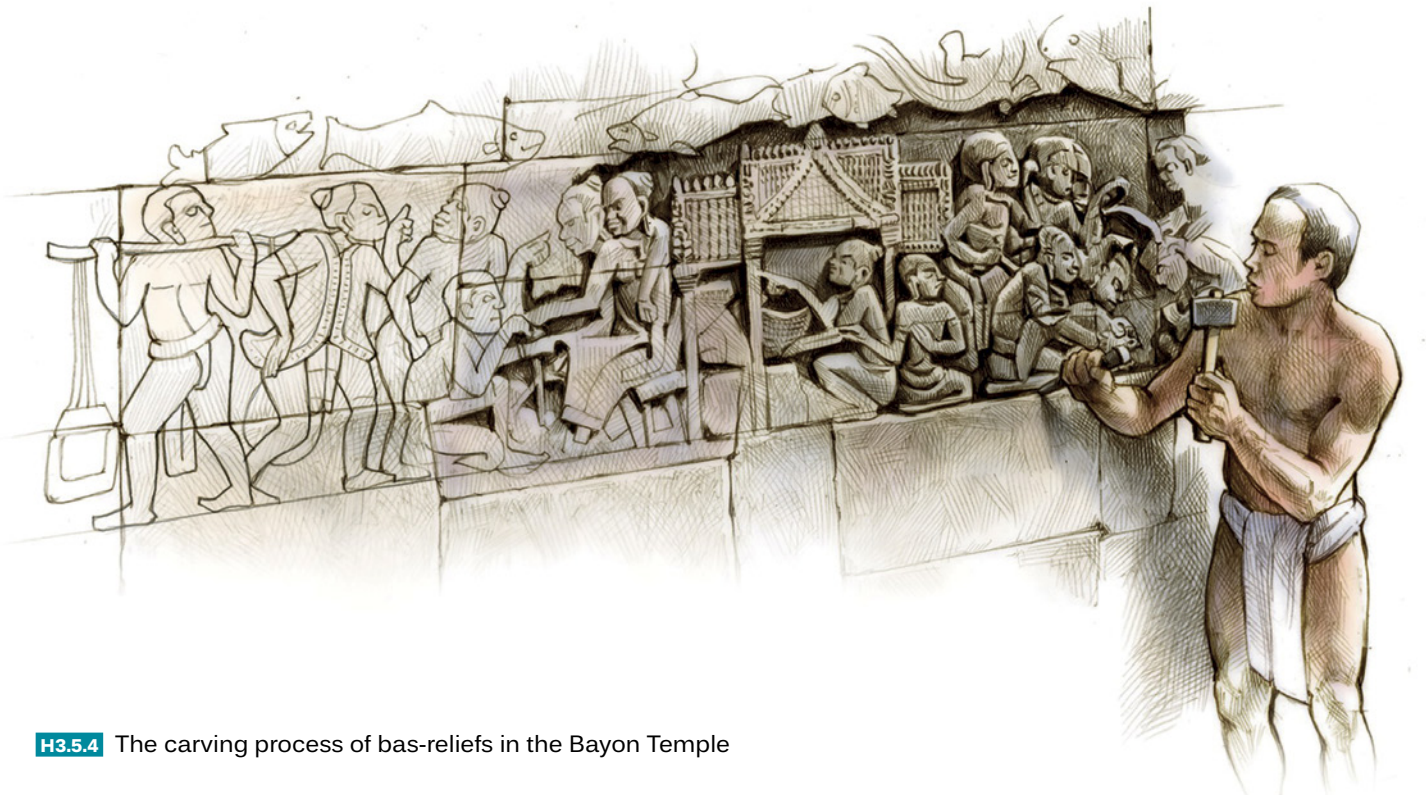
The carving was intricate (finely detailed) and difficult work:

- The chiselling was done with basic tools.
- The sculptors carved directly into the sandstone.
- There was immense pressure to finish quickly.
- Mistakes may have led to punishment and even execution.

The bas-reliefs were a picture of Suryavarman's eternal resting place. That is why over 2000 ***apsaras*** (divine dancers) were carved into the walls; they would welcome Suryavarman to heaven.

The Churning of the Ocean of Milk

One of the most spectacular reliefs at Angkor Wat is the 47-metre-long *Churning of the Ocean of Milk*. In this epic creation tale, *devas* (gods) are searching for the potion of eternal life. Believing it was under the ocean of milk, they stirred unsuccessfully for 1000 years. Vishnu is depicted suggesting that the *devas* ask the *asuras* (demons) to help. Using the serpent Vasuki as a rope and a mountain as the pivot, they churn the ocean for another 1000 years, this time successfully. The *apsaras* were formed by the foam of the churning of the seas.



H3.5.4 The carving process of bas-reliefs in the Bayon Temple



H3.5.5 The *Churning of the Ocean of Milk*: the *asuras* on the left work with the *devas* on the right for access to the elixir of eternal life.

Activities

Remembering and understanding

1 What three purposes are suggested by archaeologists for the building of Angkor Wat?

2 Discuss how religion and the building of temples are linked. Use Sources H3.5.1 and H3.5.3 to assist in preparing your response.

Applying and analysing

3 Refer to Source H3.5.5 to complete the following activities.

- **a** Compare the *asuras* and the *devas*.
- **b** Explain what this source reveals about Khmer religious beliefs.

Creating and evaluating

4 Read 'The process of building Angkor Wat'. Draw a cartoon strip illustrating how Angkor Wat was made.

H3.6 Religion

An empire of many religions

Religion provided the king with legitimacy (this means that he had the right to govern) and served as the source of inspiration for the building of magnificent temples. The king decided which god would be worshipped by his people. Although Hinduism remained the dominant faith in the empire, there were firmly established local religions. A growing interest in Buddhism developed as well. Buddhism had no central deity (god) and therefore did not pose a direct threat to the dominant Hinduism. The different religions were consequently able to coexist effectively, which means they could all exist in the same place at the same time. In fact, it became common to see parts of Hindu deities merged with Buddhist ones.

Hinduism

Hinduism originated in India and is believed to have arrived in Cambodia via sea merchants. It is a complex series of philosophies and stories with reincarnation as one of the central themes. Reincarnation or afterlife was a concern for all Khmers, not just the kings. Living a worthy life, by offering food and clothing to the gods, for example, was the way to build merit or favour with the gods.

Buddhism

Buddhism was introduced in the twelfth century by Jayavarman VII (reigned 1181–1218), although he was not the first Buddhist king. The Khmer people practised Mahayana Buddhism, which centred not just on Buddha but also on the ***bodhisattvas*** (persons of wisdom). These are monks who are on their way to becoming buddhas and perform acts of kindness and goodwill.

Animism

Strongly featured in Khmer life was animism, or the worship of spiritual forces. It was believed that these spirits (***neak ta***) were the guardians of the Earth and that they lived everywhere in nature—in the mountains, rivers, trees and stones.

The *neak ta* were to be feared and revered because they had the power to destroy or protect. Households built humble shrines to worship them and made offerings of food, chickens, flowers and liquor. The *neak ta* were consulted in all decisions, ranging from crop planting to starting building works. For the locals in particular, worship of animism was more important than any other. It was a daily ritual that held greater personal impact than the king's lofty ideas about building temples.

Ancestral worship

Linking to the idea of reincarnation was the Khmer practice of ancestral worship. Ancestral worship was based on the idea that the dead had power to influence the living. In Khmer culture, it was thought that the king's ancestors would protect the kingdom and its subjects and bring prosperity. Therefore, Khmer kings built temples specifically for ancestral worship. It allowed them to fulfil their responsibility to communicate with the ancestor spirits on behalf of their people.

Mount Meru and the apsaras

According to the Hindu sacred texts, Mount Meru is the centre of the universe and home of the gods. Here the gods are attended by *apsaras* (divine dancers), who were formed out of the foam during the churning of the ocean of milk. The peak of the mountain is surrounded by concentric circles that spiral into outer darkness. Seven layers below the surface make up the region of hell.

In Khmer tradition, Angkor Wat is a representation of Mount Meru on Earth; the walls represent mountains and the moats are the oceans. The king resided here as the divine medium or messenger between the gods and his people.

Worshipping the gods

The gods were worshipped through offerings brought to the temple. Every day the image of the god was awakened, bathed, rubbed with sesame oil and clothed. It was worshipped by dancers, singers and musicians throughout the day. At night it was fed, undressed and retired for the night. A Brahman priest had the sacred job of caring for the god.

Temples

Temples were often the size of small cities and were very influential places. They were not designed as meeting places with grand halls and large rooms, but rather their purpose was to house the gods. The only requirement when building a temple was the provision of a small sanctuary for the *linga* and its attending priest. The inventory or itemised list in Source H3.6.2 gives an indication of the power and wealth associated with temples.



Shiva, destroyer of the world
- He has long, unruly locks and sometimes wears animal skin.
- He has three eyes—one side is the sun, the other the moon, and the middle eye is fire and is always closed. If it opens, the Earth will be destroyed.
- He rides on an ox called Nandin and holds a trident.
- He has his own mountain.
- He is represented by the *linga*.



Vishnu, saviour and preserver of the universe
- He rides on a garuda, which is half eagle, half man.
- He has four arms that carry his attributes—chakra, conch, club and ball.
- He has ten earthly avatars or reincarnations.



Buddha
- He was born Siddartha Gautama around 480 BC.
- He was a prince who was raised in luxury.
- After taking a chariot ride and seeing poverty, he decided to change his life.
- He wanted to liberate humans from suffering.
- He reached **enlightenment** at the age of 35.

H3.6.1 The Khmer gods

From the over 3000 villages that it owned, the monastic complex of Ta Prohm grew rich enough to support 18 high priests, 2740 officials, 2202 assistants and 615 dancers, along with a host of monks, commoners and 'slaves'. In its treasury were:
- a set of gold dishes weighing 500 kilograms
- a silver service of equal size
- 35 diamonds
- 40 260 pearls
- 4540 gemstones
- 523 parasols
- 512 sets of silk bedding
- 876 chinese veils [mosquito nets?]

H3.6.2 An inventory from the Ta Prohm temple

Activities

Remembering and understanding

1 Define animism.

2 In the Hindu religion, how were people able to secure a good reincarnation?

Applying and analysing

3 a What does the inventory of Ta Prohm reveal about temples?

b Imagine you were one of the slaves working there. How do you think you would feel about your work and your king, if you stumbled across this storehouse of wealth?

4 Explain why Khmer kings built additional temples for ancestor worship.

LS H3B

H3.7 Water management in Angkor

The hydraulic city

The success of the Khmer civilisation can in part be put down to clever water usage. The Khmer had a superior understanding of irrigation. This made them stand out from other cultures and made them one of the most economically prosperous of the time. It enabled surplus rice production, which was needed by the king to demonstrate his power and sustain his empire. The extreme nature of the Cambodian climate required the Khmer people to be creative. They had intense monsoonal (rainy and wet) periods followed by long dry spells, so the water supply needed to be regulated or controlled. This was done through construction of large reservoirs or holding ponds known as barays.

In 1979, the French archaeologist Groslier was the first to use the term 'hydraulic city' to refer to Angkor. He argued that the barays served both a religious and a practical purpose.

The mechanics of the water system

The area of Angkor is relatively flat with a slight slope. Over several centuries, hundreds of kilometres of canals and dykes were constructed. Using the natural slope of the land, the Khmers diverted water from the major rivers down into the barays. In the dry seasons, the barays distributed the water to the south and east of the region. This ensured that the oversupply of water received during the monsoonal period was not wasted.

The success of the barays

In order to support the demands of an increasingly growing empire, the water system needed to:

- support construction of cities and temples
- transport people and materials
- manage and control flooding
- supply water for agriculture
- maintain inland fisheries
- support military activities.



H3.7.1 An aerial view of Angkor Wat and its water systems

By building the barays, the Khmers were able to harness the water to achieve their objectives simultaneously (all at the same time). This was a major feat.

Construction of a baray

The baray was built alongside the temple. According to Khmer tradition, the baray was aligned to the north-east to bring prosperity. The original method of constructing the baray was to pile up earth to stop the water flow. Once this was completed, other features were added:

- a strong stone structure for water diversion
- roads and bridges
- canals.

Canals were dug to transport goods, connect streams with the lake, and transport labourers, soldiers, construction material and military goods.

The East and West Barays

The East and West Barays were the jewel (meaning the main feature) of the water system. Over the years, their purpose has been much debated, but recent mapping of the Angkor region has confirmed that they had both spiritual and practical uses.

The religious purpose of the baray was to serve as the symbolic ocean surrounding Mount Meru. The water acted as a reflecting pool glorifying the temple, the king and the law.

The barays also irrigated the rice fields and managed flood control, protecting the rice fields and temples from inundation. The discovery of a canal leading out of the West Baray proves that they were used to maintain water levels.



H3.7.2 The Royal Bath in the East Baray

Did you know?

Some sources have suggested that the barays were a water source for the king's vast collection of elephants. On average, elephants drink 190 litres of water a day.



H3.7.3 A three-headed elephant picks lotus flowers with its trunks at the Terrace of the Elephants, Angkor Thom

Finished in 890 by Yasovarman I, the East Baray, or Pond of Yasovarman, was 7.5 kilometres long by 1.8 kilometres wide and held 55 million cubic litres of water. Protected by Ganga, the goddess of the Ganges River, it has a shrine in the middle—the east Mebon.

Construction of the West Baray, or Pond of Pure Water, was started by Suryavarman I (reigned 1006–1050). It measured 8 kilometres long by 2 kilometres wide, covering an area of 1769 hectares. It is the largest reservoir of Angkor, holding over 123 million cubic litres of water with an average depth of 7 metres. Unlike the East Baray, which dried up, it still has water in it today.

Activities

Remembering and understanding

1. Outline why water was such an important resource for the Khmers.
2. Why did the Khmers have to be clever about their water usage?
3. Describe the function of the barays.

Applying and analysing

4. Use information in this unit to evaluate the effectiveness of the water system at Angkor. Present your findings in a PMI chart.

H3.8 The decline of Angkor

The end of an empire

In 1431, Angkor was sacked (destroyed) by the Thais, signalling the end of one of the world's most remarkable civilisations. Angkor was abandoned almost immediately and the jungle soon reclaimed it. Historians have very little evidence or documentation to explain why the decline was so rapid, and therefore the collapse of Angkor remains a source of debate.

Reasons for the decline

Source H3.8.1 presents a few possible reasons for the collapse of Angkor.

Sack of Angkor

Apparently the sack of Angkor ... simply consummated [completed] a movement ... already well advanced ... it was not the sack of Angkor so much as its abandonment of [the] capital that marked the end of the wonderful Khmer civilisation.

Jayavarman VII

His religious zeal surpassed the bound of all reason and his vanity amounted to megalomania. He impoverished and embittered the people ... in building useless monuments to satisfy his personal ambition.

Religion

... the soldiers of Ayuthia [Thailand] not so much conquered them with warlike blows as seduced them with a hope of a milder religion ... In short ... the wonderful period of ancient Khmer civilisation ended, not so much because the Khmers got licked [beaten] as because they got religion.

H3.8.1 Three perspectives on the collapse, from L.P. Briggs, 'The Ancient Khmer Empire', *Transactions of the American Philosophical Society*, February 1951

Politics

As the Khmer Empire had grown in size, it became difficult to maintain central rule and control remote provinces. More bureaucrats were appointed, but they became too powerful and more concerned about their own careers.

Religion

One of the most popular reasons to explain the collapse of Angkor is the introduction of Theravada Buddhism. Unlike the monarchy that the Khmer people had lived under, Buddhism was a democratic religion. There was no need for a complex political bureaucracy and the leader was not viewed as divine or god-like. Instead, addressing poverty and helping people were the focus. This meant an end to building temples, which had crippled the population and kept them in a position of submission for so many centuries. Historians believe that this may have lessened the authority of religion and possibly caused rebellion. In fact, people were so tired of the greedy gods, they were mutilating (damaging) the bas-reliefs.

Economics

Jayavarman VII

Jayavarman VII, who reigned from 1181 until 1218, was the last great king of the Khmer people. When he died, the empire was at its greatest, but his accomplishments, including much construction, had overstretched the empire and its resources.

Costly invasions

Successive invasions after Jayavarman's death left a significant strain on the economy. With every raid, the Khmers lost more territory and resources (including slaves and riches decorating temples).

Trade

Trade was vital to the Khmer economy and during this time sea trade between South-East Asia and China boomed. Economic interests meant that the capital needed to be closer to the South China Sea. This could be a reason why Angkor was abandoned relatively quickly.

The environment

There are three major environmental factors that contributed to Angkor's collapse:

- *destruction of the landscape*—The construction of temples, barays, rice fields and roads led to large-scale erosion and topsoil degradation, clogging dams and affecting farming.
- *a failing water system*—The system had become too complex to alter or adjust when required. The dams were crumbling, filling with silt and operating at lower levels. Surplus rice production depended on a working water system.

- *drought*—Tree-growth rings show successive droughts between 1362 and 1392. In between these severe droughts, there was unusually heavy monsoonal flooding. This extreme weather ruined the water system, directly affecting rice production. The northern parts of the kingdom were starving. A malnourished or hungry army would have left the city of Angkor open to attack.

Military action

Jayavarman VII was not well liked by his neighbours. Consequently, there were many people who wanted to see the Khmer Empire destroyed. He spent much of his reign trying to rid the empire of the **Cham**, long-time enemies from the eastern kingdom of Champa.

The empire's size and wealth made it a target for invasion in two ways:

- The more the empire grew, the greater the area the army had to defend.
- Angkor had become a real prize and ambitious foreign rulers wanted to control it.



H3.8.2 A bas-relief depicting a naval battle between the Khmer and the Cham during a Cham invasion

After the death of Jayavarman, the Thais in the north became the newest enemy. They took advantage of weak Khmer kings and continued to launch invasions until Angkor collapsed in 1431.

The sacking of Angkor

The final factor in the collapse of the empire was the successful Thai invasion in 1431. Once Angkor was overrun, any hope of restoration of the Khmer Empire, meaning to return it to its former power, disappeared. To ensure that the empire would never rise again, the Thais destroyed the canals, the backbone of Khmer society. The violent and total devastation of the empire saw survivors flee to safety. Sadly the intellectual classes were also lost as a result of the sacking. Without them, the knowledge of the *devaraja* cult simply disappeared.



H3.8.3 Overgrown ruins of Ta Prohm Temple in Angkor, Cambodia

Activities

Remembering and understanding

1 Outline the event that sparked the final collapse of Angkor.

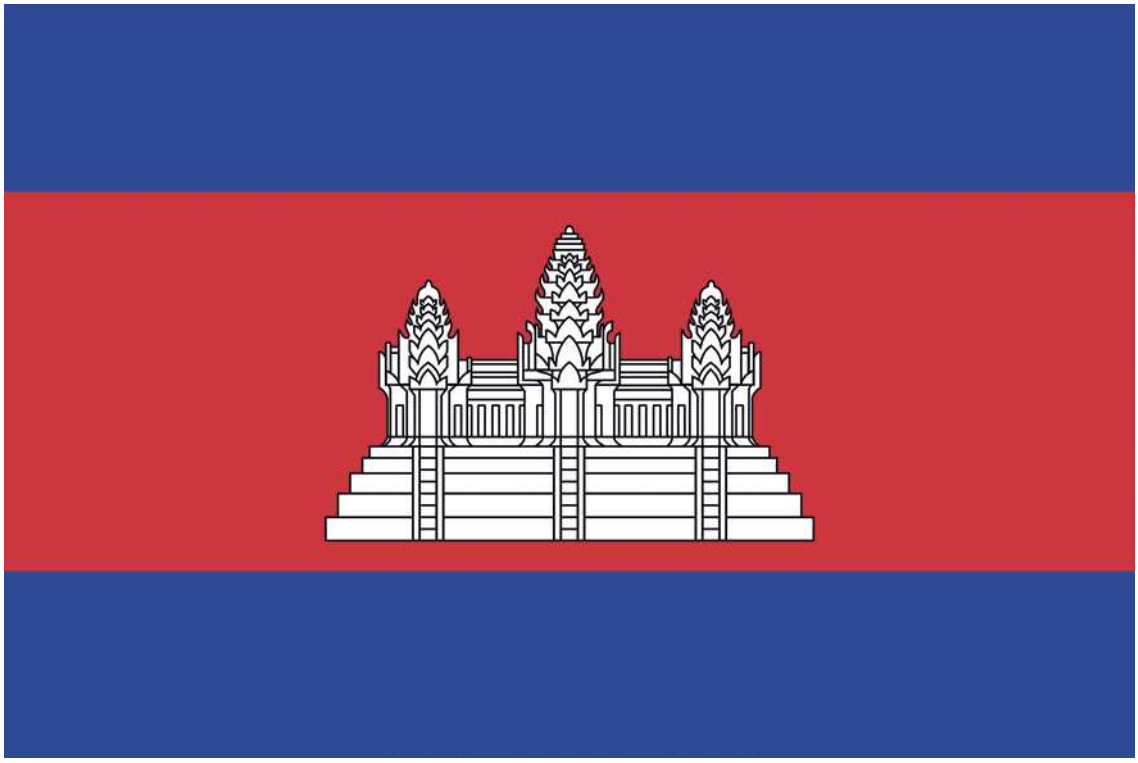
Applying and analysing

2 Read Source H3.8.1.
   - a Identify the three reasons provided in this source for the collapse of Angkor.
   - b Discuss whether these theories are contradictory.

3 Re-examine the section on the collapse of Angkor.
   - a Imagine the scene that is portrayed and write a paragraph to describe it.
   - b Was this a fitting end for the magnificent Khmer Empire? Justify your answer.

4 Rank the theories of the decline of the empire from most important to least important. Justify the reasons for your decision making based on material you have studied in this unit.

H3.9 The significance of Angkor



H3.9.1 The flag of the Kingdom of Cambodia

Angkor Wat: A symbol of Cambodian identity

The turmoil and tragedy of recent Cambodian history have left the people of Cambodia devastated and vulnerable. Civil war and the reign of Pol Pot during the 1960s and 1970s ravaged the nation physically and economically. However, Angkor has been a consistent and positive symbol of the Cambodian national identity. Cambodia is the only nation in the world to have a World Heritage site pictured on its national flag.

Angkor today

Apart from its historical value and beauty, Angkor holds significance for many reasons:

- Tourists are fascinated by this unique civilisation, and it is their funds (money spent while visiting) that helps to contribute to temple maintenance and restoration.
- The story of this empire has universal themes; that is, ideas that appeal to everyone. The factors that brought about the end of the Khmer Empire are the same ones that threaten powerful countries today, and the empire's unsustainable use of land and water is a warning to all nations.
- Angkor Wat is still a working Buddhist temple.
- The Khmer people have renovated elements of the original water system and still use it.
- Scientists and archaeologists can test new research methods and technologies at this location.
- Archaeologists are able to learn here how best to preserve ancient sites.
- More than twenty countries are collaborating (working together) to protect and preserve Angkor.
- Angkor has been placed on UNESCO's World Heritage List.

Custodians of their future

Today, Cambodians are learning more effective ways to preserve the significant sites of Angkor. This is important work, because the past glory of Angkor offers future hope for many who have been affected by Cambodia's more recent tragic past.

International teams are helping Cambodians:

- repair climatic and environmental damage on the temples at Angkor
- locate and dismantle landmines left from Cambodia's civil war
- manage the positive and negative impacts of tourism
- improve the standard of living for Cambodians generally.

Mount Mahendraparvata secrets revealed

The location of Jayavarman II's sacred Mount Mahendraparvata has always remained a mystery. Finally, after 1200 years, it was announced in mid 2013 that the sacred site had been found. Archaeologists, guided by a local, braved dense forest, bogs, swollen rivers, dangerous paths and landmines to uncover this mystical place, long kept secret by the inhospitable jungle.

Lidar technology made this possible. Laser lights strapped to a helicopter fired rapid pulses at the landscape. A sensor measured the amount of time it took for each pulse to bounce back. This process was repeated over 7 days and the results were used to create a 3-D topographical model. A GPS then guided the team through the jungle to the site.

The discovery

The remarkable discovery was made by Dr Damian Evans, the director of Sydney University's archaeological research centre in Cambodia. The team discovered the existence of five new temples and evidence of roads, dykes and canals all linking the sacred sites. The discovery confirms the vastness of the empire. Lidar technology also revealed that the landscape was devoid of (without) vegetation, which further explained the empire's collapse.



H3.9.2 The Thom Dab temple, one of at least two dozen new temples discovered by Dr Damian Evans and his team

The impact of the discovery

- A find such as this ensures long-term interest in Cambodia.
- For the villagers who live in the area it is an opportunity for employment; they have been recruited to clear the mountain and protect the sites.
- More funding is needed for further investigation.
- Archaeologists no longer need to clear large areas of jungle to conduct their searches as lidar imaging makes this unnecessary, thereby reducing deforestation.
- The instrument collected billions of data points and about 5000 digital aerial photographs that need further analysis and investigation.
- UNESCO will need to revise its World Heritage listing of Angkor to include the new boundaries of the official site of Angkor.

Skills builder

Determining historical significance

Prepare an extended response that examines the significance of the Khmer civilisation.

In structuring your work, you should include:

- an introduction that briefly outlines the major areas of discussion
- a series of paragraphs, with each paragraph examining one area of significance and providing supporting evidence
- a conclusion to briefly summarise your main findings
- a bibliography listing your references.

Activities

Remembering and understanding

1 How has Angkor helped the Cambodian people through their recent past?
2 Why is it important for Cambodians to learn how to manage Angkor?
3 What technology helped archaeologists discover Mount Mahendraparvata?

Applying and analysing

4 Explain why Angkor is important for:
   a archaeology
   b Cambodia
   c humanity (the world).

LS H3C



Mongol expansion

H4

From humble beginnings, the Mongol Empire became the largest **contiguous** land empire in history. Famed as horsemen and hunters, feared as brutal invaders and led by their powerful leader Genghis Khan, the **Mongols** of the thirteenth and fourteenth centuries AD also made significant and lasting contributions to trade and culture that are often overlooked.

OVERVIEW QUESTIONS

H4A How was Mongol society and its way of life shaped by the environment?

H4B What caused the great Mongol expansion and what were its effects?

H4C What role did the Mongols play in forging (developing) connections between Asia and Europe?

LS Before you begin

GLOSSARY

anda a sworn blood brother

contiguous sharing a common border

etymologist a person who studies the history of words and their origins, and how they have changed over time

ger a Mongol tent made of felt stretched over a circular wooden frame; still used in Mongolia

khan a chief of a Mongol clan

mobilise to prepare and organise soldiers for active service

Mongols a small nomadic tribe inhabiting the Mongolian Plateau

nökör the voluntary attachment to another warrior

plateau an area of mostly level high ground

qanats ancient irrigation systems of Persia

quriltai an assembly of tribal leaders

shamanist a follower of shamanism, the traditional religion of the Mongols

siege a military operation whereby enemy forces cut off essential supplies to force surrender

Silk Road the major land and sea trade route connecting eastern Asia and Europe

tumen a division of the Mongol army (10 000 men)

Yasa a set of written rules about ancestral traditions, customs and laws, introduced by Genghis Khan

zud bad weather during the Mongolian winter

H4.0.1 Genghis Khan, born Temujin, was the founder and great khan of the Mongol Empire.

Timeline

Mongol expansion

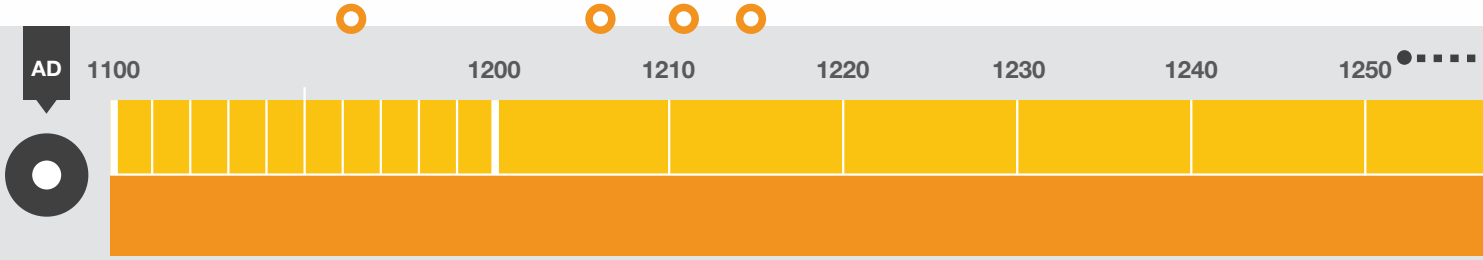
Under the leadership of Genghis Khan, the conditions were set for a rapid expansion of the Mongol Empire. His lead was followed by Kublai Khan and others, who established the Mongols as rulers of the largest contiguous empire that the world has ever known.

1162
Temujin is born

1206
Temujin is proclaimed Genghis Khan at a *quriltai*

1211
First invasion of the Chin Empire by Genghis Khan

1215
Kublai Khan, the grandson of Genghis Khan, is born



1220
Genghis Khan invades the Khwarazmian Empire, attacking the cities of Bukhara and Samarqand

1227
Death of Genghis Khan



A mounted archer from the time of Genghis Khan



Parts of the Mongolian landscape have proved challenging to live in.

1274
First invasion of Japan by Kublai Khan

1279
Kublai Khan defeats the last Song emperor

1294
Death of Kublai Khan

1368
End of the Yuan dynasty in China

1251 1260 1270 1280 1290 1300 1400 AD

1258
Baghdad is sacked by Hülegü Khan, grandson of Genghis

1264
Kublai Khan begins construction of Dadu, his new capital city

1271
Kublai Khan establishes the Yuan dynasty

A cutaway diagram of a traditional Mongolian *ger* or yurt, which looks like a tent and could easily be moved from place to place



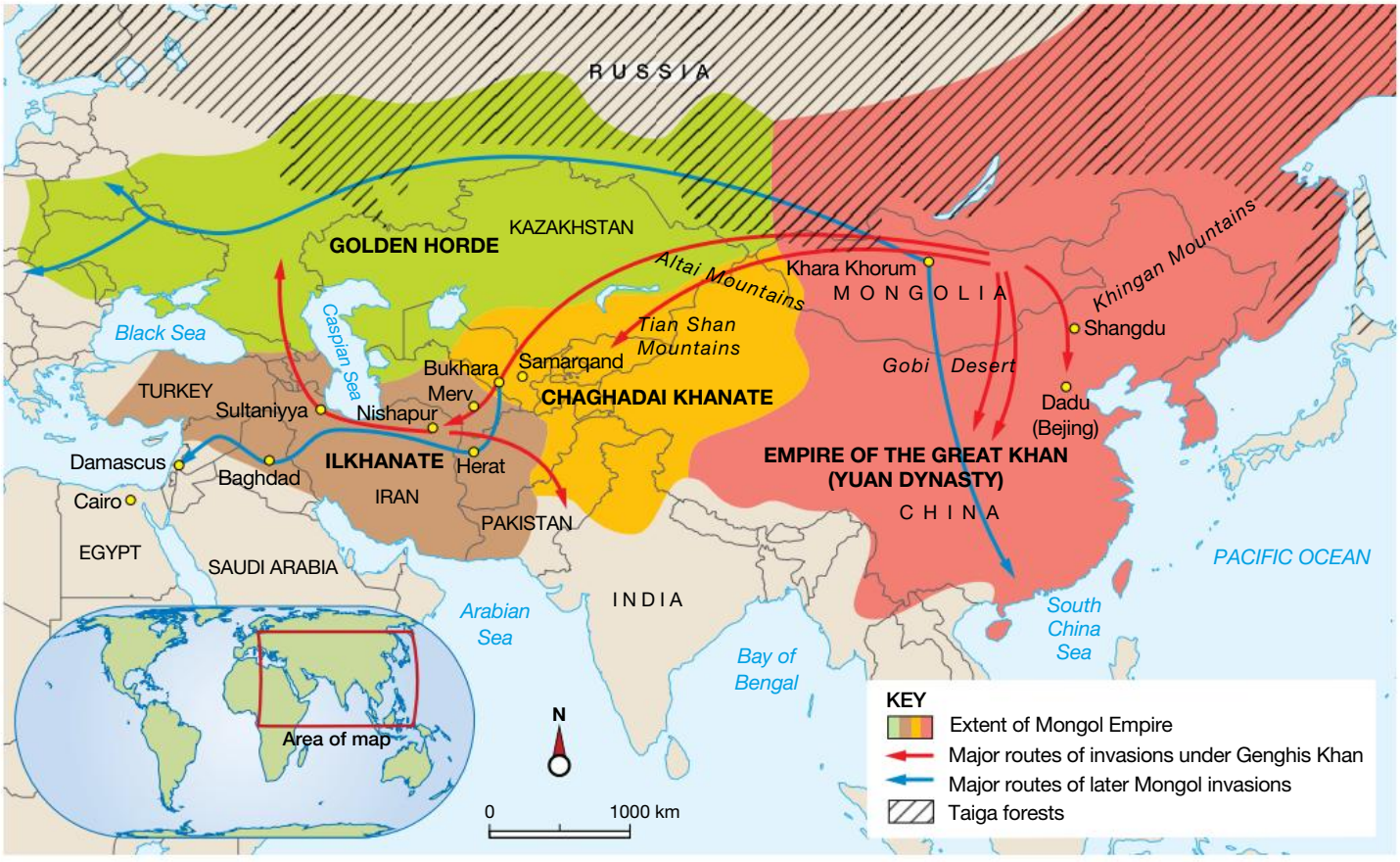
H4.1 Geography

The Mongol homeland and the Central Asian steppe

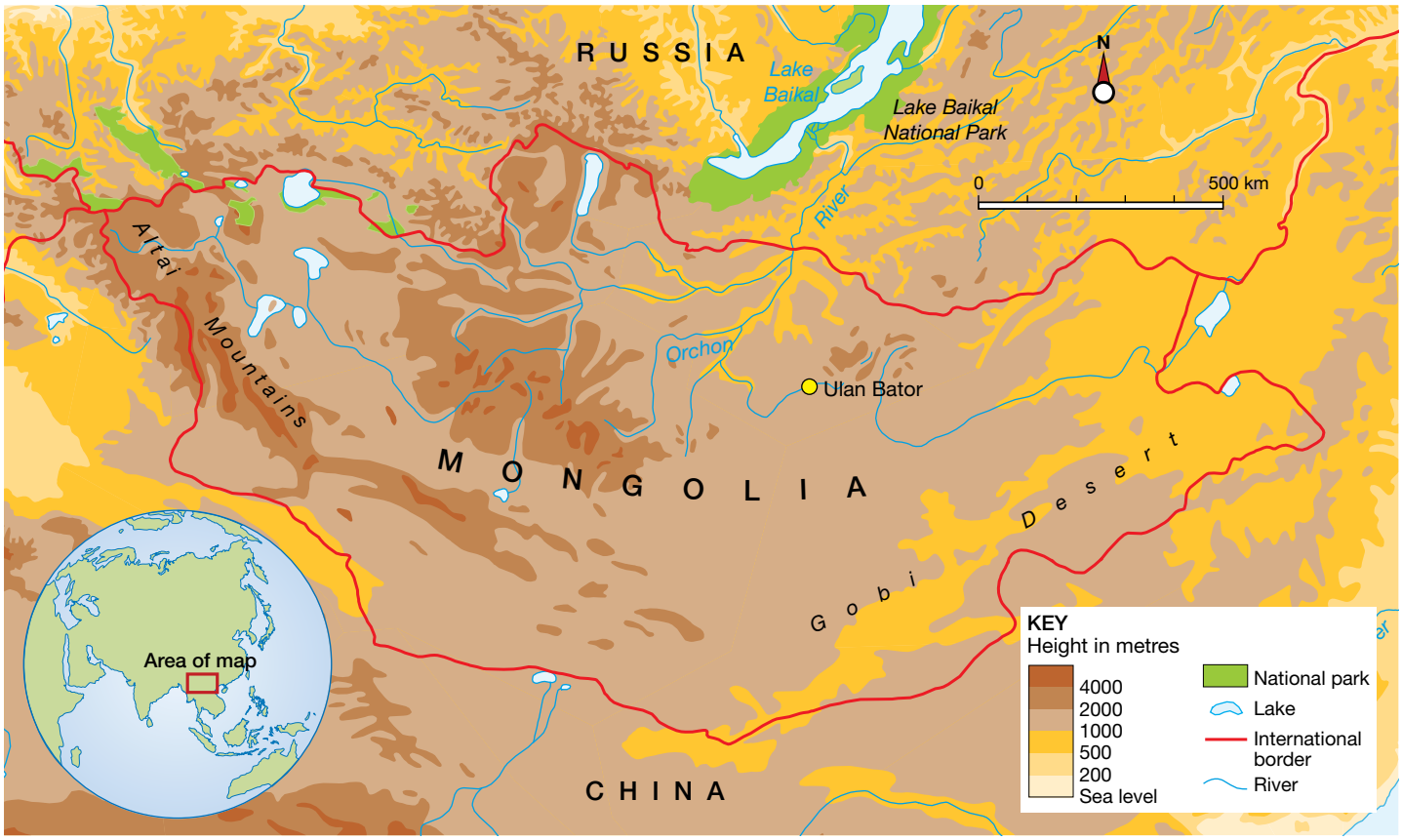
The homeland of the Mongols lies in the territory of the modern Mongolian People's Republic. At the end of the twelfth century AD, the Mongols were just one of several small nomadic tribes inhabiting an isolated **plateau** in the middle of Central Asia. Elevated 1000–1500 metres above sea level, this plateau was part of a giant steppe (grassland), which stretched from historic Manchuria—present-day north-east China—to Hungary in Central Europe. A range of geographical factors contributed to the Mongols being nomadic livestock herders and expert hunters rather than farmers.



H4.1.2 Orkhon Valley, central Mongolia



H4.1.1 Mongol expansion under Genghis Khan and his descendants, and the Mongol Empire during the reign of Kublai Khan



H4.1.3 This physical map, with the boundary of modern Mongolia marked in red, demonstrates the elevation of the land across the Mongolian Plateau.

The Mongolian Plateau

The Mongolian Plateau—with natural barriers to the north, south, east and west—remained isolated. This kept the people who dwelled within the plateau protected from invaders for hundreds of years.

H4.1.4 A description of the Mongolian Plateau surroundings

To the north	The immense Siberian subarctic taiga (forests). Taiga contain few plants except conifers, which are adapted to survive long, cold winters and short summers. Mosses, lichens and fungi cover the ground.
To the south	The Gobi Desert, mostly consisting of bare rock
To the east	The Khingan Mountains, made up of the volcanic Greater Khingan region and the forested Lesser Khingan region
To the west	Two huge mountain ranges—the Altai and Tian Shan. There are approximately 1400 glaciers in the Altai region, and it is home to the critically endangered snow leopard. The Tian Shan's highest peak is Victory Peak; it stands 7439 metres above sea level.

Extreme temperatures

The Mongolian Plateau experiences extremes of climate, with temperatures ranging from 30 degrees Celsius in summer to minus 45 degrees Celsius in winter.

Nearly everything freezes during winter, including streams, rivers, wetlands and lakes. Mongolians refer to these conditions as ***zud***, and distinguish between black, white, cold and iron or ice *zuds*.

H4.1.5 *Zud* conditions

Type	Description	Risk
black *zud*	a lack of snowfall combines with freezing temperatures	drought
white *zud*	there is very heavy snowfall	famine, as livestock cannot access food grasses
cold *zud*	the temperature gets extremely low for many days in a row	famine, as livestock must conserve body temperature rather than graze
iron or ice *zud*	rain freezes and covers the land in ice	famine, as livestock cannot access food grasses

To stay hydrated, and to cook frozen mutton into thick stews, the Mongols had to cut and drag large blocks of ice from frozen waterways to a fire for about 6 months each year. Though the winter was extreme, livestock herding remained possible because of sheltered oases along the valley of the Orkhon River where a hardy turf grew all year round.

Rainfall and wind extremes

The plateau also experiences low annual rainfall—typically between 20 and 35 centimetres of rain per year in the north and between 10 and 20 centimetres in the south. Some southern regions close to the Gobi Desert often receive no rainfall at all for 12 months at a time. Extreme winds during the short spring (May to June) also caused significant dust storms.

The 'Land of the Blue Sky'

Despite the extreme climate, many modern Mongolians call their nation the 'Land of the Blue Sky'. The Mongolian Plateau experiences an average of over 250 sunny days each year. In the summer months, the land is carpeted with a variety of medium to tall grasses such as feather grass and sheep's fescue (see Source H4.1.2).

Activities

Remembering and understanding

1. In an extended paragraph, describe the geography of the Mongolian Plateau. In your paragraph, state one advantage and one disadvantage of living there.
2. Identify two extremes associated with the climate of the Mongolia Plateau.

Applying and analysing

3. Why do modern Mongolians call their nation the 'Land of the Blue Sky'? Devise or invent two alternative names for Mongolia based on the description of its geography and climate in this unit.



H4.1.6 Landscape at Tsaluu, Mongolia

H4.2 Nomadic life and society

Nomadic life

Herding

The life of Mongolian herdsmen today shares many similarities with those who lived in the thirteenth century. The extreme climate meant that herdsmen were regularly moving. In the summer months, this meant grazing livestock on the vast steppe grasslands. During winter, migration to protected river valleys was necessary to survive the extreme conditions. Mongols did not travel aimlessly in search of good grazing land, but returned to traditional pastures each year. However, when herds grew larger, access to more grass was required. Conflict between Mongol tribes became almost inevitable in these circumstances.

Types of livestock

For the typical herdsman, livestock meant sheep. Sheep provided most of the basics for survival—meat, milk and cheese to eat; leather, skins and wool to wear; and felt for housing. Sheep also provided dung for fuel. This dung was collected by Mongol women and children. Women also had a role in coaxing (gently persuading) ewes to nurse their young. Herdsmen also kept small numbers of goats, as well as camels and oxen for carrying large loads.

Shelter

Mongols used tents to live in, as their encampments needed to be mobile. The ***ger*** (sometimes called a yurt) was a cylindrical frame of thin wooden struts or poles covered by a stretched piece of felt made from sheep's wool that could be taken down and reassembled very quickly.



H4.2.1 Nomadic herding on the Mongolian Plateau. The temporary nature of the dwellings and the lack of fences are indicators of a nomadic lifestyle.

The importance of horses

Horses were central to the Mongols' way of life in the harsh environment of the steppe. Mongol horses were docile, relatively small and had short, stocky legs. With their speed and stamina (staying power), they provided transport for people and goods, helped to monitor and move livestock, and were essential for hunting.

Mares also provided milk, which could be fermented into a bitter-tasting alcoholic drink called *qumis*.

Features of Mongol society

Politics

Mongols lived in loosely defined tribes. These tribes were divided into clans that were either ruling or subordinate. Ruling clans were those who had triumphed in war and who were asked to protect other clans.

Clan members did not live together in one encampment, but were scattered among smaller encampments. Within ruling clans, kinship (descent from a common ancestor) was shared, but other types of clan relationships could also be freely chosen by Mongol men.

H4.2.2 Clan relationships

Type	Description
anda	sworn brotherhood with someone not related by birth, implying an equal relationship
nökör	voluntary attachment to someone not related by birth, but implying an unequal relationship, e.g. a warrior to a more gifted and dominant warrior or **khan** (chief)
quda	attachment via exogamy (women marrying men outside their clan), universally practised by the Mongols

In the early period of Mongol history, khans found it difficult to control large groups or territories because clans were spread out over a vast geographical area. The 'openness' of clan membership also made it difficult for khans to achieve political power because *nökörs* could come and go as the fortunes of the khan rose and fell, or as interests changed. The neighbouring Chinese dynasty of the Chin also influenced Mongol politics at this time. The Chin used a policy of 'divide and rule' to encourage disputes among the Mongol tribes. This meant that the Mongols would have less time to think about invading northern China.

Khans were usually from the branches of the ruling clans, but they had to show individual merit in battle to remain influential. Because of the *nökör* system, gifted warriors from subordinate clans had the chance to build up followings of their own that could challenge a khan's authority. While this led to political instability in Mongolia, it also strengthened Mongol governance as a whole, as incompetent khans would be replaced by more able—and often more ruthless—men. It was only at a time of war that khans could expect to receive absolute loyalty and obedience.

Economy

As the early Mongols produced no technologies or manufactured goods, and did not mine, they had to satisfy some of their needs via trade with neighbouring settled societies such as the Chinese Chin dynasty. For example, to balance their protein-rich diet, Mongols needed grain. They also sought 'luxuries' such as tea and textiles. Most important, however, was their demand for wrought metals and metal products such as swords and armour. The Mongols were only able to exchange woollen goods and animal skins for these items. As the settled societies did not have very much demand for Mongol goods, the balance of trade favoured the settled societies.

Women

Women played an important role in Mongol society. In addition to their key role in dung collecting and the care of livestock, Mongol women were responsible for felt-making, sewing and cooking. Historical sources show that it was common for Mongol husbands to ask their wives for advice in a wide variety of matters, including politics.

Mongol women were allowed to move about more freely in public than their contemporaries in other societies.



H4.2.3 A modern Mongolian woman outside her *ger* in winter

Religion

Early Mongols were **shamanist**. They believed in a supernatural world inhabited by spirits, and a supernatural hierarchy, with the Blue or Eternal Heaven at the top. The shaman (priest) had an important role in mediating between people and spirits (mostly while in a trance). He also performed exorcisms to get rid of evil spirits; recited blessings over herds, hunters and children; and made prophecies by burning the shoulderblades of sheep and examining the cracks made by the flames.



H4.2.4 A traditional silver belt worn by a modern Mongolian herdsman

Activities

Remembering and understanding

1 Explain the key advantages of the Mongol tent (*ger*) as a form of housing.
2 Describe shamanism, including four key facts about this religion.

Applying and analysing

3 Using a graphic organiser of your choice, visually represent the Mongol social structure, including kinship and other types of relationships.
4 Use information from this unit to describe the Mongols' relationship with the Chinese.

LS H4A

H4.3 A significant individual

Chief tribes of the Mongolian Plateau

At the time of Genghis Khan's birth, the four most important tribes of the Mongolian Plateau were the Tatars to the east, the Naimans to the west, the Kereyids in the centre, and the Merkits to the north. The Mongols also lived in eastern Mongolia, and were the longstanding enemies of the Tatars. The Tatars were the most powerful of all the tribes, enjoying the support of the neighbouring northern Chinese dynasty of the Chin.

Historians are not absolutely certain when Genghis Khan was born. Modern Mongolia celebrated the 800th anniversary of his birth in 1962, suggesting a birth year of about 1162. He did not become Genghis Khan until 1206. Before then, he was known by his birth name of Temujin.



H4.3.1 A portrait of Genghis Khan in his later years

Early hardships

No one could have predicted Temujin's rise to power. When he was 9 years old, his father, a minor chieftain, was poisoned by some strangers who he asked for a drink. The strangers were Tatars and recognised Temujin's father, who had just arranged Temujin's marriage to a girl named Borte, from his wife's tribe, the Unggirad.

The death of his father left Temujin's family vulnerable. Temujin's mother fled with her children to the mountains near the River Onon in north-eastern Mongolia, surviving on foraging, hunting and fishing. Temujin grew into adolescence here. It was also here that he met and befriended a fellow Mongol called Jamukha; they swore *anda* (brotherhood) to one another, something that would have future importance.

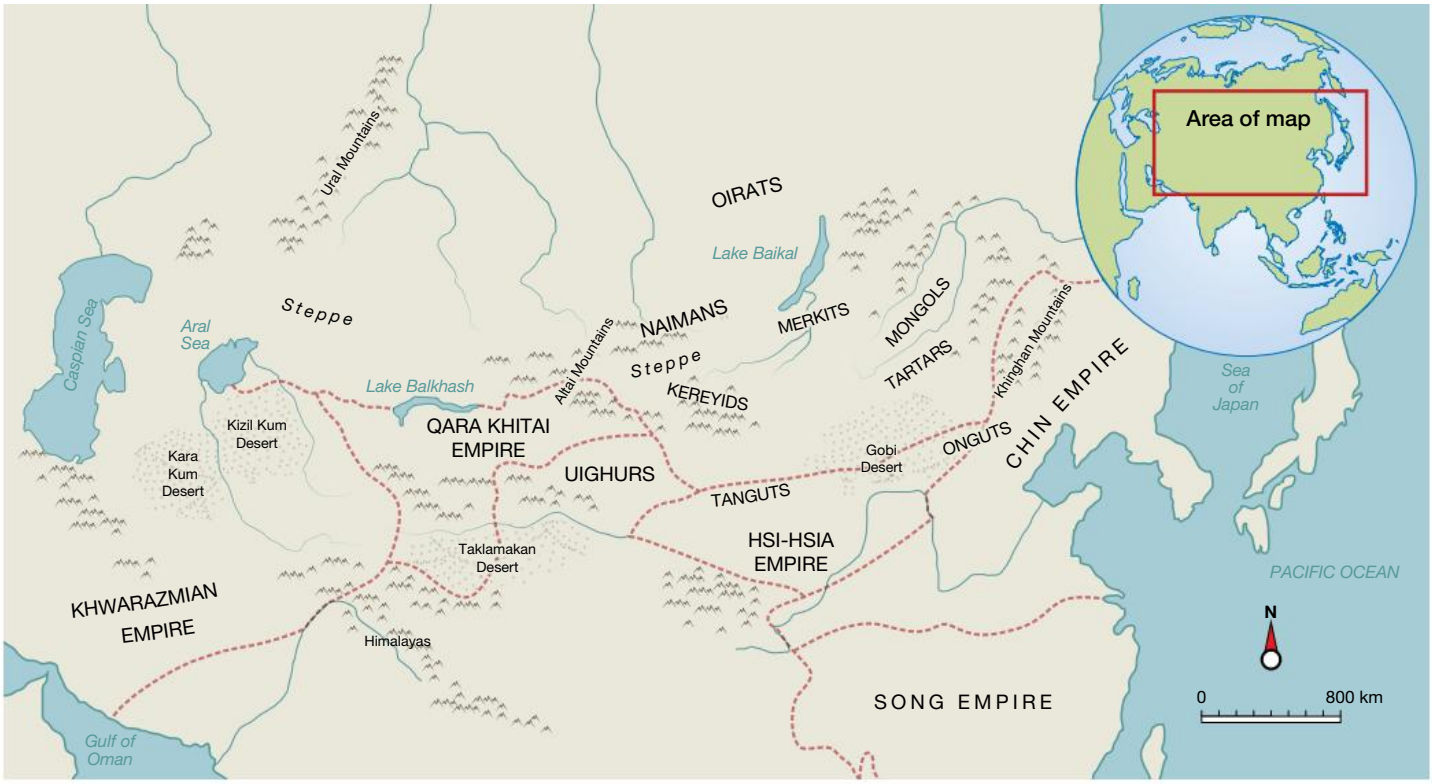
Emergence of a warrior

Temujin was then kidnapped by the Taichi'uds (a rival clan), possibly because Temujin had killed his half-brother, Bekter, in a fit of rage (Bekter had ties to the Taichi'uds) as he was angry that Bekter had stolen a small songbird and then a fish that Temujin had captured. Temujin was held captive for several months before escaping during a local festival. All those who aided Temujin's flight were later rewarded when he came to power.

Aged sixteen, Temujin returned to marry Borte. He then sought help in gaining leadership of his father's clan from an old friend of his father's, Toghril. Toghril agreed, but in the meantime Toghril's camp was raided by a rival tribe and Borte was kidnapped. Toghril raised an army to give chase, placing Jamukha in charge. Borte was rescued, but fell pregnant to one of her captors. Temujin distinguished himself during the battle to rescue Borte.

Rivalry and rewards

For the next 18 months, Temujin and his followers travelled with Jamukha. However, a rivalry developed that threatened their friendship. In response, Temujin and his followers left Jamukha's camp, and some of Jamukha's men joined them. They believed that Temujin was the better leader, inspiring loyalty and confidence. He was also generous, rewarding his followers well.



H4.3.2 Asia on the eve of Genghis Khan's rise to power

Stories now proliferated (quickly increased in number) that Temujin held a 'heavenly mandate' to rule the steppe. Temujin played on these stories, reportedly saying:

> My strength was fortified by Heaven and earth. Foreordained [for this] by Mighty Heaven, I was brought here by Mother earth.

H4.3.3 Temujin justifies his increasing power.

Betrayal and loss

Around this time, Jamukha launched a surprise attack on Temujin, which Temujin barely survived. The attack broke the *anda* bond sworn years before. Temujin was also angry when he learnt that Jamukha had killed all of Temujin's followers captured in the attack by boiling them to death. Temujin wanted revenge, but this had to be delayed—his patron Toghril desperately needed his help, having been expelled from his lands by another tribe.

This was the beginning of a period in Temujin's life where his reputation as a warrior would be built, then lost and then built again, finally resulting in his defeat of all the tribes of the Mongolian Plateau. Key events of this time are described in Source H4.3.4.

H4.3.4 Key events in Temujin's defeat of the tribes of the Mongolian Plateau

Event description
Temujin successfully helps Toghril repel the attack from a rival tribe. Temujin's reputation as a warrior grows.
The Chin engage Toghril and Temujin to overthrow the Tatars. They succeed. Temujin's reputation as a warrior grows even further. His status is also enhanced by the riches and titles the Chin bestowed on him.
Toghril and Temujin lead additional campaigns, further strengthening their relationship and their influence.
A jealous Jamukha forms an alliance of disgruntled rival tribes, including Temujin's mother's tribe, the Unggirad. They attack the forces of Toghril and Temujin in 1201–02 but are defeated. This is Temujin's first victory over his rival Jamukha, illustrating the growing effectiveness of his leadership and skill of his forces.
Fearing Temujin's growing importance, Toghril refuses Temujin's request for his son Jochi to marry his daughter. Trust starts to erode. In battle, Temujin finds that Toghril's forces often do not show up. Clans that had flocked to Temujin's banner now began to desert him. This marks a period of personal suffering for Temujin, yet he maintains his resolve to return to power.
In the face of a huge Kereyid force amassed against him, Temujin retreats to a river or a lake known as Baljuna in 1203 with only 4600 loyal followers. Temujin's retreat is tactical, giving him time to plan for a return to power.
Temujin exploits the weakening of Kereyid authority, launching a surprise attack that ends in victory after three days of fighting. The elderly Toghril is captured by a neighbouring tribe and executed, eliminating a significant rival.

Vengeance or nation-building?

Temujin had to decide whether to punish or praise the defeated—and now leaderless—Kereyids. Temujin's ultimate vision was not to defeat all the tribes of the Mongolian Plateau but to lead a Mongol nation. In the case of the Kereyids, Temujin praised the heroism of the defeated, and married their daughters to his sons. With his focus on making friends rather than pursuing vengeance for past betrayals, Temujin was showing himself to be a shrewd (very clever) politician.

The Naimans were now Temujin's only significant opposition. They amassed a huge force in their traditional lands in western Mongolia. Other fugitives joined them, including Jamukha. Temujin saw the coming clash as inevitable and called a ***quriltai*** (a meeting of tribal leaders) to make plans.

Part of the planning involved the organisation of his forces according to a decimal system, where soldiers and military units were divided into groups of ten (see Unit H4.4). Temujin also reorganised his command hierarchy, the system by which authority was passed down from Temujin through a series of military ranks, with each individual answerable to a more senior individual. Both of these reforms improved the ability of Temujin's forces to carry out complicated manoeuvres on the battlefield and respond quickly and positively if conditions changed. They reflect his remarkable skill in strategy, organisation and logistics.

A final stand

Temujin's forces marched to Naiman lands. The horses arrived exhausted. To give the illusion of superior numbers, hundreds more fires than were necessary were lit. However, when the two armies stood before each other on the battlefield, something unexpected happened: Jamukha left the battlefield and his forces withdrew.

Historians cannot agree on why, but have suggested Jamukha might have been confused about the formation he saw in front of him and doubted his own battle plan. Deserted, the Naimans faltered and were defeated. Jamukha was later captured and asked that his captors kill him.

The great khan

Another meeting of tribal leaders in 1206 confirmed what everyone already knew—that Temujin was the undisputed master of all the tribes of the Mongolian Plateau. By now in his early forties (considered past his prime at the time), they proclaimed him Genghis Khan.



H4.3.5 The 'Nine Bands' made from horsehair or yak hair, which Genghis Khan adopted as his standard (flag). The bands represent the nine tribes of the Mongols. White hair was a symbol of peace; black hair a symbol of war.



H4.3.6 Genghis Khan's enthronement in 1206. His sons Jochi and Ögedei are standing on the right. Created by Rashid al-Din (1247–1318)

Did you know?

Etymologists cannot be sure of the exact meaning of the word 'Genghis'—also spelt Chingis, Chinggis, Genghiz, Jengiz and Tchingis, depending on the language it was originally written in. They do know that it is associated with the ocean. It therefore probably describes a khan whose power was as limitless as the oceans.

Consolidating power

Genghis Khan learnt a great deal during his rise to power. He learnt that tribal and familial loyalties could not be relied on and that a political power base could only be forged from those who had a personal loyalty to him.

It was thus to the *andas* and *nökörs*, who had been with him at Baljuna, that Genghis Khan looked when he established his army command.

By now, Genghis has also established a *keshig* or personal guard. Originally, it consisted of seventy day guards and eighty night guards recruited solely from his original and most faithful followers. Over time, the *keshig* greatly expanded in size. Its functions also multiplied, from personal protection and household organisation to administration of the empire. Membership was regarded as a supreme honour.

Another important act was the promulgation (official declaration) of his great ***Yasa*** of general laws and ordinances (see Unit H4.5), which were designed to be binding on the Mongol people and their descendants forever.

Activities

Remembering and understanding

1. When was Genghis Khan born?
2. Outline what a *quriltai* was and explain why it was important.
3. Describe the significance of the *keshig* to Genghis Khan.

Applying and analysing

4. Summarise the relationship between Temujin and Jamukha throughout their lives, noting major changes over time.
5. Produce a concept map of the major figures in Genghis Khan's rise to power, including his mother, his wife, Jamukha and Toghril. For each person, note key facts from this unit. Also include up to three adjectives describing their actions (e.g. ruthless, loyal).

Evaluating and creating

6. Write an extended response examining the factors that helped and hindered Genghis Khan's rise to power. What qualities did he possess that underpinned his extraordinary achievement of uniting the nomadic tribes of the Mongolian Plateau? Construct a plan before writing to help organise your thoughts and ideas.



H4.3.7 Genghis Khan in battle

H4.4 The Mongol army

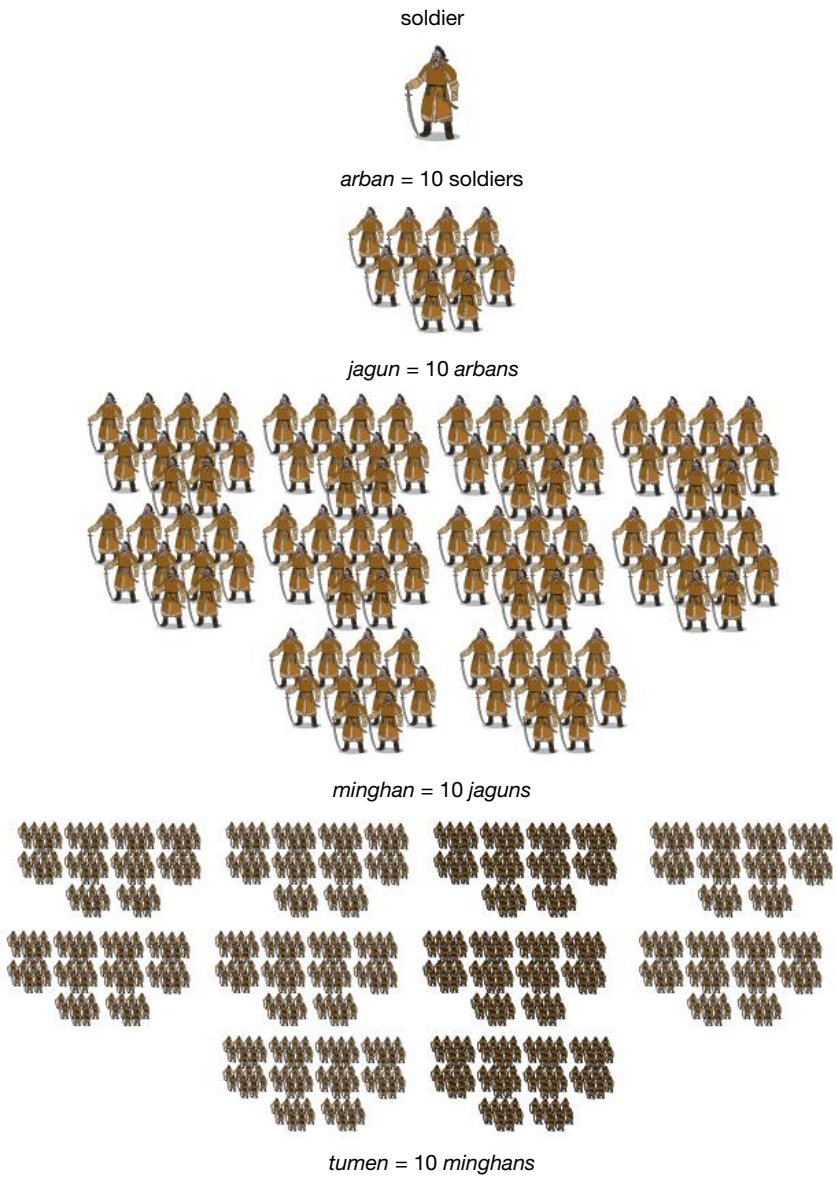
Military organisation

The Mongol army was the most important institution of the empire. It was modern and professional, and made up of soldiers who were one of the great success stories of world military history.

Genghis Khan used a decimal system to order his army:

- *arban*—10 men
- *jagun*—100 men or 10 *arbans*
- *minghan*—a regiment of 1000 men or 10 *jaguns*
- *tumen*—a division of 10 000 men or 10 *minghans*.

Decimal ordering was common among the nomadic tribes of the Mongolian plateau. But Genghis did something extraordinary with this system, using it to create 'artificial' tribes. Cleverly, Genghis split up the surviving soldiers of 'enemy' tribes like the Tatars, Merkits, Kereyids and Naimans, distributing them across other units. Only 'allied' or 'loyal' tribes were able to form small units of their own. In this way, the old tribal system was destroyed, replaced by an individual's loyalty to his army unit. Through this, Genghis Khan and his descendents became the focus of obedience and allegiance.



H4.4.1 The military organisation of the Mongol army reflected a decimalisation, or ordering of the system by units of 10.

Did you know?

Historians find it difficult to estimate the size of the Mongol army. Estimates vary from 105 000 to 800 000. Mongol numbers may have been unwittingly (without knowing) exaggerated by their enemies because of the tricks the Mongols played; for example, the mounting of 'dummies' on spare horses.

Camps

Mongol military camps (*ordu*) were always laid out the same way. This meant the Mongol soldier would always know where the physician's tent was, and where to find the armoury. *Ordu* were overseen by quartermasters called *jurtchis*.

Soldiers

All Mongol men between the ages of fourteen and sixty were required to join the army. Only physicians, undertakers and shamans were excused from this duty, as these occupations were seen to be most crucial to the continued functioning of Mongol society.

When **mobilised**, soldiers gathered up to five horses, and travelled to the military camp where their unit was based. Families shadowed the military camps, most often with their livestock in tow.



H4.4.2 Actors dressed as Mongol warriors

Discipline

Discipline was a key to Mongol military success. A strict set of laws, rules and regulations was maintained, and breaches of discipline were punished by anything from three strokes of the cane to immediate execution. Execution was carried out, for instance, if a mounted soldier did not pick up an object dropped from the mount ahead of him. If one soldier from an *arban* ran from danger, all ten soldiers of the unit were put to death.

> The Papal envoy [the Pope's representative] John de Plano Caprini, well accustomed to discipline and obedience, said of the Mongols that 'these men are more obedient to their masters than any other in the world, be they religious or secular [not religious]'.

H4.4.3 A comment on Mongol obedience, quoted in M. Barnes, *The Mongol War Machine*, PiCA, 2010, p. 9

Equipment

The Mongol soldier's equipment is described below. The Mongols were renowned horsemen and archers, and were sometimes referred to as the 'nation of archers'.

H4.4.4 A Mongol soldier's equipment

Item	Description
undershirt	Made from silk, a technique borrowed from the Chinese. Silk is so tightly woven that it is difficult to pierce; when a soldier was injured, the silk would often be pulled into the wound, reducing the depth of penetration. The silk also made the object easier to remove, as it could be grasped, turned and pulled.
tunic	Worn over the undershirt
coat of mail and cuirass (heavy cavalry only)	The cuirass was made of leather covered in iron scales.
shield	Made from wicker (hardened woven fibre) and covered in leather
helmet	Made from either leather or iron, depending on rank
two bows and a quiver	The composite bows were made from layers of horn and sinew on a wooden frame; the quiver carried a minimum of sixty arrows.
small sword and two to three javelins (light cavalry only)	
scimitar, battle-axe or mace and 4-metre lance (light cavalry only)	

Mongol children began to learn to ride and shoot the bow at 2 or 3 years old. They needed all the practice they could get as the composite bow, made of horn, bamboo and sinew, was hard to use. An average of 75 kilograms of draw weight (the effort needed to fully draw the bow) was needed to shoot an arrow from a composite bow, compared with 32 to 36 kilograms for the English longbow. As a result, the composite bow was unsurpassed for distance, firing arrows 320 metres, compared to the English longbow's 228 metres.

Mongol horses were equipped for long-distance travel. Historian Robert Marshall describes what Mongol horses carried:

> ... clothing, cooking pots, dried meat, a water bottle, files for sharpening arrows, a needle and thread and other useful little items. The saddlebag itself was usually made from a cow's stomach which, being waterproof and inflatable, also provided a useful float when crossing rivers.

H4.4.5 A description of what Mongol horses carried, in R. Marshall, *Storm from the East*, Penguin Books, 1993, p. 40

Military training and tactics

The Mongol army was a highly trained cavalry force. The same skills necessary for survival in the harsh conditions of the Mongolian Plateau were those also used in warfare—riding, shooting, swordsmanship, discipline, coordination and obedience.

> The leaders study, in this practical school, the most important lesson of the military art: the prompt and accurate judgement of ground, of distance and of time. To employ against a human enemy the same patience and valour [bravery], the same skill and discipline, is the only alteration which is required in real war; and the amusements of the chase serve as a prelude [an introductory action] to the conquest of an empire.

H4.4.6 Historian Edward Gibbon describes how large-scale hunting exercises in peacetime effectively trained Mongol warriors for war, in D. Morgan, *The Mongols*, 2nd edn, Wiley-Blackwell, 2007, p. 75.



H4.4.7 A fourteenth-century watercolour depicting Mongol warriors pursuing their enemies

The Mongol army generally avoided hand-to-hand combat until enemies had been 'broken' by arrow fire.

Borrowed from the Chinese, the Mongols' use of the stirrup provided stability while shooting. This allowed them to master the Parthian shot—shooting backwards over the rear of their horses as they rode away from the enemy. Because they had access to multiple horses, the Mongols could employ this tactic—riding towards the enemy shooting, followed by retreat while shooting—over and over again.

Other Mongol tactics are described in Source H4.4.9.



H4.4.8 A sixteenth-century miniature showing Genghis Khan and his forces capturing a Chinese town

H4.4.9 Mongol military tactics

Tactic	Description
arrow storm	This was firing showers of arrows at a high trajectory and from a distance into a target area.
encirclement	Modelled on the *nerge* (the annual expedition for meat to sustain them during extreme winter climate), a fully armed ***tumen*** that was spread out along a 'starting line' would ride forward. After some time the flanks of the column would begin to ride ahead of the centre, forming a massive arc. Eventually, these flanks would turn inwards and then directly towards each other, encircling the enemy.
Fabian tactics	Mongol soldiers would engage the enemy in skirmishes (small fights) in order to reduce enemy numbers and lower their morale, and disrupt supply.
feigned retreat	Modelled on another hunting technique, a small party of soldiers would ride forwards in an arc. The enemy would be goaded or provoked into attacking one or two of the Mongol soldiers, who would then gallop away. The tactic worked if the galloping Mongols drew the enemy soldiers away and into a trap. The arc would then close and the enemy would be attacked.
surprise	The Mongols often appeared from the 'impossible' routes, disorienting the enemy.
synchronisation	Mongol units were in constant contact with their commander and one another during battles. They signalled each other with flags and torches, and by employing riders to carry messages.
terror	Populations of cities who resisted the Mongols were massacred, thus helping to ensure that the next city on the path unconditionally surrendered. This tactic helped minimise Mongol casualties.

Did you know?

As the Mongol Empire expanded, siege technologies from China and the Middle East were adopted. Chinese and Middle Eastern engineer units in the Mongol army built siege engines that could continuously bombard a city with large arrows and stones. Naphtha pots (filled with flammable liquid, often referred to as 'Greek fire') were also hurled over the walls.

LS H4B

Activities

Remembering and understanding

1 Describe the decimal system for ordering the Mongol army. Why was this a clever idea?

2 Using information and the sources from this unit, sketch a typical Mongol soldier, labelling his clothing and equipment.

3 Outline two of the tactics the Mongols typically employed in warfare. Consider the strengths and possible weaknesses of these tactics in your answer.

Applying and analysing

4 In your own words and with direct reference to Source H4.4.6, demonstrate why being good at hunting prepared the Mongols so well for warfare.

5 Examine and discuss the scene in Source H4.4.7. How are the Mongols behaving? How are their opponents responding? What elements of the Mongol army—its organisation, equipment and tactics—are shown in this source?

6 Compare Sources H4.4.7 and H4.4.8, noting the key similarities and differences in a Venn diagram. Taken together, what conclusions about Mongol warfare can be drawn?

Evaluating and creating

7 Imagine you are an enemy general in 1220 who has just received a satchel of battle plans stolen from the Mongols just before their invasion. A report from one of your spies accompanies the satchel. Create the satchel and the report, making sure that they cover:

- a description of Mongol army organisation
- a description of Mongol weapons and their usage
- the battle strategies they plan to employ in the first few months
- suggestions to your king or emperor about how to counter (oppose or stop) the Mongols.

Complete a plan first and get some feedback on it from a teacher or peer.

H4.5 Mongol expansion and conquered peoples

The spread of Mongol rule

At the time of Genghis Khan's death in August 1227, the Mongol Empire was twice the size of ancient Rome and four times the size of Alexander the Great's empire. Under Genghis Khan's successors, this empire expanded further, to take in all of the Middle East and China. As rulers, the Mongols promoted religious tolerance and exempted teachers, lawyers and artists from taxes. Those who immediately submitted could benefit from Mongol rule. Those who resisted faced certain slaughter.



H4.5.1 A subject paying homage to the conqueror, Genghis Khan

The rules of engagement

The pattern of Genghis Khan's engagements with enemies of Mongolia was:

- invasion
- slaughter of the population
- submission of the enemy
- extortion (securing demands through force and threats)
- withdrawal, laden with massive quantities of silk, gold, silver and large numbers of girls and boys to be slaves.

In the case of the Chin people, this pattern of destruction happened three times between 1211 and 1213.

Treatment of the Chin people

When the Mongol army first invaded northern China in 1211, the Chin responded with military force, sending an army of 70 000 to meet the Mongols. All were slaughtered within a matter of hours. However, the fortified cities of the Chin stopped the Mongols in their tracks. Genghis Khan and his generals had little knowledge or experience of **siege** warfare and were forced, at first, to withdraw.

The siege of Chung-tu

In 1213, the Chin emperor sought peace with the Mongols. In response, Genghis Khan called off his siege of Chung-tu, the Chin capital (near modern Beijing), and left northern China with a Chin princess as his newest wife, more gold and silk, and 500 girls and boys who would become slaves.

When the Chin emperor decided to move his court to the city of K'ai-feng, much further south, Genghis Khan interpreted this as a breach of trust and resumed his siege of Chung-tu. Fearful of the Mongols' wrath, the inhabitants refused to surrender, despite having so little food that they had to resort to cannibalism. When the Chin commanders finally abandoned the city, the Mongols laid waste to it and massacred its inhabitants. A visiting ambassador from the Khwarazmian Empire described scenes of terrible destruction; of streets scattered with dead bodies.

The fall of the Khwarazmian Empire

The Mongol invasion of the Khwarazmian Empire began in 1220 and was the largest military expedition the Mongols had ever undertaken. The Khwarazmian Empire was a Muslim dynasty of Turkic origin that occupied present-day Iran, Turkmenistan and Uzbekistan, and parts of Afghanistan, Kazakhstan, Kyrgyzstan and Tajikistan. Its ruler, the Khwarazm Shah, had a massive army of about 400 000 men, which was larger than any army in the world at the time.

Friendly relations

Genghis Khan had initiated friendly contact with the Khwarazm Shah in 1216, sending him gifts of gold, jade, ivory and cloaks spun from the wool of white camels. A letter proposed a trade agreement between the 'lords of east and west' and an agreement was struck.

Enemies

However, in 1218, the Khwarazmian governor at the border town of Utrar, a man called Inalchuq, killed 450 Muslim merchants travelling from Mongol territory and confiscated their property. Inalchuq suspected the merchants were spies (they probably were). When Genghis Khan sent three envoys to demand compensation, the Khwarazm Shah had one killed and burnt the beards of the other two before sending them home. The Mongols interpreted this as an act of war.

Attacks on Utrar and Inalchuq

Utrar was attacked first, with a force of 50 000 led by Genghis Khan's middle two sons, Chaghadai and Ögedei. They were prepared for a long siege, as Inalchuq was unlikely to surrender given the Mongols' reputation for vengeance. It took 5 months to breach Utrar's walls, and its citadel where the garrison and most of the inhabitants had taken refuge, held out for a month after that. The entire garrison and most of the citizens were slaughtered and the city burnt and levelled.

The destruction of Bukhara

Bukhara, part of the Khwarazmian Empire, was one of the first great cities of the **Silk Road** (the major trade route connecting eastern Asia and Europe) to come under Mongol attack. Its garrison was horrified when Genghis Khan and his most famous general, Subedi, appeared on the outskirts of the city in March 1220. The Khwarazm Shah and his generals had had no warning of the Mongol force's advance, as it had taken a secret—and thought to be impossible—route through the Kizil Kum Desert to the north-east.

The garrison left their posts and met the Mongols in the fields beyond the city walls. All garrison troops were killed. Historians have compared the fields to trays filled with blood. Bukhara's inhabitants immediately surrendered.

Genghis Khan as punishment

Bukhara was one of the most important centres of Islam at the time. When Genghis Khan entered its largest mosque, he ordered that copies of the Qur'an (the holy book of Islam) be ripped up, that the mosque be converted into stables, and that cases that had held Qur'ans be used for mangers (containers for animal feed). He also berated Bukhara's citizens:

> I am the punishment of God. If you had not committed great sins, he would not have sent a punishment like me.

H4.5.2 Genghis Khan to the citizens of Bukhara



H4.5.3 Genghis Khan uses the *minbar* (pulpit) of a mosque in Bukhara to berate its citizens. From a fourteenth-century Persian manuscript

> ... as a result of the eruption of the Mongols and the general massacre of people which took place in those days ... there can be no doubt that if for a thousand years to come no evil befalls the country, yet it will not be possible to repair the damage, and bring the land back into the state it was formerly.

H4.5.4 A Persian chronicler, writing more than 100 years after the event, on the impact of Mongol invasion of the Khwarazmian Empire



H4.5.5 A Persian manuscript illustration depicting Mongols under the leadership of Hülegü Khan (c. 1217–1265), the grandson of Genghis Khan, storming and capturing Baghdad on 10 February 1258. Baghdad was the centre of the Abbasid Caliphate.

The conquest of Samarqand

Samarqand was the greatest of the Khwarazmian cities, with about 500 000 inhabitants including a large community of craftsmen, merchants, Chinese artisans, leatherworkers, goldsmiths and silversmiths.

Genghis Khan wanted to terrorise and demoralise Samarqand's population, so he formed a 'human shield' of prisoners from Bukhara, which he placed in front of his own soldiers to protect them from the arrows of Samarqand's garrison.

After surrender

Samarqand surrendered after only 5 days. The entire garrison of about 30 000 was then slaughtered, and the civilian population divided into sections. Religious leaders were lucky—they were released. Women were singled out to be raped. They were then sent back to Mongolia as slaves, joined in their journey by all of Samarqand's artisans and craftsmen, who were to work at Genghis's court.

Later conquests

Under Genghis Khan's successors, the Mongol Empire expanded to take in all of the Middle East and China. The full conquest of Iran and Iraq began in the 1250s. Baghdad was sacked in 1258. The Mongol forces also desecrated the graves of past leaders, including that of Harun al-Rashid, a highly regarded Muslim leader. It was said that the waters of the Tigris River ran black with ink because of the number of books thrown into it. The loss of learning was greatly mourned. Mongol rule in China under Genghis Khan's grandson Kublai Khan is discussed in Unit H4.6.



H4.5.6 Mounted Mongol warriors in battle, a Persian manuscript illustration, c. 1400

Skills builder

Analysing historical artworks

Select three artistic representations of Mongol expansion from this chapter and analyse each. Choose from Sources H4.0.1, H4.3.6, H4.4.7, H4.4.8, H4.5.3, H4.5.5 and H4.7.1. For each work of art, answer the following questions:

- What do you see?
- What are the key messages the artist is trying to convey?
- What particular elements in the artwork convey this and how?
- How accurately do you think the image represents the event or person being depicted? Explain your answer.

Write a concluding paragraph that identifies key similarities and differences in the way that Mongol expansion has been represented across the three sources, and suggest why this might be so.

Laws and policies under the Mongol Empire

Genghis Khan's *Yasa*—a set of written rules about ancestral traditions, customs and laws—came to represent a day-to-day set of rules for conquered peoples. No copies or even parts of copies have survived, so historians rely on second-hand accounts of it. Genghis Khan's son Chaghadai was responsible for observance of the *Yasa* during his lifetime. Source H4.5.7 gives two examples of law under the Mongols.

> The Yasa of [Genghis] Khan forbids lies, theft and adultery and prescribes love of one's neighbour as one's self; it orders men not to hurt each other and to forget offences completely, to spare countries and cities which submit voluntarily, to free from taxes temples consecrated to God, and to respect old people and beggars. Whoever violates these commands is to be put to death.
>
> Leaders of a religion, lawyers, physicians, scholars, preachers, monks, persons who are dedicated to religious practice, the Muezzin [who call Muslims to prayer in the mosque] ... and those who bathe the bodies of the dead are to be freed from public charges.

H4.5.7 Two ideas from Genghis Kahn's *Yasa*

The Mongols wanted to govern conquered peoples effectively, because they knew that it was subdued populations and large tax revenues that would allow them to continue their military campaigning beyond the empire's borders. But the Mongols initially lacked the basic legal and financial institutions to administer such a large empire.

In the early stages of the empire, the Mongols therefore adopted the alphabet and chancery (diplomatic) practices of the Uighurs, a semi-nomadic Turkic tribe who once lived on the Mongolian Plateau. They also adopted the office of *darughachi*, a multipurpose Mongol official stationed in conquered territory, from another semi-nomadic Turkic tribe, the Khitans.

Darughachis were attached to the *keshig* (personal guard) of Genghis Khan, reported directly to him, and were chiefly responsible for putting down revolts and collecting taxes to be sent back to the Mongolian treasury.

In the later stages of the empire, the Mongols relied more heavily on the already established bureaucracies of the Persian and Chinese empires.

Activities

Remembering and understanding

1. Why was Genghis Khan's siege of Chung-tu called off and then later resumed?
2. Why did Genghis Khan use a human shield in his attack on Samarqand?
3. a. What was the great *Yasa*? Why would it have been important for peoples conquered by the Mongols?
   b. Choose one of the ideas from the *Yasa* that are shown in Source H4.5.7. List the people who benefit the most from this rule.

Applying and analysing

4. Examine Source H4.5.3. In a paragraph, and by making direct reference to the image, contrast the physical position and gestures of Genghis Kahn with those of the other figures. What does this say about Genghis's view of conquered peoples?
5. Create a concept map of the rules of engagement of the Mongol army. Illustrate each of the 'rules' with two examples from the unit that demonstrate the rule in practice.
6. Using information from this unit, including the sources, create a PMI chart that appraises the Mongol treatment of conquered peoples. Include at least three entries in each column.

Evaluating and creating

7. Only a few years after the Mongols sacked Baghdad in the 1258 invasions, its economy began to improve again. Write a series of three letters to a friend in Cairo that explore the impact of Mongol expansion on Baghdad. The first should be dated about 1240, and should describe and illustrate the sights, sounds and activity of the city. The second should be dated during the sacking and should describe the destruction, the mood of the people and your own experiences and fears. The third letter should be about 15 years later and should describe the changes that have (or have not) taken place. Additional research will be required, so begin with a KWL chart to establish what you already know and what you need to find out.

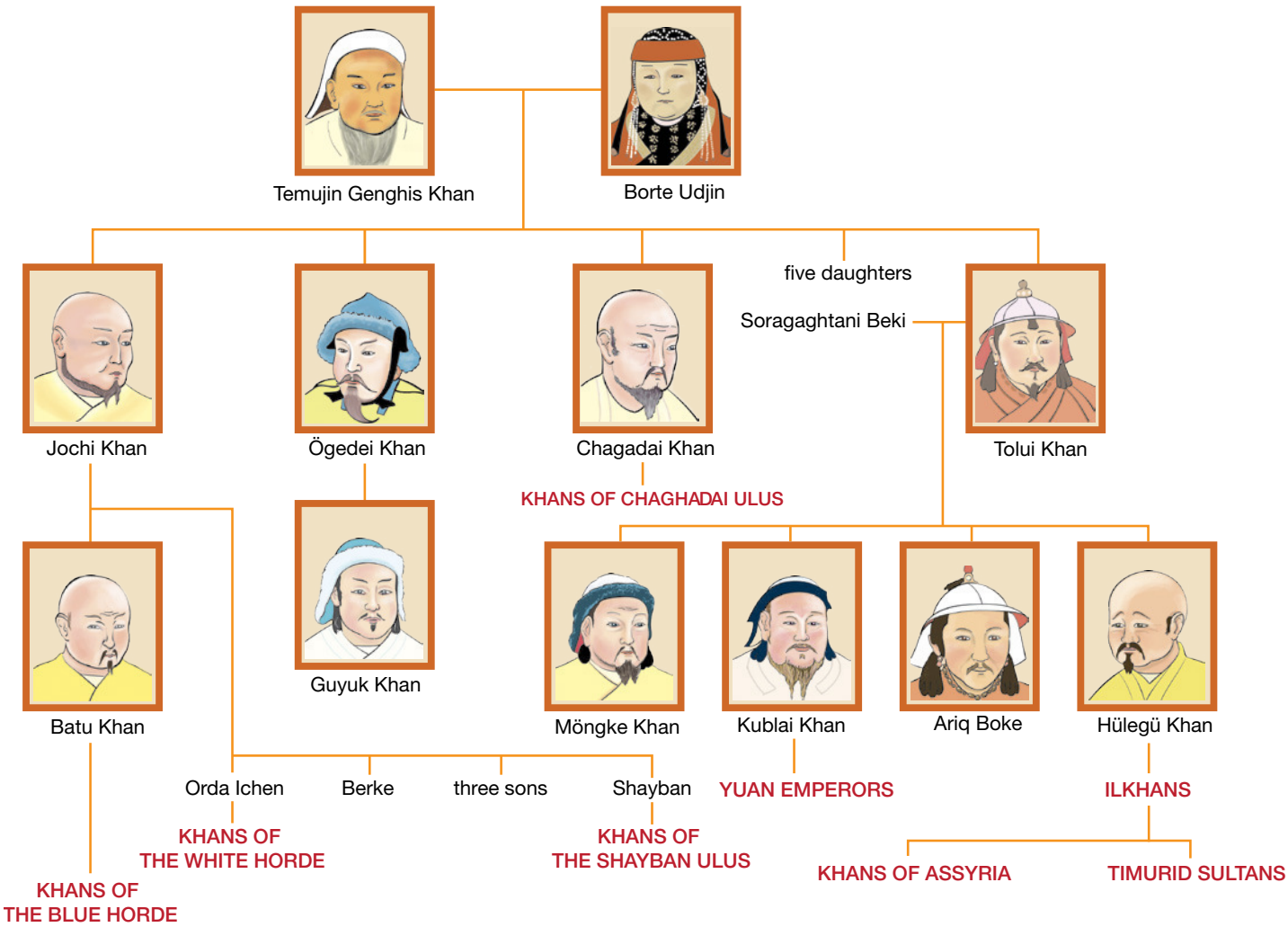
H4.6 Mongol rule in China

Kublai Khan

Kublai Khan (ruled 1260–1294) was the grandson of Genghis Khan, who had died in 1227. Many historians rank Kublai Khan's reign as the most significant in Mongol history after Genghis Khan's, largely because he assumed the role of emperor of China and established the Yuan dynasty.

Origins and influences

Kublai Khan was born in 1215 in Chung-tu, the former capital of the Chin Empire. In typical Mongol fashion he could ride, shoot and wield a sword with great skill from a young age. Unusually, he was both learned and cultured—the outcome of years of study under Chinese and Uighur tutors.



H4.6.1 The descendants of Genghis Khan became very powerful as a result of the Mongol expansion, and established dynasties covering a vast area. Some of their territories can be seen in Source H4.1.1.



H4.6.2 A portrait of Kublai Khan

Rise to power

Kublai Khan succeeded his older brother Möngke as ruler of the Mongol Empire in 1260. It was during Möngke's reign that the Mongol conquest of China's southern Song Empire began, in 1252. Northern and inner China had been held by the Mongols since the Chin gave up their resistance to Mongol rule in 1234.

When Kublai Khan came to power, the Song Empire contained 60 per cent of China's population and its best agricultural land.

It had made recent advances in shipbuilding and ironworking, and had developed gunpowder and the compass. The Song Empire also had an advanced system of government, employing educated 'scholar-officials' selected through competitive written examinations. The Song were finally conquered by the Mongol forces in 1279.

Impact of Mongol rule in China

Agriculture

As Great Khan, Kublai had a serious problem—northern China's economy had stalled and millions of peasants lived in abject (complete) poverty, mostly as a result of the invasions of his grandfather. Kublai Khan therefore ordered that state resources be diverted for the relief of the population; for example, in the free delivery of grain to widows and orphans. Tax exemptions were also introduced in farming areas that had reached the point of collapse, and a reduction in taxation was granted to the producers of silk, an important industry that had declined.

Kublai Khan went as far as to establish an Office for the Stimulation of Agriculture to encourage the re-establishment of farming lands that had been abandoned years before.

Artisans and merchants

Kublai Khan and his Chinese administrators introduced policies to improve the situation of artisans and merchants.

Crafts and the work of artisans flourished (did well) during the Yuan dynasty. Building projects were undertaken to create work for artisans; for example, the construction of a new southern capital city called Dadu (the site of modern Beijing).

Ortaghs (merchant associations) were encouraged. They traded across Asia and changed the traditional, more inward focus of the Chinese. Kublai Khan maintained tight control of the Chinese economy.

He required all foreign merchants to exchange their gold and silver for paper money at the Chinese border. Paper money allowed merchants to access the whole of the Chinese market, which was profitable for them. Paper money also helped Kublai Khan finance military expeditions and also control inflation (when overall prices began to increase—meaning that paper money could buy less than it could before—Kublai Khan could reduce the number of banknotes in circulation, making them more valuable).

Chinese social structure

Despite accepting many of the suggestions of his Chinese advisers, Kublai Khan remained true to his Mongol origins. For example, many key positions in his government were reserved for Mongols and other non-Chinese peoples like the Uighurs. A new class system was also introduced: the highest class were Mongols, followed by the non-Chinese and the northern Chinese. The southern Chinese, who formed the largest group in the population, found themselves in the lowest class.

It is nevertheless clear that Kublai, with the encouragement of his wife Chabi, modelled his rule on the great Chinese emperors of the past and not Mongol ones. This resulted in his formal establishment of the Yuan dynasty in 1271, which is today considered both a successor to the Mongol Empire and an imperial Chinese dynasty.



H4.6.3 A blue-and-white porcelain dish from the Yuan dynasty

Culture

The arts blossomed during the Yuan period, mainly because traditional restrictions on art forms were abolished. Archaeological evidence points to new levels of creativity in ceramics, painting, poetry, calligraphy and drama. Kublai Khan himself was an art collector and a patron to many artists. More than 160 plays of the Yuan era (and the titles of another 500) have survived, covering never before explored subjects.

Religion

During his reign, Kublai Khan provided funds and support for the building of Buddhist monasteries and the translation of Buddhist texts. This was because one of Kublai Khan's closest friends and advisers was a Tibetan monk named 'Phags-pa (1235–1280). 'Phags-pa tutored Kublai and Chabi in the key tenets or principles of Buddhism (Chabi eventually became a Buddhist).

'Phags-pa's Tibetan form of Buddhism went on to become the dominant Mongol faith in China, bringing it into conflict with the indigenous Chinese religion of Daoism. In 1281, monks from both religions were called to debate each other; Kublai supported the Buddhists.

Kublai Khan's patronage of religion extended to Islam and Christianity. Highly regarded for their skills in financial administration, thirty senior Muslim officials served in Kublai's court, and at one point eight of the twelve administrative districts of the Yuan Empire had Muslim governors. Many mosques were built during Kublai Khan's reign. Several Nestorian Christian churches were also built.

Activities

Remembering and understanding

1 Which religions flourished during the Mongols' reign in China and why?

2 Name four arts that grew during the Yuan period. What helped them grow?

Applying and analysing

3 Produce a mind map illustrating Kublai Khan's actions towards different occupational groups during his reign. In a short paragraph, interpret his reasons for these actions: what do they suggest his priorities were?

4 Evaluate Mongol rule in China during the Yuan dynasty. Do this by drawing up a two-column table, one to list positive points and the other to list negative points about Mongol rule. Write three points in each column.

LS H4C

H4.7 Consequences of Mongol expansion

Extent of Mongol conquests and expansion across Asia and Europe

At its greatest extent, the Mongol Empire stretched from its Mongolian heartland to take in all of the Middle East and China. It also made significant incursions into eastern and central Europe, including successful invasions of most of modern Ukraine, Belarus, north-west Russia, Poland and Hungary between 1237 and 1242.

The Mongols did not make as much of their European conquests as they could have because the political climate changed in 1241 with the death of Genghis Khan's son and successor Ögedei. Ögedei's death foreshadowed 10 years of political infighting among Genghis's descendants. Though stability was restored when Genghis's grandson Möngke came to power in 1251, Möngke showed a lack of interest in Europe, instead prioritising new invasions of the Middle East and southern China.

Pax Mongolica

Historians have described the Mongol Empire at its peak as *Pax Mongolica* meaning 'Mongol Peace'. The empire stabilised economic and social life across Asia and Eastern Europe. Communication and trade were easier, especially along the Silk Road, which stretched the full length of the empire. The *Yasa* ensured safe travel by imposing a penalty of nine times the value of original goods stolen.

Geography

The Mongols changed world geography. Their actions unified areas such as east and west Russia and the separate political dynasties of China. This eventually resulted in the formation of the large and influential countries we recognise today.

Mongolia itself emerged as a country as a result of the unification of separate nomadic tribes under the Mongol Empire.

The significance of Mongol expansion

Impact on commerce

An important legacy of Kublai Khan's rule was the extension of commerce both to South-East Asia and to Europe. Kublai Khan's merchant fleets developed markets in India, Sri Lanka, Malaya (modern Malaysia) and Java (modern Indonesia). Arab dhows (a type of ship) were also warmly welcomed into Chinese ports.

It is estimated that about 200 000 ships navigated the Yangtze River each year, loaded with silk, rice, sugar, ceramics, pearls, medicines, herbs, ivory and other luxury items. Europeans had access to these often exotic items via overland highways from the Crimea, through the land of the Golden Horde, to Utrar then across the Altai mountains to Dadu.



H4.7.1 A Japanese illustrated handscroll depicting the samurai Suenaga under fire from Mongol arrows and bombs. This is an eighteenth-century copy of the original thirteenth-century scroll. Kublai Khan's invasions of Japan in 1274 and 1281 were disastrous. The 1274 invasion was abandoned when a great storm caused 13 000 sailors to drown. In 1281, another 60 000 Chinese and Koreans drowned or were slaughtered trying to withdraw from Japan's coastline in the face of another great storm.



H4.7.2 This part of the Catalan Atlas (1375 AD) shows Marco Polo and his companions travelling east during the period of relative peace that modern historians refer to as the *Pax Mongolica*.

Contributions to European knowledge

European knowledge of Asia improved as a result of Mongol expansion. Before the thirteenth century, there were many descriptions of lands filled with men with dog's heads, or with no heads and faces in the middle of their chests. This changed when European traders and ambassadors actually visited the east. For example, Marco Polo's account of his time working for Kublai Khan, *The Travels of Marco Polo*, was widely read in Europe and influenced European notions of geography. (However, because they were so extraordinary, many of his contemporaries thought Polo's tales were fictional. As he is not mentioned in any Chinese account of the time, historians think that Polo exaggerated his role in the affairs of Kublai Khan.)

Impact on the environment

An early but long-lasting consequence of Ghengis Khan's victories in Persia (present-day Iran) was environmental. The irrigation systems that moved water from mountains to fields via underground canals, called ***qanats***, were neglected by the Mongols. This was not a deliberate act of sabotage, but reflected the Mongol lack of interest in governing conquered peoples during the first half of the thirteenth century. When the need for some kind of administration became pressing, foreign officials were left in charge, and the Mongols moved on to their next targets or returned to Mongolia. As a result, the *qanats*, which had been maintained for thousands of years, silted up and agricultural lands turned to desert. Many cities were abandoned.



H4.7.3 An aerial view of hot and dry plains in south-west Iran. Remnants of ancient *qanats* can be seen at the bottom of the image.



H4.7.4 A view of the Hagia Sophia in Istanbul, Turkey, from 1852—a symbol of the resurgence of Islam and the rise of the Ottoman Empire

Impact on religion

The invasion of and rule over Islamic lands by the Mongols could be seen as a low point in Islam's history. However, in some ways it reinvigorated the Muslim world. The unifying but weak Abbasid Caliphate, a dynasty that had existed for 500 years, was abolished, leading to the emergence of new centres of Islamic civilisation like Ottoman Turkey and Mughal India. Also, the Mongols were eventually changed by their contact with the Islamic world. For example, three of the four khanates (lesser Mongol states established during the reign of Kublai Khan) embraced Islam. This brought them closer to their subjects and thereby reinforced their rule and Islam itself.

Did you know?

In 2011, scientists from the Carnegie Institution's Department of Global Ecology estimated that more than 700 million tonnes of carbon (roughly equivalent to the annual amount the world produces today from burning petrol) was removed from the atmosphere as a result of Mongol expansion. As the Mongols killed millions of people, the fields these people would have cultivated became forests again, removing carbon from the atmosphere. The Mongols may have been the world's greenest warriors.

Activities

Remembering and understanding

1 In your own words, describe the impact of Mongol expansion on the Islamic world.

Applying and analysing

2 With a partner, debate the statement 'Genghis Khan and his Golden Horde were history's "greenest" warriors'. Write up your arguments in an extended paragraph to present to the class.

3 What changed for Europe as a result of Mongol expansion? Present your findings as annotations (captions) on a blank map of Europe and Asia.



Polynesian expansion

H5

The **maritime** expansion of Polynesian peoples, originally from southern China, across the Pacific Ocean is one of the world's human wonders. Their journeys occurred over thousands of years. The Polynesians crossed the Melanesian islands of the western Pacific and also settled in eastern or remote Oceania. They created new, partly land-based and partly maritime societies. Since the end of World War II, this migration pattern has continued with hundreds of thousands of modern Polynesians migrating to the United States of America, New Zealand and Australia.

OVERVIEW QUESTIONS

H5A Why did the Polynesian expansion involve such a diverse range of cultural groups?

H5B What skills did the Polynesian people need to survive in their unique island environments?

H5C How did the Polynesian expansion affect the environment?

LS Before you begin

GLOSSARY

archipelago a large group of islands

atoll a flat, often coral island with a lagoon inside the circling land

genetics a method of tracing ancestors by scientific examination of bone, blood and genes

haka a Maori dance accompanied by a chant

iconic representing an idea, belief or culture—like a logo, symbol or insignia

kava a plant used to make a drink that has a sedating (relaxing) effect

Lapita a style of early pottery carried by voyagers into Polynesia

lateen a type of sail, inverted (with the point to the bottom) and shaped like a crab's claw

marae a communal and sacred meeting ground in the Polynesian societies of New Zealand and Tahiti (referred to as *malae* in Samoa)

Melanesia a region of Oceania extending from New Guinea in the south-western Pacific Ocean to the Arafura Sea and eastwards to Fiji

maritime connected with the sea

moa a large, flightless New Zealand bird that was hunted to extinction

mo'ai giant stone statues on Easter Island with human features

moko the Maori word for 'tattoo'

rahui a restriction on an area that bans the harvesting of resources

sherd a fragment of a pot, found in an archaeological excavation

tapa cloth made from bark that has been softened through a process of soaking and beating

tapu a Polynesian concept meaning that something was sacred or forbidden ('taboo' in English)

H5.0.1 Giant *mo'ai* statues carved out of volcanic stone on Easter Island (Rapa Nui), c. 1000–1600 AD

Timeline

Polynesian expansion

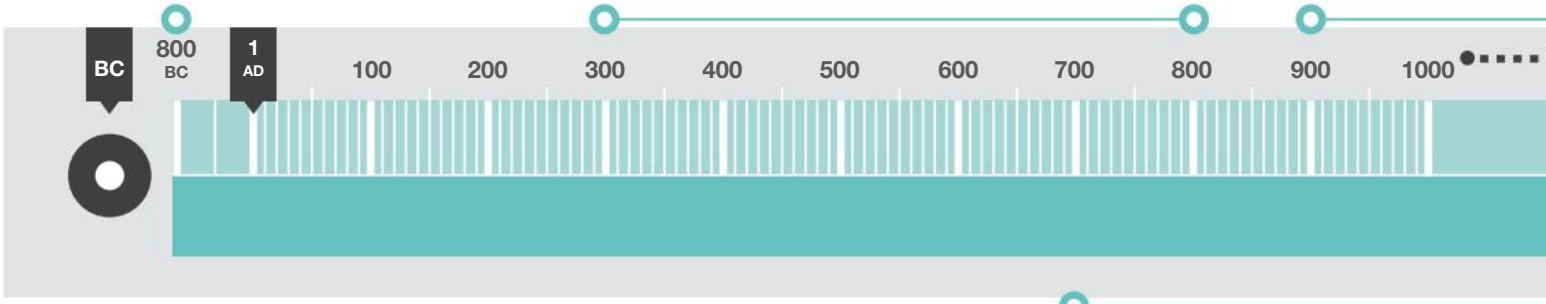
Polynesia is made up of over 1000 islands in one of the most remote parts of the world. Originally settled by seafaring voyagers, it is home to a large number of different societies who share many spiritual beliefs, language roots and cultural practices. Pacific Islander people can be traced back 3000 to 4000 years ago to when people of Asian origin explored and colonised the western Pacific.



A *hei tiki* carved amulet

800 BC
Lapita pottery spreads with voyagers into Polynesia

300–800 AD
Polynesian migration to Hawaii



700–1100 AD
Polynesian migration to Easter Island



The famous Tongan trilithon, *Ha'amonga-a-Maui*, also known as the Gate of Tonga. A trilithon is an ancient monument consisting of two large vertical stones that support a third, horizontal stone. It is said to have been built 800 years ago by a Tongan king of that time as an entrance to his royal residence.

Five of the fifteen giant stone mo'ai statues at Ahu Tongariki, Rapa Nui (Easter Island), c. 1250–1500



900–1200 AD
Haketa is established as Tonga's capital

1250–1300 AD
Polynesian migration to New Zealand

1350 AD
Diverse agricultural systems in use in Hawaii

1500 AD
Basalt rock for tools is traded between American Samoa and Cook Islands

1001 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 AD

1000–1650 AD
288 *mo'ai* are constructed on Easter Island

An engraving showing a long Maori war canoe with carved stern and prow, being paddled by about fifty men, with several men standing, 1769



1756 AD
First use of the term 'Polynesia' in a book by a French geographer

1832 AD
Use of 'Polynesia', 'Melanesia' and 'Micronesia' is promoted by French scholars



This carved figure is of the war god Ku-ka'ili-moku (Ku, the island snatcher). It was made for King Kamehameha I of Hawaii between 1790 and 1810.

H5.1 The geography of Polynesia

The extent of Polynesia

The Pacific Ocean takes up one third of the Earth's surface. Polynesians occupy an area known as remote Oceania.

Polynesia is usually defined as a triangle formed by Hawaii, Easter Island (Rapa Nui) and New Zealand (Aotearoa). This is known as the Polynesian Triangle. The main island groups inside the triangle are Samoa, American Samoa, Tonga, the Cook Islands, Tuvalu, Tokelau, Niue, Wallis and Futuna, and French Polynesia (made up of the Society Islands, Austral Islands, Tuamotu Islands and the Marquesas Islands to the north). Rotuma, 400 kilometres north of the Fijian group, is also home to Polynesian people. They are now officially called 'Fijian' after their incorporation in 1881 into the British colony and later nation of Fiji.

Did you know?

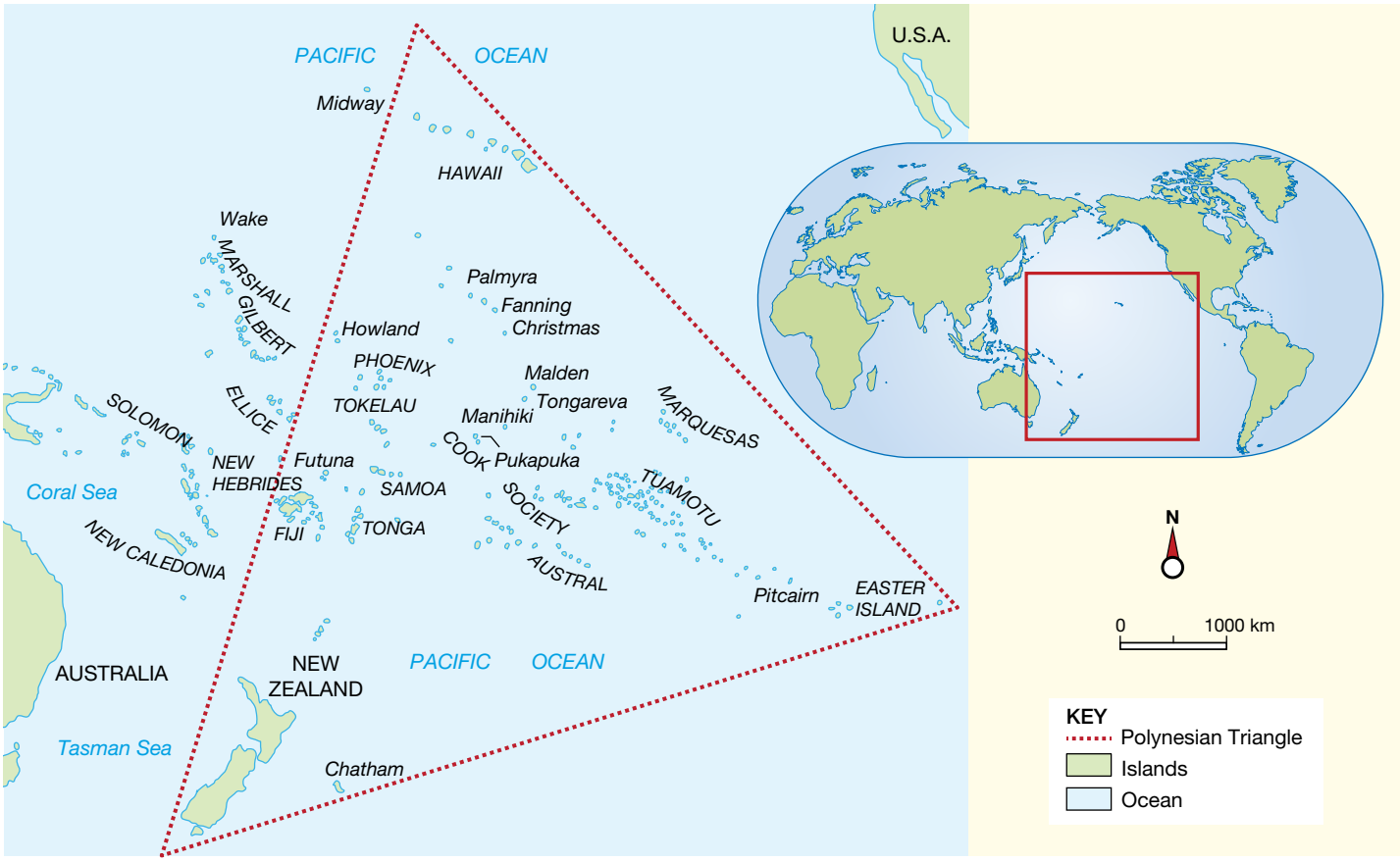
Hawaii is the most recent state to join the United States. It became the 50th state in 1959.

Natural features of Polynesia

The geography of Polynesia is so diverse it cannot be described by a single feature, other than that all Polynesians live on islands.

At one extreme of the diverse geography are the three Polynesian coral **atolls** of Tokelau, which are small, flat and covered by scrubby forest and coral debris. These atolls cover only 10 square kilometres in area. The 1400 Polynesians on Tokelau's three atolls regularly experience droughts. Poor soils means that there are no abundant crops or agricultural food supplies, other than fish from the reef and ocean.

At the other extreme of the diverse range of geographical features in Polynesia are large islands with diverse ecosystems and climates. These range from glaciers and volcanoes to rich flood plains, dense tropical forests and river systems, such as the Hawaiian Islands and New Zealand. Hawaiians, for example, could rely on a wide range of natural resources. They were able to use stone and earth to construct irrigation, terracing and artificial fish ponds, and they farmed ginger, taro, arrowroot, turmeric, banana, sugar cane, breadfruit and sweet potato.



H5.1.1 A map of the Polynesian Triangle

Population distribution

Most Polynesians occupy so-called 'high islands' or the exposed tops of underwater volcanic mountain ranges. The Samoa **archipelago** consists of islands that are the tops of volcanoes, including Savai'i, Manono, Apolima, Upolu, Tutuila and the Manu'a group (the three islands of Ta'u, Ofu and Olosega). This archipelago is now divided into Samoa and American Samoa. Other Polynesians are scattered across small communities. For example, the people of the Cook Islands are spread across six southern volcanic islands and nine northern coral atolls. Some Polynesians settled on a single raised coral island with surrounding steep cliffs, such as Niue, or Makatea in the Tuamoto group. New Zealand (87 per cent) and Hawaii (8 per cent) make up the majority of the land area in the Polynesian Triangle, with the rest of the islands making up the remaining 5 per cent.



H5.1.2 The islands of Hawaii enjoy a tropical climate with lush vegetation.



H5.1.3 The island of Bora Bora, part of the Society Islands in French Polynesia

Adapting to different climates

As the area of the Polynesian Triangle is vast, the environment and climate can vary greatly from one region to another. The Polynesians or Maori (as they were known from the 1860s) who migrated to New Zealand had to adapt to a new environment in a colder Southern Ocean, with wide seasonal variations. The Maori developed a range of maritime, hunting and agricultural techniques to use the resources of their new homeland. They quickly learnt to build cold-climate housing and create warm clothing to help them survive.

Activities

Remembering and understanding

1 Identify the points that define the Polynesian Triangle.

2 Outline some of the differences in natural resources and geography in different parts of Polynesia.

Applying and analysing

3 Given what you now know about the geography of Polynesia, predict which forms of transport would have been important for early Polynesian settlers. Justify your response with evidence from this unit.

4 Why was there so much variation in the quality of environmental resources available throughout Polynesia?

Evaluating and creating

5 a With a partner, conduct research about the traditional navigation systems used by the early Polynesians. You should consider aspects such as the use of the stars, ocean swells and winds, clouds, star pairs, nesting birds.

b Then conduct some research on historical European navigation methods and modern navigation techniques. Compile your research findings into a table.

c Once you have conducted all your research, create a report that evaluates the accuracy and methods of traditional navigation compared to modern or European navigation methods. You may find graphic organisers, such as a Venn diagram, helpful when creating your report.

H5.2 The origin and spread of Polynesian settlers

Migration to the Pacific

Our understanding of the origins and spread of early settlements in Polynesia is largely based on studies of the language and **genetics**. How Polynesians travelled into remote Oceania is also now well known. The designs of double-hulled, **lateen**-rigged voyaging canoes from island nations have become **iconic**. A sail and canoe are now found on many national flags, coins and banknotes, medals, stamps and insignia. Why and when the ancestors of the Polynesians undertook these voyages remains unknown.

Origins of Polynesian settlement

People of Asian origin explored and colonised the western Pacific 3000 to 4000 years ago. This was followed by a long break in migration. Historians believe that environmental factors and population growth may have caused this pause. Falling sea levels and wind direction changes meant that food could not be exchanged so readily and reliably between island inhabitants.

The next series of voyages from **Melanesia** (a region of Oceania extending from New Guinea in the south-western Pacific Ocean to the Arafura Sea and eastwards to Fiji) led to the occupation of remote Oceania 2000 to 3000 years ago.

The achievements of the voyaging ancestors are especially astounding when one considers that they didn't use modern materials, wet-weather gear, engines or communication technologies such as satellite phones and global positioning systems. Although contemporary voyagers can use these resources, many choose to follow their ancestors' building and navigation methods as closely as possible. As a Tongan navigator once said, 'The compass can go wrong, the stars never'.

H5.2.1 Polynesians voyaging in the Pacific is now established as an ancient cultural trait.



H5.2.2 A reconstructed stamped Lapita pot. Lapita pottery features stylised, intricate and geometric patterns.

The importance of archaeology

Archaeology, and more specifically, the discovery of a style of pottery, called **Lapita** pottery (named after a site in New Caledonia where it was first discovered), has also played an important role in tracing the original voyages. Remains of Lapita pottery are found on the islands that the Lapita peoples settled in East Micronesia, Melanesia and West Polynesia. Archaeologists in Papua New Guinea have dated the first Lapita-style pots as being about 9000 years old. Lapita pottery then spread with the voyagers into Samoa, Tonga and Fiji, and finally eastwards, where it eventually disappeared because suitable clay was not available. However, the dating of **sherds** and some nearly intact pots can be tracked from island to island as migrations of Polynesians headed eastwards.

Theories about the origins of Polynesian settlers

Historians debate where the ancestors of the Polynesians came from—either South-East Asia or South America. However, the theory that they were from South-East Asia has gained credibility.

From South America

The theory that the ancestors came from South America was supported by several factors.

- Some foods used by Polynesians, such as the sweet potato, originated in South America.
- The statues found on islands such as Easter Island were similar to those found in Aztec, Incan and Mayan cultures.
- In 1947, Thor Heyerdahl, one of the supporters of the South America theory, used a raft to float from South America to Polynesia, showing that it was possible to cover the 8000 kilometres in the type of raft used by the South American people.

From South-East Asia

The theory that the ancestors came from South-East Asia is more widely accepted and is supported by several factors.

- Polynesian languages have been shown to originate from South-East Asian languages.
- There is evidence that animals such as rats, pigs and chickens were transported from South-East Asia to the Pacific for food. Plants that were transported included sago and coconut.
- In the 1990s, DNA analysis confirmed that Polynesians are related to South-East Asian people, including the Taiwanese.

Theories about the spread of Polynesian settlers

A second debate was whether the ancestors arrived as a result of deliberate voyaging (meaning that they set out to reach the islands of Polynesia on purpose) or drift voyaging (meaning that they arrived by accident). Andrew Sharp argued in his book *Ancient Voyages of the Pacific* (1957) that the settlement of Polynesia was the result of accidental drift of boats during storms. However, this theory did not gain popularity and has now been discounted (considered impossible).

After discussion with his Tahitian guide and observation of Polynesian sailing skills and techniques, Captain James Cook noted in his journal that the Polynesians were accomplished navigators and sailors, with their own systems and processes. More recently, modern sailors have used Polynesian navigation techniques and reproduction canoes to recreate long journeys made by the ancestors. They have clearly demonstrated that lengthy journeys were possible, and confirmed the strength and stability that these double-hulled canoes provide. For these reasons, it is most likely that the ancestors arrived due to the deliberate voyaging.

Activities

Remembering and understanding

1 Where did Polynesian people come from and how long ago did they arrive there?

2 What type of evidence have archaeologists used to support the theory that Polynesian migration headed eastwards?

Applying and analysing

3 a Find out some more information about Thor Heyerdahl. Write a short account describing his 8000-kilometre voyage.

b Research the importance of DNA and explain why this was such an important factor in deciding where Polynesian people came from.



H5.3 Polynesian society

Organisation and leadership

Polynesians developed unique political structures and organisations. Regulation and leadership were needed to:

- manage food supplies
- resolve disputes
- work the land and the sea
- control reproduction and social relationships
- set out lines of inheritance
- engage in warfare, expand influence and defend territory.

The village was the main residential and social organisation for Polynesian societies.

Kings, nobles and commoners

In 1816, Russian observers noted the Polynesians of Nuka Hiva in the Marquesas were a hierarchical society. This means that people were divided into different classes or ranks depending on their wealth and importance or level of influence in society. (Source H5.3.1 describes the social hierarchy at Nuka Hiva.) In Tonga, a Polynesian royal family developed, with a second layer of nobles holding the land, and commoners below. The current King of Tonga traces his ancestry back several centuries. In Hawaii, a warlike Polynesian leader, Kamehameha, united the archipelago in 1810 and created a dynasty or royal family of kings, queens, princes and princesses that ruled Hawaii until 1893.

> The people of Taiohae Bay are divided into three social classes. The first is the higher class superior by birth, services and descent from kings. The second consists of the priests and is descended from the first (class), while the third is made up of the common people. Thirty men from the first class comprise [consist of] the king's council, serve as war leaders and assist in the political governance of the people.

H5.3.1 Fedor Shemelin, a crew member on a Russian ship

A council of chiefs or decision makers, called *ari'i* (or *ariki*, or *ali'i*), existed in most Polynesian societies. There were often two levels of council—a high ruling *ari'i* class and a second level of landowning chiefs. Anthropologists (who study people, societies and cultures) and historians have characterised Polynesia as a collection of 'chiefly societies'.



H5.3.2 The current king of Tonga, King Tupou VI, meeting Queen Elizabeth at Buckingham Palace in 2013

Tapu

The concept of ***tapu*** ('taboo' in English) existed in Polynesia. It meant something that was sacred or prohibited. This concept was used to:

- regulate relationships in small communities
- differentiate between high and low classes
- preserve the environment from overfishing or overharvesting of scarce resources.

Village life

We are given an insight into Samoan village life from the observations of a European visitor. In the following extract, he observes that Samoans do not value possessions because they have all that they need to live from the land and the sea around them. He also claims that these supplies are abundant (plentiful) and freely available to everyone without requiring any effort or intervention from the local people.

> The Samoans are very courteous and dignified ... Property was little reputed [not greatly valued] because nature supplied all that man wanted practically without labour on his part. Rank was however most highly esteemed and the chiefs enjoyed great respect ... The Samoan has ample supplies of the necessities of life provided for him by nature. The breadfruit, the yam, the taro—the last two resemble potatoes somewhat, the former is a faint imitation of bread—many kinds of fruits, the coconut, which is useful for food and drink and its fibre—all grow with little or no cultivation ... The ocean gives a plentiful supply of fish.

H5.3.3 A description of Samoan life. From F. Fox, 'Samoa: A paradise of the South Seas', in J.A. Hammerton (ed.), *People of all Nations*, 1926

Roles of men and women

In Polynesia, male and female roles were strictly defined by occupation, skills and family traditions. For example, ***tapa*** were highly valued in the society and were exchanged in the community as bribes and presents. Groups of Tongan women worked together to beat the bark to make huge mats of *tapa*. However, the ceremonies in which the *tapa* were given as bribes or presents were led by men, and men made the necessary speeches and gestures. In the **kava**-drinking ceremony, which is held at important meetings, women were often involved in the making and presentation of the drink, but it was otherwise a male-dominated ceremony. (Kava is made from the beaten roots of the pepper plant.)

Did you know?

In the Society Islands, now part of French Polynesia, a class of entertainers called *arioi* travelled around performing, using humour and satire to criticise local leaders and events.

An overview of Polynesian societies

Tonga and Samoa

For much of its history, Tongan society was ruled by three royal dynasties. The third dynasty, the Tu-i Kanokupolu, still hold power today. The centre of the ruling class was the Mu'a district on the large island of Tongatapu. Tongan society used *fono*, councils consisting of leading elders and chiefs, to make laws according to the demands and decisions of the king.

Samoan society also used *fono*, but included a wider range of individuals with more freedom than people had in Tonga. Villages based on *aiga* (family landholding groups) were able to elect their representatives to *fono* to speak on their behalf. The Samoans maintained open ceremonial areas called *malae*. They were also known for developing a very sophisticated and complex form of body tattooing.



H5.3.4 The kava-drinking ceremony is common not only across Polynesia but in Melanesian cultures also. Here is a Fijian group gathered around a kava bowl at the Christchurch Exhibition, 1906.



H5.3.5 A Samoan village *malae*, which is the open area in front of the village buildings, used for public and ceremonial meetings. Photograph taken c. 1900

Tahiti

Tahiti was previously a major centre of pre-European voyaging, and the Tahitians maintained widespread trade networks with other island groups. In 1774, Captain James Cook witnessed a large gathering of canoes carrying over 7000 people attending a festival. The great ***marae*** of Taputapuatea, in the district of Opoa on the island of Ra'iatea, was the main religious centre, where the god Oro was worshipped.

Tuamotu, Mangareva, Rarotonga, Austral Islands and Te Henua Enata

The Tuamotu island chain is 1300 kilometres long and includes a large number of mainly low-lying atolls and small islands. The Tuamotuans were known for being particularly good sailors. The Mangareva island group lies further south and was heavily populated.

Rarotonga and the Austral volcanic island chains stretch 2500 kilometres. Rarotonga was a main centre of activity for the islands around it. Ra'ivave, in the Austral Islands, is known for its large statues, a form of stone carving shared with Easter Island and Te Henua Enata (Marquesas Islands). The woodcarvings from Rarotonga and the Austral Islands were some of the finest in Polynesia.

The islands of Te Henua Enata are somewhat isolated from other groups. They have very rugged coastlines and mountainous interiors. The people constructed the finest stone house platforms in Polynesia and built many high fortresses for defence. The islands are also known for their strong tradition of almost full body tattooing, a practice that continues today.

Hawaii and Aotearoa

The Hawaiian islands were one of the most densely populated island groups in Polynesia, with a population of possibly up to 500 000 people when Captain James Cook arrived in 1778. The islands were settled from Tahiti and Te Henua Enata as early as 300 AD. The deep lush valleys of Hawaii yielded (produced) some of the richest crops in Polynesia.

The Maori settled Aotearoa (New Zealand) from East Polynesia about 1000 years ago. Adaptation to the colder climate took about two centuries. Many tropical crops either did not grow, or only grew in the northern part of the North Island. The Polynesian pig and chicken, which thrived (did well) in some regions of Polynesia appear not to have survived in the colder climate. The Maori developed a sophisticated level of carving and tattooing.

Easter Island (Rapu Nui)

Easter Island (Rapa Nui) is the most isolated island in Polynesia, lying 2000 kilometres from its nearest neighbour, Rapa. It is mostly known for the tall ***mo'ai*** stone statues along its coastlines. Rapa Nui has a tragic environmental history (see Unit H5.4). When Polynesians first arrived, the island was fully forested. However, the forests had completely disappeared by about 1500 due to overharvesting (meaning that all of the trees were cut down and not replanted) by the local population. With the loss of the forests, streams and drinking water supplies dried up. Crop yields declined as wind, rain and sunlight eroded topsoils. Society broke down and bitter fighting erupted. By the time Europeans arrived in 1722, the society was in disarray.



H5.3.6 Taro farm fields in Hanalei Valley, Kauai, Hawaii

Activities

Remembering and understanding

1 Outline in a paragraph the characteristics of a typical Polynesian village, using Sources H5.3.3 and H5.3.4 as a guide.

2 Summarise the characteristics of each Polynesian society discussed in this unit in a table. Create a column for each society. Using the information in the unit, write down two or three facts for each.

Applying and analysing

3 In Source H5.3.3, the author uses the phrase 'with little or no cultivation'. In Europe, crops needed to be sowed or planted in prepared soil, fertilised and weeded. The European observer was surprised at the lack of cultivation needed to grow food in abundance. What was he trying to say about Samoan food production and labour?

4 a Based on the information in this unit, create a PMI chart that examines the positives and negatives of a hierarchical society with nobility and classes, such as was found in many Polynesian societies.

b Discuss the relationship between Polynesian chiefs and ordinary people or commoners. Use evidence from Sources H5.3.1 and H5.3.3 to support your answer.

5 Examine Source H5.3.5. How do the features of this village *malae* make it suitable for large meetings and ceremonies?

6 Using your answers in Questions 1 to 5 to help you, produce a mind map (with mainly illustrations and a few key words and phrases) to demonstrate your understanding of Polynesian societies.

Evaluating and creating

7 Historians and anthropologists have different theories about why society on Rapa Nui (Easter Island) broke down. In pairs or small groups, research online to see how many different theories you can discover. Choose one and create a presentation for the rest of the class that explains the theory you thought sounded the most convincing.

LS H5B

H5.4 Use of environmental resources

Environmental resources of Polynesian societies

Low and high islands

The Polynesian ancestors encountered varied natural resources during their voyages. Many islands in Polynesia are coral atolls or 'low' islands (islands formed by coral reefs). These generally have poor, sandy soil, limited fresh water and are difficult to farm. These factors make the islands more challenging for humans to inhabit. Polynesia also has some 'high' or volcanic islands, which host diverse and lush ecosystems, for example Hawaii and New Zealand. High islands often have more fresh water and are easier for humans to inhabit.

Flora

Islands such as Fatu-Hiva in the Marquesas have largely undisturbed rainforests. Many other formerly forested Polynesian islands have, over time, been cleared for agriculture and logging.

Before the arrival of humans in New Zealand, for example, it is estimated that about 80 per cent of the land was forested. Now, that figure is closer to 23 per cent.

Fauna

Birds are common in Polynesia, as they are able to move across the large expanses of water between the Polynesian islands. The area around New Zealand is a particularly rich source of seabirds. Coral reefs and their abundance of marine life are also scattered throughout the Polynesian region.

New Zealand: A case study

In New Zealand, the Maori encountered a fertile but varied land, completely different from anything they had seen before. The Maori became hunter-gatherers and crop farmers who used the sea, rivers and forests and created gardens, which they then cultivated. The settlements where hunter-gatherers and crop farmers concentrated are called 'resource islands'. Each 'resource island' had access to gardens, fishing, rock supplies, seals, forest foods and hunting.

The Maori found a variety of new and useful plants and animals, including the **moa** (a large flightless bird), geese, snails, karaka berries, bracken fern roots (*aruhe*), cabbage trees, forest birds such as parakeets, and new rocks and minerals for making sharp-edged tools.

When the Maori arrived in New Zealand, they also brought with them a wide range of tools, food resources, plants and animals. By studying remnants found in archaeological digs, archaeologists have been able to determine when these plants and animals first arrived in New Zealand carried by the original voyagers:

- sweet potato
- pearl shell, as fishing lures
- yam
- taro
- *kuri* (Polynesian dog)
- *kiore* (Pacific rat)
- *aute* (paper mulberry plant used for making *tapa* or cloth).

The following source is an extract from a history of New Zealand. It presents two views of the Maori—as environmentally considerate people and as people who did not care about the environment.

> The Waitangi Tribunal suggested that Maori were more ecologically minded than Pakeha [European settlers] ... Tangata whenua [Maori people] saw themselves as part of their environment, not dominating or subduing it; they were its guardians who held resources in trust as taonga (treasures) for future generations ... Ecologists project a different view. They have portrayed the first Polynesian settlers not as environmentalists but as humans who typically exploited nature's bounty ... The late settlement of New Zealand presents a case study of how humans plundered their environment, its flora and fauna until in the long term they reached an accommodation with it.

H5.4.1 Extract from P. Mein-Smith, *A Concise History of New Zealand*, 2005

This source is from a book about New Zealand. It discusses the importance of the wide range of weather variations in New Zealand and the impact on the early Maori settlers there.

> In considering everyday life in early New Zealand it is important to appreciate the considerable climatic variation across the country … The first settlers successfully introduced a limited range of cultivated plants from their tropical homeland … As people adapted to the seasonal changes in New Zealand, they developed an annual round of preserving birds in their own fat, drying fish and shellfish, drying bracken-fern rhizomes [root-like stems of native ferns] and storing garden produce … Some shortages would have been met by gifts and exchanges between regions.

H5.4.2 Extract from J. Davidson, 'Explorers and pioneers: The first Pacific people in New Zealand', 2012

Use of environmental resources

The early Polynesian settlers had a major impact on the land, plants and animals as they searched for food supplies. The success of their migration relied on nutrition—the supply of starches from plant foods and fats from birds, for example—to keep them healthy and ultimately for their survival. To provide nutrition, voyagers initially relied on what they carried with them. However, they quickly learnt what natural resources were available where they landed. As a result, their food production techniques changed as they adapted to their new environment. For example, they grew crops in large communal gardens (*mara*) and improved the soil by adding nutrients and other materials such as gravel, charcoal, shell and sand (for better drainage). They also planted trees closer to their settlements to attract birds that they could trap and eat.

Did you know?

The art of surfing, known as *he'e nalu* in the Hawaiian language, was first observed by Joseph Banks during the first voyage of James Cook, when the *HMS Endeavour* was in Tahiti.

The extinction of the moa in New Zealand

The moa was a flightless bird native to New Zealand. It is believed that the tallest of these birds measured up to 3 metres. Until the arrival of the Maori, the moa only had one predator, Haast's eagle. Maori people hunted the moa for its meat, eggs, bones, skins and feathers. As well as being a food source, the bones were used for fishhooks, while the skins and feathers were used to make clothing. The moa was extinct by around 1400, about 150 years after the arrival of the Maori. Its extinction was caused by a combination of hunting and habitat loss. In addition, Haast's eagle, which relied on the moa for food, also became extinct around this time. Over time, the Maori developed more sustainable practices, such as restricting the collection of species that were in short supply.



H5.4.3 The New Zealand moa, a flightless bird that was hunted by the early Polynesian settlers

The exploitation of Easter Island's palm trees

Archaeological evidence suggests that when the first Polynesian settlers arrived, Easter Island (Rapa Nui) was covered in lush vegetation, including numerous palm trees. However, by 1722, when Europeans arrived, the island was an almost barren environmental disaster. There was a range of reasons for this disaster, two of which involved the palm tree.

- The islanders overharvested the palm trees, both for building canoes and for moving the large stone statues (*mo'ai*) for which Easter Island is well known. In order to move the statues, large ladders were built using palm trees.
- The Polynesian rat, which was brought by early settlers, ate the seeds of the palm trees, preventing the trees from regenerating.

The extinction of the Easter Island palm tree had several ongoing consequences, including the decline in the building of statues and canoes, a decline in fishing activity and therefore a loss of an important food source.

Islanders ate more birds as a result, but the birds (which spread seeds and pollinated the trees) also became extinct. This led to food shortages and more land clearing in attempts to grow food. Drinking water supplies dried up. Conflict and the near disintegration (breaking down) of the society followed.



H5.4.5 Birdman petroglyph on Easter Island



H5.4.4 Easter Island was once almost entirely covered in forest. By 1722 it was barren. Instead of trees, nearly 900 giant *mo'ai* statues dominate the landscape.

Religious and supernatural threats

The story of the Birdman Cult of Rapa Nui (Easter Island) demonstrates the use of religion and supernatural beliefs to conserve precious and dwindling resources, and to limit conflict and violence. Polynesians believed that the dead had a relationship with the living, and that the dead would provide things such as fertile land and animals if the living provided offerings to them. This was called the ancestor cult and had been the basis of spiritual belief for the inhabitants of Rapa Nui.

As society broke down as a result of the environmental crisis, there was fighting between tribes, the statues (*mo'ai*) were being smashed and toppled, and some evidence suggests that cannibalism was occurring.

In response to this crisis, the Birdman Cult emerged, in about 1540. The belief developed that the way of maintaining important contact with the ancestors was through one person. This person was the winner of the annual Birdman contest, the Birdman (*tangata manu*). The bird and egg had always been considered symbols of fertility. Now they became symbols of the freedom and strength that the Rapa Nui were looking for, as their society crumbled and resources disappeared.

The competition took place at Orongo, where young men from all tribes on the island would swim out from shore, about 1.5 kilometres, to the frigate bird's nesting area. Whoever claimed the first egg to be laid was named the Birdman.

The Birdman's tribe had the first pick of the limited resources left on the island, with the remainder distributed among the other tribes in an orderly manner. This method of distributing resources solved much of the fighting that had been occurring over food and survival.

LS H5C

Activities

Remembering and understanding

1 What were the serious challenges faced by the first Maori migrants to New Zealand?
2 Explain the concept of 'resource islands'.
3 Read Source H5.4.2. Describe the impact of climate variation on food supplies in New Zealand.
4 Outline what occurred to the moa after Polynesian settlers arrived in New Zealand.

Applying and analysing

5 a Why do you think the islands that are coral atolls have poor soil while the volcanic islands have rich soil?
  b With a partner, create two flow charts that explain some of the possible impacts of poor and rich soil on the different Polynesian island communities.
6 With a partner, take sides and write two paragraphs. One paragraph should argue that the Maori were excellent managers of the environment, and the second that they had a destructive impact. Use evidence from this unit to support your arguments. Present your arguments to the class.
7 Using the information in this unit, devise a cartoon strip that illustrates the chain of events leading to the environmental problems on Easter Island (Rapa Nui). In your cartoon, show some of the lessons that could be drawn from this example.
8 Imagine you are at a crisis meeting of the leaders of the disintegrating Rapa Nui society. In a small group, script and perform a short role-play that demonstrates how the proposed Birdman Cult is intended to help your society and what it will involve. Remember, it is possible that not all tribal leaders would have been in favour of this proposal.

Evaluating and creating

9 One of the most recognisable features of the Polynesian Triangle is the giant statues or *mo'ai* of Easter Island. There are various theories about why they were created by the Rapa Nui people. Conduct research on the *mo'ai* to create an AVD or slide presentation about these giant statues. Include:
- a description and explanation of what a *mo'ai* is
- a map showing their locations on Easter Island
- an annotated sketch of a *mo'ai* of your own design, giving your *mo'ai* an appropriate name
- a theory as to why the *mo'ai* were created
- a theory as to how these giant statues were transported, explaining your theory with a diagram.

H5.5 Everyday life in Maori society

Theories about the origins of Maori society

There are different views about the origins of Maori society. Some historians argue that there was an initial Maori society with its own practices from the time of arrival around 1300. They believe that this society remained largely unchanged over time.

Others argue that the Maori in the eighteenth and nineteenth centuries were different from their ancestors. These historians believe that between the thirteenth and fifteenth centuries, the Maori transformed many aspects of their society, including the economy, politics and social organisation. They argue that the reasons for these changes were related to environmental, population and cultural changes as the Maori expanded their settlement across the two islands. Some of the features established by 1500 included collective identity, landownership and defence, residential settlements, art and woodcarving, a warrior class, a common language, *hapu* (sub-tribes or clans) and public meeting places or houses such as *marae*.

Social and cultural features

Oral tradition

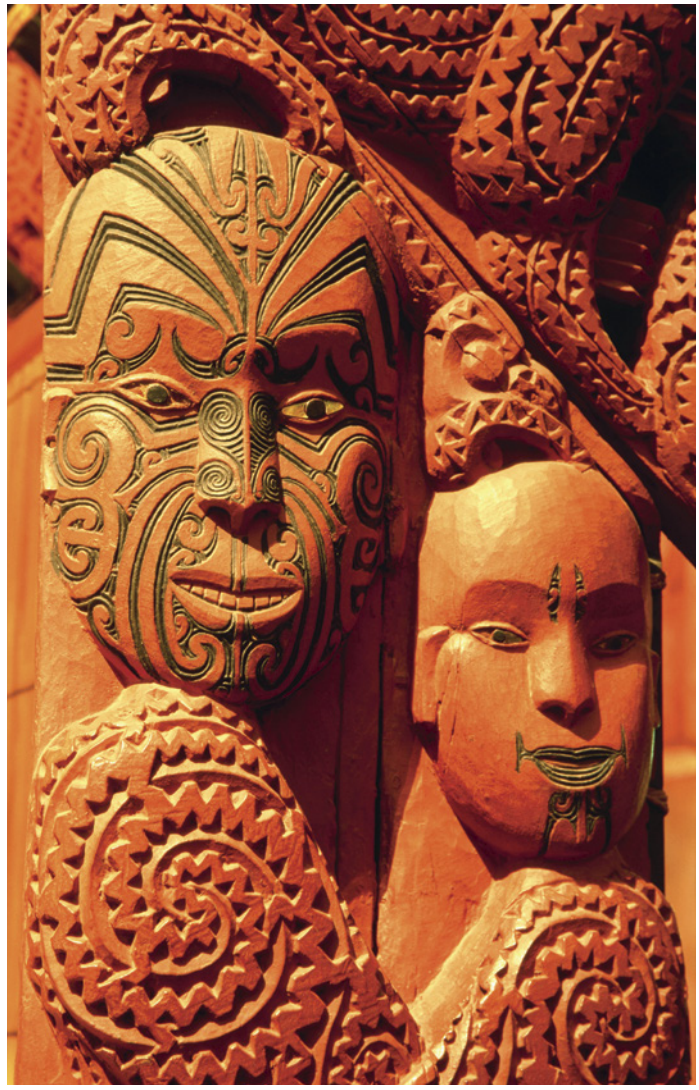
Like many of the cultures of the Polynesian Triangle, Maori history and stories were passed on through an oral tradition of storytelling. Knowledge of ancestors was conveyed through these stories, and people therefore identified with a group that was based on common ancestry. Stories about gods and other mythical inhabitants of the land were also part of the oral tradition, and were an important way for Maori people to foster and maintain a deep connection to the land.

Did you know?

Maori, also known as Te Reo, is the language of the Maori people. It evolved in New Zealand over hundreds of years, and was never written down. Instead of books and literature, stories were passed down through the generations by song (*waiata*) and through symbolism in carving, knots and weaving. When European missionaries arrived in the early 1800s, they started to record the Maori language by writing it down. Since 1987, it has been one of New Zealand's official languages, alongside English.

Spiritual beliefs

The Maori believe in a marriage between the sky father (Ranginui or Rangi) and the earth mother (Papatuanuku or Papa). Their children include all the gods of nature, such as the gods of the sea, stars and forests. There were also a number of goddesses in the Maori tradition. The Maori had a strong belief that humans were connected to nature. There were many gods associated with nature and the Maori people had strict guidelines controlling the use of natural resources.



H5.5.1 A carving of Rangi and Papa from a storehouse. Now held at Auckland War Memorial Museum, New Zealand

People were believed to have power called *mana*, which came from their ancestors. Some, like firstborn children and *tohunga* (priests), were thought to have more *mana*. The concept of *tapu*, something that was sacred or restricted, was also important to the Maori. A ***rahui*** was a particular form of taboo that was used to protect a specific area. For example, a *rahui* could be placed on a river to prevent it from being overfished. Sometimes ceremonies were conducted to remove the *tapu* and make something free from restriction. There were also rituals for people to follow when gathering food or going to war. These rituals were enforced by the *tohunga*.

Skilled artisans

The Maori were skilled carvers of wood and stone, which can be seen in their weaponry, tools and through the depictions of stories in carvings at the front of their meeting houses. Additionally, they were weavers of clothing and baskets. All of these skills were necessary for their early survival.

The role of women

Women were highly respected and honoured for their ability to produce life. Traditionally, they had a role in decision making in the tribes. In some tribes, both men and women were able to speak at community meetings at the *marae*, but in others only the men were allowed to speak. Women were thought to have the ability to remove *tapu*, and often participated in ceremonies for this purpose.



H5.5.2 A *hei tiki* carved amulet, made of greenstone. *Hei tiki* were usually worn by women, and were thought to overcome infertility.



H5.5.3 A maori *marae* or meeting house



H5.5.4 A lithograph of an abandoned Maori *pa* on the eastern headland of Paroa Bay, Bay of Islands, by Louis Auguste de Sainson, 1833

Key political features

Traditional Maori culture was a communal one, with the idea of the family (*whanau*) being central. The society was divided into leaders, commoners and slaves (captured from other tribes). The tribe (*iwi*) was the largest political grouping in traditional Maori society. Within the tribe, the clan (*hapu*) was a group of about 500 people from related family groups. The *hapu* was economically self-sufficient and would farm, hunt and gather as a group. A village could have one or a few *hapu*.

The most powerful leader, or chief, of a *hapu* was called an *ariki*. He was usually the firstborn son of a firstborn son. In addition, there were other leaders in the *hapu*, who had also inherited their authority.

These leaders were called *rangatira* and have been described as chieftains. They had practical knowledge and wisdom about their own clan.

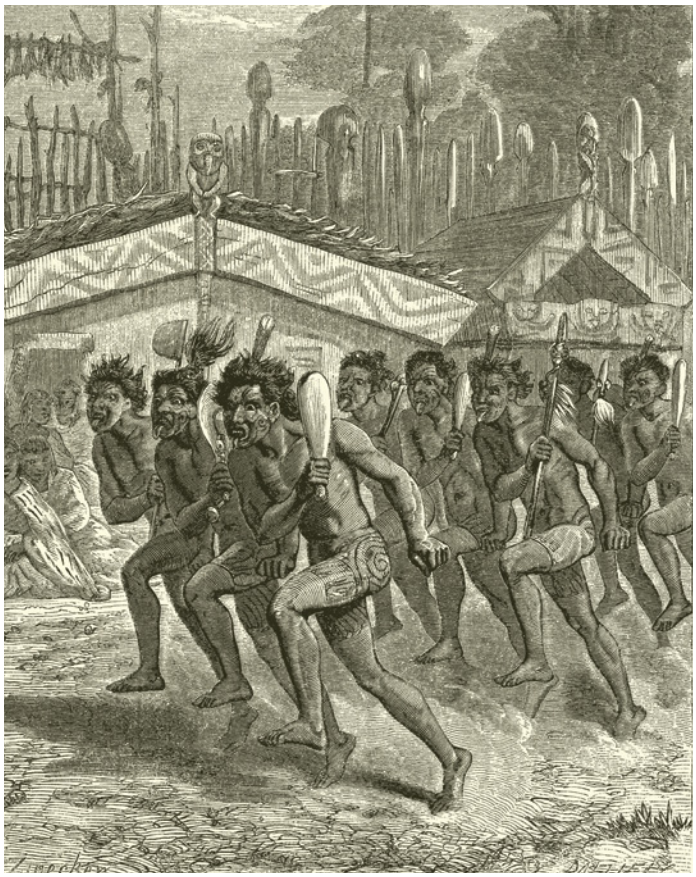
Public meetings to discuss and decide issues affecting the community were held in the communal meeting space. While members of the clan were allowed to speak, it was the *ariki* whose decision was final.

Warfare

Warfare was an important aspect of traditional Maori life. Wars were often fought over resources such as land and food. Sometimes, they were fought for revenge or to improve the reputation of a tribe. Hand-to-hand combat was the preferred method of battle, using weapons such as spears and pointed staffs. At the end of war, often the victors would intermarry with the defeated tribe as a sign of peace. Fortified structures, called *pa*, were used from the 1500s onwards to defend tribal areas. These were difficult to breach, so strategies such as surprise were often used.

> The position of the Maori women in the tribe was unusually high ... and [their] influence was correspondingly great. The women took an active part in all the business of life, sharing in the work and the amusements of the men, assisting in the defence of their fortified village and accompanying war parties on expeditions. Moreover their advice was sought on all matters; in fact it was by no means reckoned extraordinary for a woman to take part in the deliberations of the war council ... a woman could become a chief, transmitting the dignity to her children.

H5.5.5 Extract from A.H. Hingston, 'The women of Polynesia', 1908



H5.5.6 *The Maori War Dance*, an engraving from 1870

Key economic activities

The exchange of gifts was the foundation of the Maori economy. Although tribes were largely self-sufficient, they would exchange gifts of needed resources with other tribes, therefore creating the expectation of a gift in return. There was no real trade conducted beyond what was needed. Resources were generally readily available, although after the extinction of the moa, for example, tribes gradually developed more sustainable practices.

Within each tribe, each member of the *hapu* was allocated a job for which they had the skills. Some, who had special skills, were given the title of *tohunga*, but were still expected to contribute to ordinary work when they were not exercising those skills. *Tohunga* were believed to have close connections to the gods, which gave them supernatural powers. Their knowledge of rituals gave them a priest-like status and they were very powerful in the communities.

Activities

Remembering and understanding

1 Examine Source H5.5.1.
   - **a** Describe the key features of this carving.
   - **b** Explain why Rangi and Papa are important in Maori creation traditions.
   - **c** Which figure do you think is Rangi and which one is Papa? Explain your answer.

2 Explain who had the most power and who had the least power in traditional Maori society.

Applying and analysing

3 **a** Produce a diagram that illustrates the social structure of traditional Maori culture.
   - **b** Then, with a partner, create a PMI chart that explains the strengths and weaknesses of this social structure.

4 Examine the statement: 'The exchange of gifts was the foundation of the Maori economy'. Do you think this would have led to a more or a less stable society? Give reasons for your opinion. Discuss further with a partner and report your conclusions to the class.

5 Examine Source H5.5.4. Explain which features of this *pa* would have made it useful during warfare.

Evaluating and creating

6 Research a traditional Maori story and create a work of art to represent that story. You could make one of the following:
   - painting
   - mural
   - short play re-enacting the story
   - diorama
   - song or chant that retells the story.

7 Investigate the meaning of *rahui* in both traditional and modern-day Maori society. Write a newspaper article explaining the concept and how it can be used today.

H5.6 Cultural legacies of Maori society

Ta moko

Moko was originally the term for tattoos created on men's faces, but has since become used to describe all Maori tattoos. Moko were a sign of status in traditional Maori society. However, not all powerful members of society had moko. Some of the most powerful leaders, including women whose lineage was related to powerful men, were considered to be so *tapu* (sacred) that they were not tattooed.

Spiritual origins

Ta moko is believed to originate from the story of Niwareka (a woman) and Mataora (a man), who were married and lived in a time when tattooing did not exist, but when patterns were painted on the body. Mataora one day hit his wife, who fled to her father, Uetonga, who inhabited the underworld. Uetonga was a *tohunga ta moko* (tattooing craftsman). Uetonga confronted Mataora when he arrived in search of Niwareka and showed him how Mataora's painted-on markings were useless, as they easily wiped off. Mataora then received a moko from Uetonga, but his face was so swollen that his wife did not initially recognise him when he asked for forgiveness. Uetonga passed on his knowledge of moko to Mataora, who brought it back from the underworld when he returned, reconciled with Niwareka. Mataora then became an esteemed (admired and respected) *tohunga ta moko*.



H5.6.1 Maori activist Tame Iti with traditional moko

The process of tattooing

The process of applying a moko was extremely painful. The design to be applied was first drawn onto the person's body with charcoal and water. Then, the chisel was hammered into the skin using a mallet. Blood was wiped away and the pigment was then applied into the cuts.

Moko were generally applied to the shoulders, lips and chin of women and to the face and buttocks of men. Facial tattooing was not always applied; it depended on the person's status in the tribe.

Originally, the dried and sharpened bones of birds were crafted into chisels, which were then used to apply the tattoo. Soot was carefully produced by the burning and processing of particular trees that produced resin (sticky tree sap).

The soot was mixed with oil to provide the pigment. After contact with Europeans, metal chisels, and later needles, were used to apply moko. These new tools meant that designs became more accurate and intricate.

The role of the *tohunga ta moko*

The *tohunga ta moko*, or tattooing craftsman, was highly regarded in traditional Maori society and had a priest-like status, partly because he dealt with blood. Not all tribes had their own *tohunga ta moko*. They would seek out tattooing experts from other tribes and provide gifts such as food, weapons and cloaks in order to secure their services.

The *tohunga ta moko* worked in an area separate to the main areas inhabited by the tribe. His work was considered to have a high level of *tapu* and sometimes the temporary structure used for tattooing would be burnt down after the tattooing to cleanse the area and remove the *tapu*.

Meaning of tattoos

The meaning of the moko often depended on where it was placed on the face. Tattooing on the left side of the face related to the father's family and ancestors, and tattooing on the right side of the face related to the mother's family and ancestors.

Moko traditionally could either signify bloodlines and tribe, or skills and qualifications. They were often quite specific to particular tribes. Markings on the forehead showed ancestry, while markings on the nose demonstrated skills or qualifications.



H5.6.2 A woman with moko and feathers. American Photographic Company, 1870

Some of the earliest tattoos were created to demonstrate grieving at the deaths of family members. At funerals, women would sometimes *haehae* (cut) themselves with shell and then put soot in the wounds. The tattoo would then act as a reminder of the loss of a family member.

The revival of tattooing

More recently, Maori tattooing has experienced a strong revival. There is renewed interest in Maori identity and culture. Many Western cultures now see tattooing as fashionable and desirable.

Haka

History

A **haka** is a dance accompanied by a chant. Many people believe that a haka is only a war dance, but it traditionally refers to a range of dances, some of which were performed by women. Haka were performed at gatherings and festivals, often as a form of entertainment along with other games and activities.

In traditional Maori mythology, the sun god and one of his wives had a son, Tane-rore. It was believed that the shimmering appearance of the sky on hot days was Tane-rore performing a dance for his mother. This movement is the basis of the haka.



H5.6.3 A war dance by Maori warriors depicted in a painting, *War Dance*, New Zealand, Joseph Merrett, c. 1845



H5.6.4 The New Zealand rugby team, the All Blacks, performing the haka at a test match against Italy in Rome in 2016



H5.6.5 Workers prepare a traditional Maori hangi in Auckland, in honour of the 2010 visit of Prince William, Duke of Cambridge.

The war haka

The war haka, often seen today in popular culture and sport, was traditionally performed before battle in order to motivate the warriors and to intimidate the enemy. It involved a group of warriors performing in unison, shouting, rolling eyes, slapping thighs and chanting. It was considered to be a bad omen if the warriors did not perform in time with each other. The war haka has been more recently adopted by sporting teams such as the New Zealand rugby team, and is commonly performed before games.

Hangi

A hangi is a pit dug into the ground, in which food is cooked slowly, using hot stones and steam as the heat source. Foods such as meat, shellfish and root vegetables were cooked using this method.

Method of construction

A large pit was dug into the ground. Rocks to be heated were selected carefully, as some types of rock explode at high temperatures. Volcanic rocks were the best type to use for a hangi. These large rocks were heated by building a fire in the pit. The fire was allowed to die down and then sticks, leaves or bark were placed on the rocks to protect the food from burning. The food was wrapped in leaves and placed on top. This was covered with wet leaves or cloths, and dirt was placed over the hole to seal in the steam.

The food was allowed to steam for several hours, and emerged with a gentle smoked flavour. By the nineteenth century after the arrival of Europeans, wire baskets were widely used instead of bark and leaves. Hangi are still used today at *hui*, Maori social gatherings.

Activities

Remembering and understanding

1. Explain how the technology used for *ta moko* changed over time and how this affected the appearance of the moko.
2. Describe the status of the *tohunga ta moko* in traditional Maori culture.
3. What function did the haka serve in traditional Maori culture?
4. Explain how the hangi method of cooking allowed traditional Maori to use resources available from the natural environment.

Applying and analysing

5. Why were some of the most powerful people in traditional Maori society not tattooed?
6. Examine Sources H5.6.3 and H5.6.4.
   - **a** What features of traditional Maori society can you see in these sources?
   - **b** What else can you deduce about the society from these sources?



Renaissance Italy 4

The Renaissance was an innovative and intellectual period in European history. It began in the fourteenth century AD and continued until the early seventeenth century. The term **Renaissance** is from the French word for 'rebirth'. It refers to the wisdom and learning, and art and architecture of the ancient worlds of Greece and Rome, which were rediscovered by the philosophers, scholars and artists of the wealthy **city-states** of Italy during this time.

OVERVIEW QUESTIONS

4A What conditions in Italy from the fourteenth to the seventeenth century enabled the Renaissance to flourish?

4B What were the key beliefs and ideas in Italy at that time and how did they shape the Renaissance?

4C What significant people, beliefs and achievements from this period have influenced the world today?

LS Before you begin

4.0.1 An artist's impression of Leonardo da Vinci with a model of his 'flying machine', one of his many inventions

GLOSSARY

Black Death a devastating plague (disease) that killed millions of people in Europe between 1348 and 1353

camicia a Renaissance shirt

chemise an undergarment that women of the Renaissance wore under their dress

city-state a region that is ruled by a major city

Copernican theory a theory proposed by Polish astronomer Copernicus in 1543 that the sun was at the centre of the universe

corselet a close-fitting garment worn under clothing and tightened to give women more curves

doublet a coat worn by men in the Renaissance

gonfaloniere the head of the *signoria*, chosen every 2 months

guild an organisation of craftsmen and merchants that set standards of work and protected its members

heresy a belief that contradicts a religious belief

humanism a concept that people should focus on the best values and behaviour of humankind rather than rely on God for guidance

mannerism a style of sculpture that featured distorted human anatomy

Medici family a significant banking family who ruled Florence for 300 years until 1737

patron a person who supports and gives money to artists, writers or musicians

perspective a technique used to give depth and dimension in an artwork

realism the painting (and also sculpting) of subjects realistically or truthfully

Renaissance from the French word for 'rebirth', a revival of interest in knowledge and learning, based on classical Greek and Roman philosophy and scientific explorations

signoria a council that ran the Florentine government

Timeline

Renaissance Italy

The Renaissance was a time of new ideas that led to outstanding achievements in areas such as the arts and science. The spirit of the Renaissance spread from Italy to other parts of Europe, helping pave the way to our modern world.

KEY EVENTS

1397 Giovanni de' Medici moves to Florence

1417 Brunelleschi begins work on the dome of the Florence Cathedral

1429 Cosimo de' Medici inherits family bank and rises to great power in Florence

1469 Lorenzo de' Medici ('Lorenzo the Magnificent') takes power in Florence

1494 The Medici are forced out of Florence

AD

1350 1400 1500

1360 1380 1400 1420 1440 1460 1480 1500

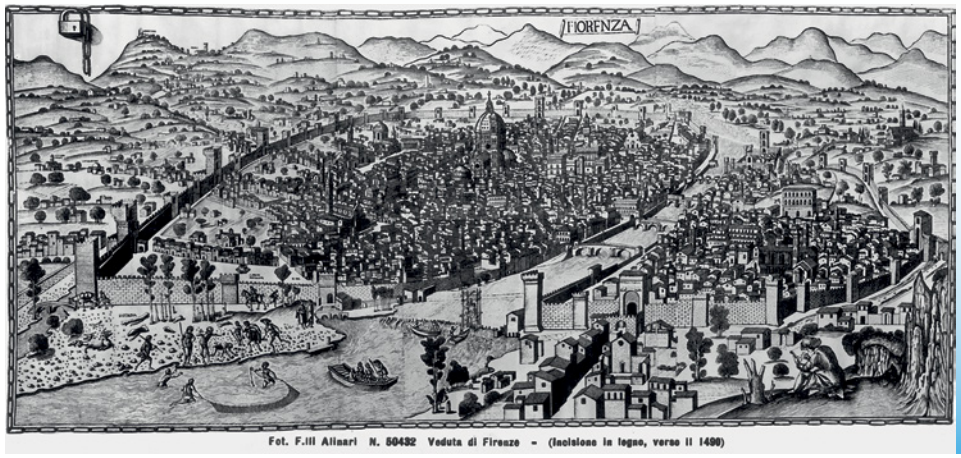
KEY ACHIEVEMENTS

1452 Leonardo da Vinci is born

1454 Gutenberg Bible published after Johannes Gutenberg invents the printing press

1486 Pico publishes his collection of 900 treatises (essays) and is condemned by the Catholic Church

1498 Leonardo da Vinci paints *The Last Supper*



The *Carta della Catena*, a view of Florence in 1490. The domed building on the left bank is the Florence Cathedral.



St Peter's Basilica, commissioned in 1505 and completed in 1626. An engraving from 1702



A portrait of Michelangelo, by Jacopino del Conti, c. 1535

KEY EVENTS

1521
Luther sets up Protestant Church

1517
The Reformation movement begins

AD

1501 — 1600 — 1650

1520 — 1540 — 1560 — 1580 — 1600 — 1620 — 1640

KEY ACHIEVEMENTS

1504
Michelangelo creates the statue of David

1505
Leonardo da Vinci paints the *Mona Lisa*

1506
Construction of St Peter's Basilica begins in Rome

1513
Niccolò Machiavelli publishes *The Prince*

1543
Copernicus announces his theory that the sun is at the centre of the universe

1609
Johannes Kepler develops three major laws of planetary motion

1610
Galileo Galilei invents the telescope



A portrait of Lorenzo de' Medici, by Raphael, 1518, privately owned. His clothes are an example of how rich people used luxury items, such as Florentine textiles, to display their power and wealth.

4.1 Italian city-states

Italy during the Renaissance

At the time of the Renaissance, Italy was not a unified country but instead was made up of a number of independent city-states. A **city-state** is a region that is controlled by a major city. These cities were some of the largest and richest in all of Europe. The Renaissance began in the city-states of Italy with prominent (important and well-known) wealthy families supporting artists, thinkers and scientists to develop new ideas. The supporters of the arts became known as **patrons** (from the Italian word for 'father'). They hired artists to decorate their homes with beautiful paintings and sculptures. Most of the people who lived in the city-states were craftsmen and merchants. Some of the most important city-states were Florence, Venice, Milan, Naples and Rome.



4.1.1 Italian city-states, c. 1500

Florence

Florence (located in north-central Italy) is considered the birthplace of the Renaissance. Florence grew powerful through its trade in wool. It was ruled by the powerful **Medici family**, who supported artists such as Leonardo da Vinci. Florence was known for its textiles and as a centre of banking.

Venice

The island city of Venice was known for its glass products. It became a powerful city-state through its trade with the Far East. During the late thirteenth century, Venice was the most prosperous city in Europe.



4.1.2 A view of Venice, Italy

Did you know?

Up to two-thirds of the medieval European population died in the **Black Death** epidemic of 1347–51. This caused great economic, social and cultural changes, which led to the Renaissance.

4.1.3 Features of Italy's most important city-states

City-state	Political features	Economy
Florence	A small merchant oligarchy mostly run by the Medici family. (An oligarchy is a country or organisation run by a small group of people; in this case, a city-state.) The Medici played a large part in the political development of the city and as patrons of the arts.	Known for textile production and banking.
Venice	Governed by a small group of merchant-aristocrats known as the Great Council. The Great Council appointed all public officials and elected a senate from which the powerful administration group of ten was chosen. One member of the Great Council was elected 'doge' or duke—the ceremonial head of the city.	Commercial trade mostly with the Far East. Venice imported products such as spices and silk.
Milan	Governed by a monarchy under a series of powerful dukes, first under the Visconti family and then the Sforza family from 1450.	Famous for metalwork including suits of armour. Heavily taxed its people.
Naples	Ruled by monarchs.	Trade—Naples is a centrally located port in the Mediterranean Sea.
Papal States (Rome)	The Pope ruled both the Catholic Church and the city-state of Rome. There were also some independent states such as Urbino, Bologna and Ferrara.	Agriculture, mining (of salt, sulphur, iron and alum) and manufacture (of wool, silk, hemp and ceramics).



4.1.4 A panoramic view of Florence during the Renaissance

Activities

Remembering and understanding

1 What was a city-state?
2 Which were the most important city-states in Italy during the Renaissance?

Applying and analysing

3 Explain the significance of the meaning of the word 'patron'.
4 Examine Source 4.1.3. Draw a concept map to illustrate the way in which the Renaissance city-states were governed.
5 Assume the point of view of either a craftsman or a merchant. Write a postcard about your city-state, showing why it is the best place to live during the Renaissance.

4.2 Everyday life

Social classes

In most city-states in Italy at the time of the Renaissance there were four levels of society:

- the nobility
- the merchants
- the craftspeople and shopkeepers
- the poor, unskilled workers and peasants.

The nobles controlled most of the land, and lived on large estates outside the cities. They served in government and the military.

The wealthy merchants lived in the cities and were involved in activities such as shipbuilding and banking. They began to demand more of the luxuries previously available only to royalty and the nobility, and used their wealth to support artists of the day.

The craftspeople and shopkeepers lived in the cities. Many belonged to **guilds** where they learnt their crafts. Guilds are organisations of craftsmen and merchants that set standards of work and protected its members.

The unskilled workers lived in the cities, where they had very little job protection. The peasants lived in rural areas, often working on the estates of the nobility. Life was very hard for them, and starvation was common.

Food

In the wealthier classes, many medieval dishes were carried over into Renaissance cooking. These dishes included roasts, pastas, tarts and pies. For dessert, nobles ate fruit, jellies, nuts and cheese. Wealthy people began to use ingredients from the New World such as peppers and potatoes, as well as spices and sugar. They also started to eat their meals using forks and plates (first made from wood, then metal and then porcelain).



4.2.1 A kitchen scene during the Renaissance, painted by Vincenzo Campi, c. 1580–1590, Milan, Italy

The lower classes generally ate beans, pasta, soup (mostly made from vegetable scraps) with a type of black bread, and a type of porridge made from grains such as oats. Meat was very expensive and was preserved with salt (which was also expensive) and so they did not eat it very often.

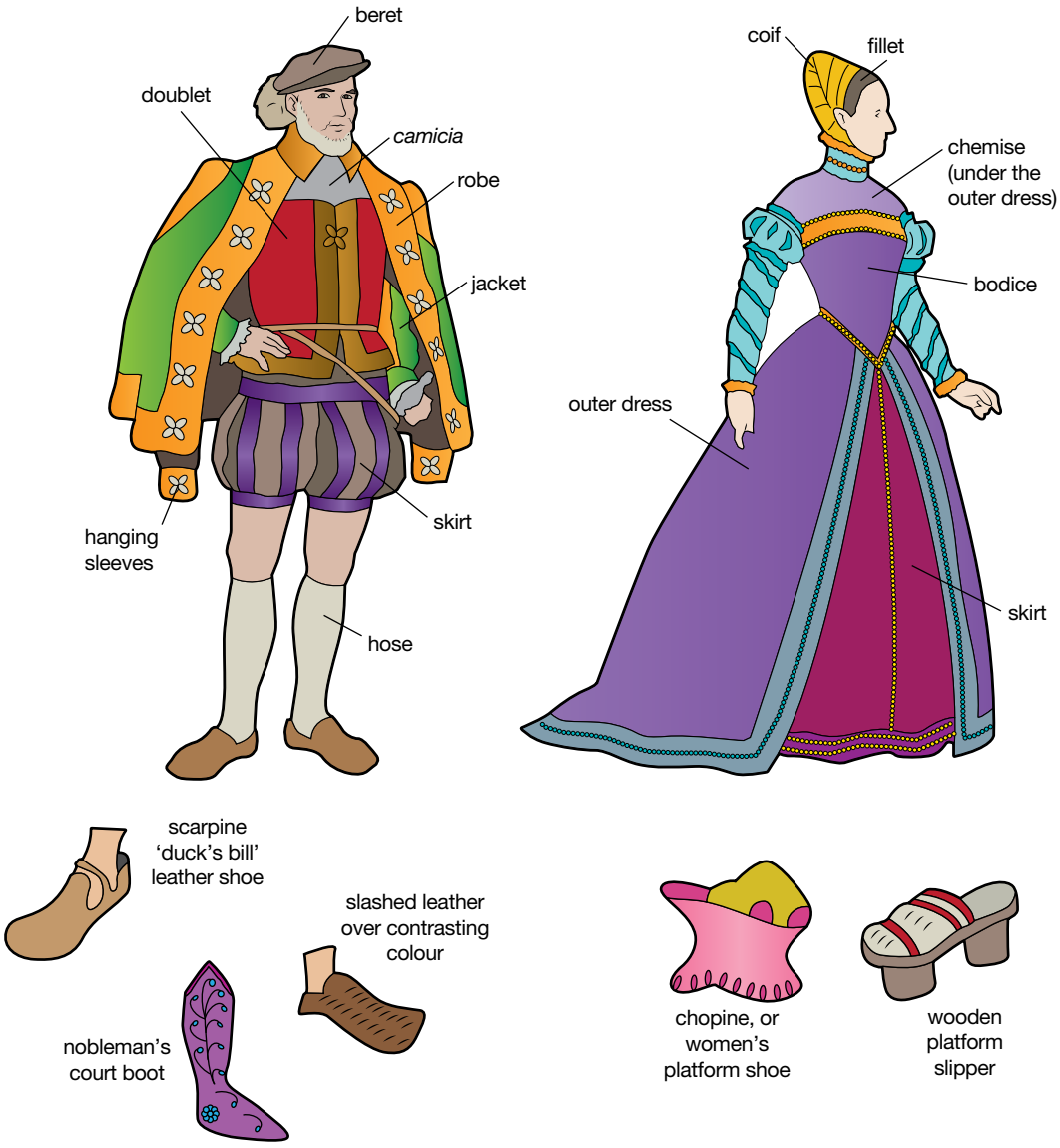
People generally drank beer or wine with their meals because the water was unclean.

Clothing

For most of the Middle Ages, clothing had been generally dark and relatively simple. During the Renaissance, clothing became more elaborate and detailed. A person's status in life determined the clothing they wore, and there were laws about which classes were able to wear which types of clothes.

One law permitted common people to wear only one colour of clothing. Wealthier people used fashion to show their status and success. Peasants were likely to have had only one or two sets of clothing.

Men usually wore tights or stockings (hose), a shirt (***camicia***), a close-fitting jacket (**doublet**), an outer jacket and a hat. Some officials might also wear a robe over the jacket. Women wore long dresses with high waists over a **chemise** (or undergarment). Later, the **corselet** (a close-fitting garment worn under clothing and tightened to give women more curves) became popular. Wealthier women had their clothing embroidered with gold and silver thread, and wore expensive jewellery.



4.2.2 Renaissance clothing for men and women

Houses

Wealthier Italians during the Renaissance became some of the most extravagant builders in Europe. They built magnificent palaces and houses filled with beautiful art and objects.

Poorer people lived in single-room dwellings. Those with a bit more money began to live in larger homes, although these would still have been very dark, cold and uncomfortable compared to the houses of today. People's possessions were also simple. A typical Renaissance family was likely to have a few kitchen utensils and some basic furniture. It was not unusual for an entire family to share a bed.

Children

During the early Renaissance, children were generally regarded as small adults from the age of about seven. They were expected to dress, talk and act as adults but had very few rights.

Children from poorer families were expected to work, while the children of merchant and artisan families began to learn the trade of their parents as soon as possible. Wealthier families may have sent their children to tutors to learn the classics, such as grammar, mathematics and Latin.

4.2.3 *Children's Games* (detail), a 1560 painting by Flemish Renaissance painter Pieter Breughel the Elder



In some areas during the later Renaissance era, children in the middle and upper classes were permitted to be children; to play and enjoy life. Education became more important during the Renaissance, for boys especially. In privileged families in Italy, such as the Medici family, the children also learnt philosophy and logic, and perhaps skills such as the arts of war and riding. However, for children born to peasant families, little changed.

Experiences of women

The lives of women during the period of the Renaissance were marked by a lack of independence. A woman was controlled by her parents as a child. Once she married, she was controlled by her husband until either she or he died. Marriage was most often arranged by a woman's parents, and she did not choose her husband. Women who were not married were not permitted to live by themselves and were required to live with a male relative or in a convent. Women of all classes were expected to perform the duties of a housewife and run the home. Peasant women were expected to work alongside their husbands in the fields in addition to running the home. Middle-class women helped to run the business of their husband. Even higher class women were discouraged from participating in the arts and sciences.



4.2.4 *Flora*, by Bartolomeo Veneto, c. 1520. The painting is believed to be of Lucrezia Borgia, the illegitimate daughter of Pope Alexander VI and a notable woman of the Renaissance.

Activities

Remembering and understanding

1. Describe the social structure of most Italian city-states during the Renaissance.
2. Explain how the clothing worn by a peasant differed from that of a wealthy person.
3. Describe what life was like for women during the Renaissance.

Applying and analysing

4. Examine Source 4.2.1.
   - **a** Describe what is taking place in the kitchen.
   - **b** Make a list of the food items you can see being prepared.
   - **c** Using the food items create a Renaissance 'master chef' menu for a banquet.
5. Examine Source 4.2.3.
   - **a** Summarise the games you can see being played in the picture.
   - **b** Draw a Venn diagram to compare and contrast the games played during the Renaissance with the games played today.
   - **c** Write one or two sentences outlining the conclusions you can make from your Venn diagram.
6. Examine all the sources. Draw an annotated diagram to illustrate how the daily lives of people during the Renaissance were affected by the social class to which they belonged.
7. Choose one group mentioned in this unit (for example a wealthy woman or a peasant man). Use all the sources in this unit to write a short diary entry of what a typical Renaissance day may have been like if you were that person.

LS 4A

4.3 Art and architecture

How the Renaissance changed art

The new ideas, attitudes and ways of looking at the world during the Renaissance were reflected in the art of the time. The new idea of **humanism** put a focus on people and changed how artists painted and what they painted. Renaissance artists, inspired by the works of ancient Greece and Rome, put people at the centre of their artwork. Artists depicted people and nature in a realistic fashion in their paintings and sculptures, not merely as religious symbols. During the Renaissance, artists benefited from the patronage of rich merchants, and some of the world's greatest achievements in painting, sculpture and architecture were created in cities such as Florence, Milan, Venice, Siena and Rome.

Painting

During the Middle Ages, paintings were mostly about religion. Renaissance artists began to break out into other subjects and to develop new techniques. **Realism** is the term given to the painting (and also sculpting) of subjects realistically or truthfully.

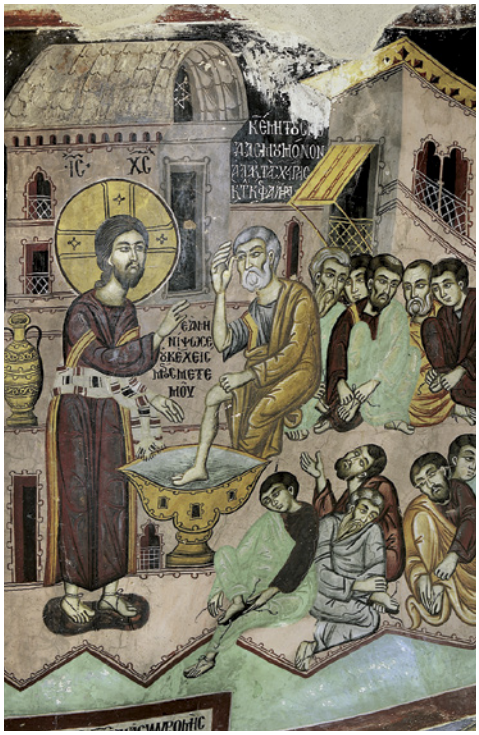
Some of the new techniques used included:

- ***perspective***—used to show depth and dimension in artwork. Medieval artists had previously only created two-dimensional art
- *balance and proportion*—drawing subjects so that they are the correct size in comparison to each other
- *the use of light and dark*—many artists began using light and shadows in their work to add drama and perspective.

A few of the significant artists during this period were Giotto di Bondone, Michelangelo Buonarroti, Sandro Botticelli, Leonardo da Vinci and Raphael.

Did you know?

Michelangelo di Lodovico Buonarroti Simoni (1475–1564) was a sculptor, painter and architect. Some of his most famous works were the *Pietà* and *David* (sculptures), the scenes from Genesis and the Last Judgment in the Sistine Chapel (fresco paintings), and his contribution to St Peter's Basilica in Rome (architecture).



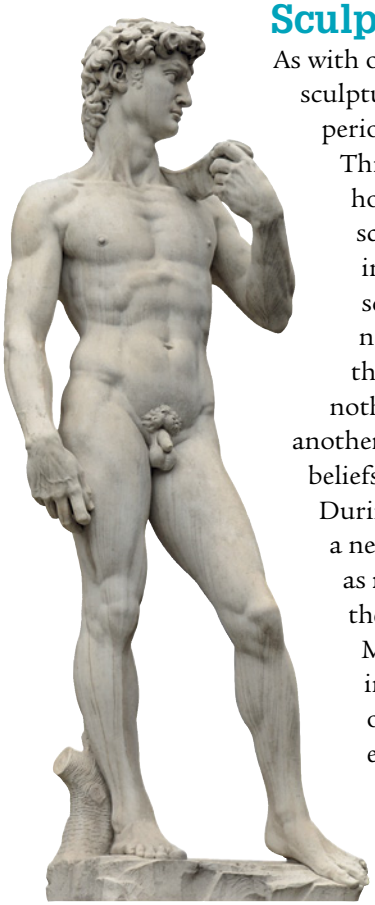
4.3.1 This fresco at the Ayios Neophytos monastery in Paphos, Cyprus, is an example of a medieval painting that lacks perspective.



4.3.2 *The School of Athens* by Raphael, a good example of perspective in painting, c. 1509

Sculpture

As with other forms of art, sculpture changed during the period of the Renaissance. Throughout this time, however, the focus of sculpture was on realism in the human form. The sculpting of naked or near-naked bodies also showed that the human body was nothing to be ashamed of; another departure from medieval beliefs controlled by the Church. During the late Renaissance, a new approach known as **mannerism** affected the work of sculptors. Mannerism resulted in distorted anatomy of sculptures, such as elongated (unusually long) limbs of the body.



4.3.3 The statue of *David* was created by Michelangelo in 1504 for the city of Florence. It has long been considered one of the greatest artworks of the Renaissance period. Held in the Uffizi Gallery, Florence, Italy

Architecture

As with painting, architects of the Renaissance looked to the ancient Greeks and Romans for inspiration for building design. The features of Renaissance architecture included:

- square or symmetrical shapes
- Roman-type columns
- arches and domes (again taken from Greek and Roman designs)
- flat ceilings—this was different from the open ceilings in the Middle Ages
- symmetrical facades (the fronts of buildings).

Filippo Brunelleschi

Filippo Brunelleschi (1377–1446) was an early Renaissance architect and engineer. He had a significant influence on his contemporaries (other architects and artists alive at the same time) and later Renaissance artists with his rediscovery of linear perspective. Brunelleschi's most famous architectural work was the dome he built for the Florence Cathedral, or *Il Duomo di Firenze* as it is called in Italian. The dome was built with the help of machines that he designed especially for the project. It was based on classical principles that Brunelleschi had rediscovered from ancient Roman architecture.



4.3.4 Florence Cathedral

Activities

Remembering and understanding

1 Define the terms 'realism' and 'mannerism'.
2 Identify and list the features of Sources 4.3.1 and 4.3.2 that distinguish each one as being a medieval or Renaissance work of art.

Applying and analysing

3 Use your understanding of the Renaissance concept of perspective to draw what you see from a window of your classroom. Use Sources 4.3.1 and 4.3.2 to help you.

4.4 Science and technology

Understanding the world

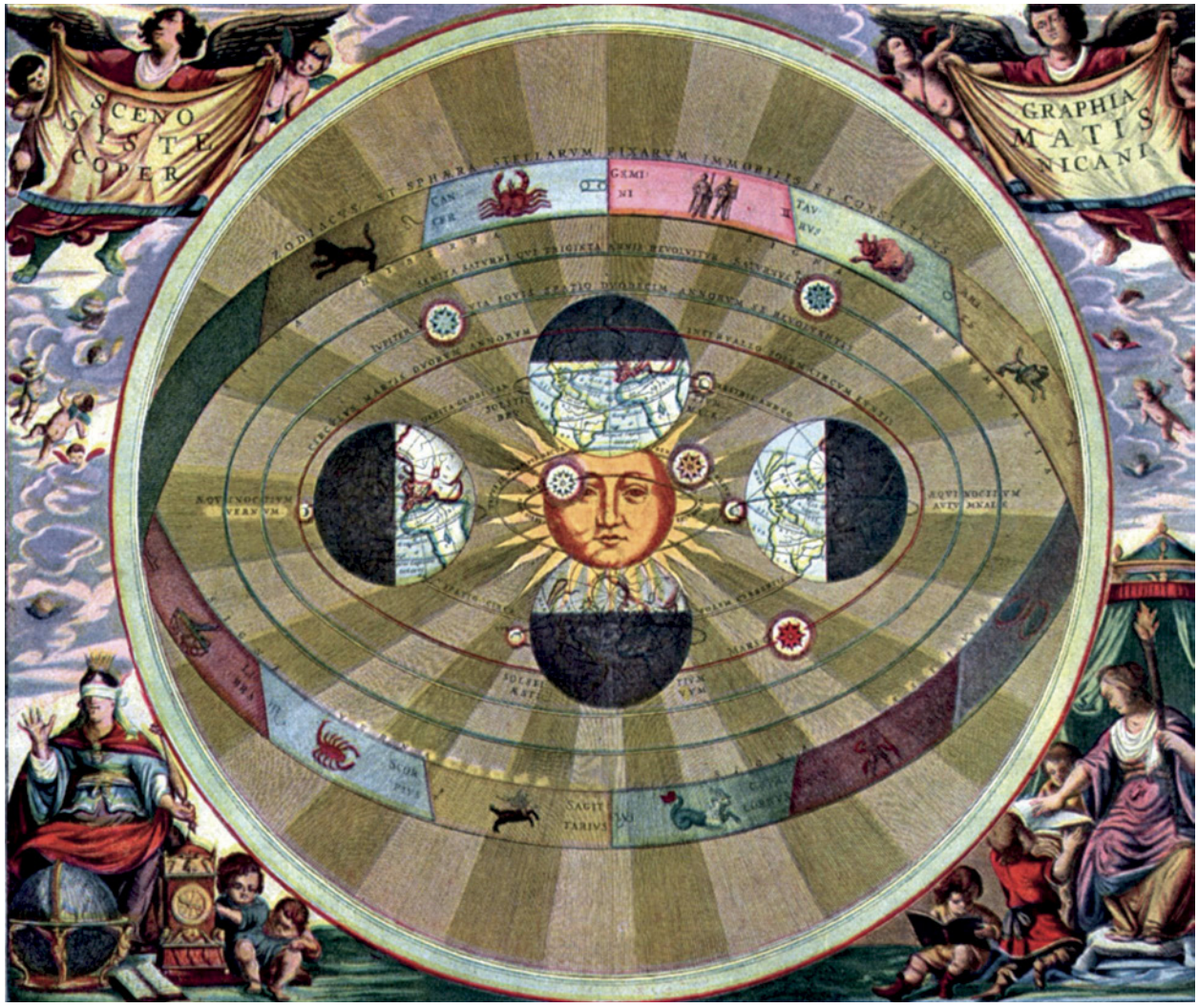
As people embraced new sources of knowledge and entered a new period of thinking during the Renaissance, they began to want to understand the world around them. Studies of the world and how it worked started a new age of science. During this time, science and art were closely linked and often great artists, such as Leonardo da Vinci, would study sciences such as anatomy to have a better idea of how to represent the body in their art.

Scientific principles

The scientific thinkers of the Renaissance proposed the idea that the philosophies and principles of the ancient Greeks might not be completely accurate.

Their new system of philosophy developed what is now called the scientific principles of observation, enquiry and experimentation. This system replaced the previous acceptance of the traditional view of nature and the surrounding world as forces beyond human control, following no rules that humankind could understand.

The application of these new scientific principles during the Renaissance began a period of significant development known as the Scientific Revolution. This was the emergence of modern science that transformed the views people had of society and nature. Increased understanding and knowledge in the areas of astronomy, chemistry, physics, mathematics, engineering and geography took place.



4.4.1 An illustration representing the Copernican or heliocentric system of the universe. Nicolaus Copernicus (1473–1543) was a mathematician and astronomer. He developed the astronomical model known as heliocentrism, which was a major event in the history of science. An engraving by Andreas Cellarius, 1661

Astronomy

Some of the developments in astronomy during the Renaissance:

- In 1543, Nicolaus Copernicus observed the sun and how it related to the rest of the universe. As a result, he came up with the theory that the sun was at the centre of the universe (heliocentrism). His views are commonly known as the **Copernican theory**. Before this, people had believed that the Earth was the centre of the universe. Of course, at the time not many people believed Copernicus.
- In 1609, Johannes Kepler developed three major laws of planetary motion, which enabled the orbits of the planets to be calculated mathematically. This was of enormous significance to the study of both astronomy and physics.
- In 1610, Galileo Galilei invented the telescope, which allowed him to discover four moons orbiting Jupiter, and also advanced the study of astronomy greatly.

Technology

The most important invention of the Renaissance was the printing press. This significant technological development was invented by Johannes Gutenberg, a German craftsman and inventor. Gutenberg developed a way of printing books using moveable type; that is, it was possible to reuse separate pieces of type by simply rearranging the individual letters in the required order to form different words. This revolutionised printing as it allowed information to be distributed to a wide audience quickly and easily. Gutenberg's invention spread after he printed 200 copies of the Bible and sold them at a fair in Germany. By 1500, more than 2500 cities in Europe had printing presses and over 35 000 books were in circulation.

Other significant inventions during the Renaissance include the first mechanical clock, the flushing toilet, the screwdriver, the submarine, cannons and muskets.

Did you know?

Leonardo da Vinci, as well as being an artist, was an engineer, sculptor, architect, inventor, mathematician, philosopher and military adviser. His detailed notebooks included designs for inventions such as the aeroplane, the helicopter, the parachute, a submarine, the tank, a machine gun and contact lenses. See Unit 4.8 to learn more.

LS 4B



4.4.2 The printing press, invented by Gutenberg in 1450

Activities

Remembering and understanding

1 Define the term 'scientific principles'.
2 Explain why the invention of the printing press was significant.

Applying and analysing

3 Imagine that you are able to travel back in time to interview one of the scientists or inventors of the Renaissance.
   a Write a list of five questions that you would like to ask.
   b Write the answers you believe would be given.
4 Choose one of the inventions listed in this unit and design an advertisement for it explaining the features of your invention and how it will revolutionise its field.

4.5 Thinking and literature

New ways of thinking

Renaissance thinkers believed that the ancient world represented a time of greatness, and hoped to achieve greatness in their own time by adopting the ideas and art of ancient Greece and Rome. The Renaissance is known as a rebirth of the ancient Greek and Roman ideas involving rational thinking, science and culture.

While people in the Middle Ages were religious and based their views of the world on their faith, Renaissance thinkers were generally humanistic in their views. During the Middle Ages, scholars had been guided by and studied the teachings of the Church. People were mostly concerned with actions leading to heavenly rewards. People in the Middle Ages did not study the Roman and Greek classics. Humanists rediscovered the ancient civilisations and placed much more emphasis on people and their life on Earth.



4.5.1 Francesco Petrarca was known as the 'Father of Humanism'. A painting by Justus van Ghent, fifteenth century

Humanistic thinking

Humanism was the philosophical idea that drove many new developments in the Renaissance era. Humanistic thinking valued humans and individuals over established ideas such as religion and faith. Humanists believed in reason (or the ability to think logically) and the dignity and worth of individuals. They believed that by studying the classics (in areas such as art, literature and architecture) they could better understand people and the world.

Humanists were not against religion, but they believed that the focus of education should be broader and encompass physical and moral development as well as intellectual learning. They believed that the Church should involve itself only with spiritual matters. Unlike the Church, who saw people as essentially sinners who needed to by saved by the grace of God through the sacraments given during Mass, humanists had a positive view of humanity.

Francesco Petrarca (1304–1374), commonly known as Petrarch, was a poet and is regarded as the first great humanistic thinker. The word 'humanities' refers to the study of humanistic ideas.

Literature

Along with art and architecture, literature flourished during the Renaissance. Following the invention of the printing press, the process of printing spread throughout Europe. Printing changed the nature of book publishing as the volume of books being produced increased and the price decreased.

With the financial support of wealthy patrons, thinkers, scholars and writers of the Renaissance were able to focus on examining new humanistic ideas. Many writers examined the works of the ancient Romans and Greeks.

As well as Francesco Petrarca, some of the notable Italian Renaissance writers included:

- Giovanni Boccaccio—known for his stories set in Florence in the *Decameron*
- Giovanni Pico della Mirandola—known as Pico, his *Oration on the Dignity of Man* and collection of 900 treatises (formal pieces of writing that examine particular subjects) had him declared a heretic by the Roman Catholic Church for declaring that people have free will
- Niccolò Machiavelli—wrote *The Prince*, a text on how to acquire and maintain political power. He declared that a prince should do whatever is necessary for the good of his state or country without considering Christian values such as compassion or forgiveness. *The Prince* is one of the best known pieces of writing of the Renaissance.



4.5.2 Niccolò Machiavelli, author of *The Prince*. A painting by Santi di Tito, sixteenth century

Here a question arises: whether it is better to be loved than feared, or the reverse. The answer is, of course, that it would be best to be both loved and feared. But since the two rarely come together, anyone compelled [forced] to choose will find greater security in being feared than in being loved ... Love endures by a bond which men, being scoundrels [dishonest people], may break whenever it serves their advantage to do so; but fear is supported by the dread of pain, which is ever present.

4.5.3 Extract from *The Prince* by Niccolò Machiavelli, 1513

The lion cannot protect himself from traps, and the fox cannot defend himself from wolves. One must therefore be a fox to recognise traps, and a lion to frighten wolves.

Never attempt to win by force what can be won by deception.

4.5.4 Two further quotes from *The Prince* by Niccolò Machiavelli

Activities

Remembering and understanding

1 Who was:
   - **a** Francesco Petrarca
   - **b** Niccolò Machiavelli?

2 Examine Source 4.5.3 and explain in your own words what you believe Machiavelli was saying.

Applying and analysing

3 Construct a concept map to explain humanism. Think about the changes in thinking between the Middle Ages and the Renaissance.

4 The term 'Machiavellian' refers to the principles of Niccolò Machiavelli. To be Machiavellian is said to be cunning and deceitful. Refer to Sources 4.5.3 and 4.5.4 to write a creative piece of 250–300 words in which the central character is Machiavellian in their thoughts and actions.

Evaluating and creating

5 Create a Renaissance treasure box filled with answers to questions about the Renaissance period (a shoebox is ideal for this).
   - **a** Choose a Renaissance artist or invention; for example, Michelangelo or the printing press.
   - **b** Complete research to answer the questions who, what, where, when, why and how for your artist or invention.
   - **c** Decorate your Renaissance treasure box and present it to the class.

4.6 Florence

The Medici family

The Medici family (or House of Medici) was originally a family of wool merchants and then later a banking family that first came to prominence (importance) under Giovanni di Bicci de' Medici (1360–1429) and later his son, Cosimo de' Medici (1389–1464). The Medici family had immense wealth and ruled Florence for over 300 years until 1737.

In 1397, Giovanni di Bicci de' Medici, the banker to the Pope, established his headquarters in Florence. When Giovanni died, he left behind a huge fortune and a legacy of patronage of the arts. His son, Cosimo de' Medici, took over. Cosimo had been educated as a humanist and was a successful businessman who then inherited the family banking business. By 1434, Cosimo had consolidated (increased and strengthened) power for himself and the Medici family in Florence. Some of Cosimo's achievements included generous support of the arts and education, the commissioning of great artworks and cathedrals, and the establishment of a special school for studying the classics.



4.6.1 Cosimo de' Medici, son of Giovanni di Bicci de' Medici, was regarded as the real founder of the family's political fortunes. Portrait by Jacopo Pontormo, c. 1520

When Cosimo died, his son, Piero I, ruled for 5 years and was then succeeded by Lorenzo de' Medici, known as Il Magnifico. From 1469 until 1492, when Lorenzo ruled, Florence became the most important city-state in Italy. His son, Piero II, 'Piero the Unfortunate', took over as leader in 1492. He was responsible for the expulsion (forced exile) of the Medici family from 1494 until 1512 (due to his poor handling of a tricky political situation with other Italian states). Once the exile ended, a series of Medici family members ruled until the fall of the dynasty in the eighteenth century.

The Medici as patrons

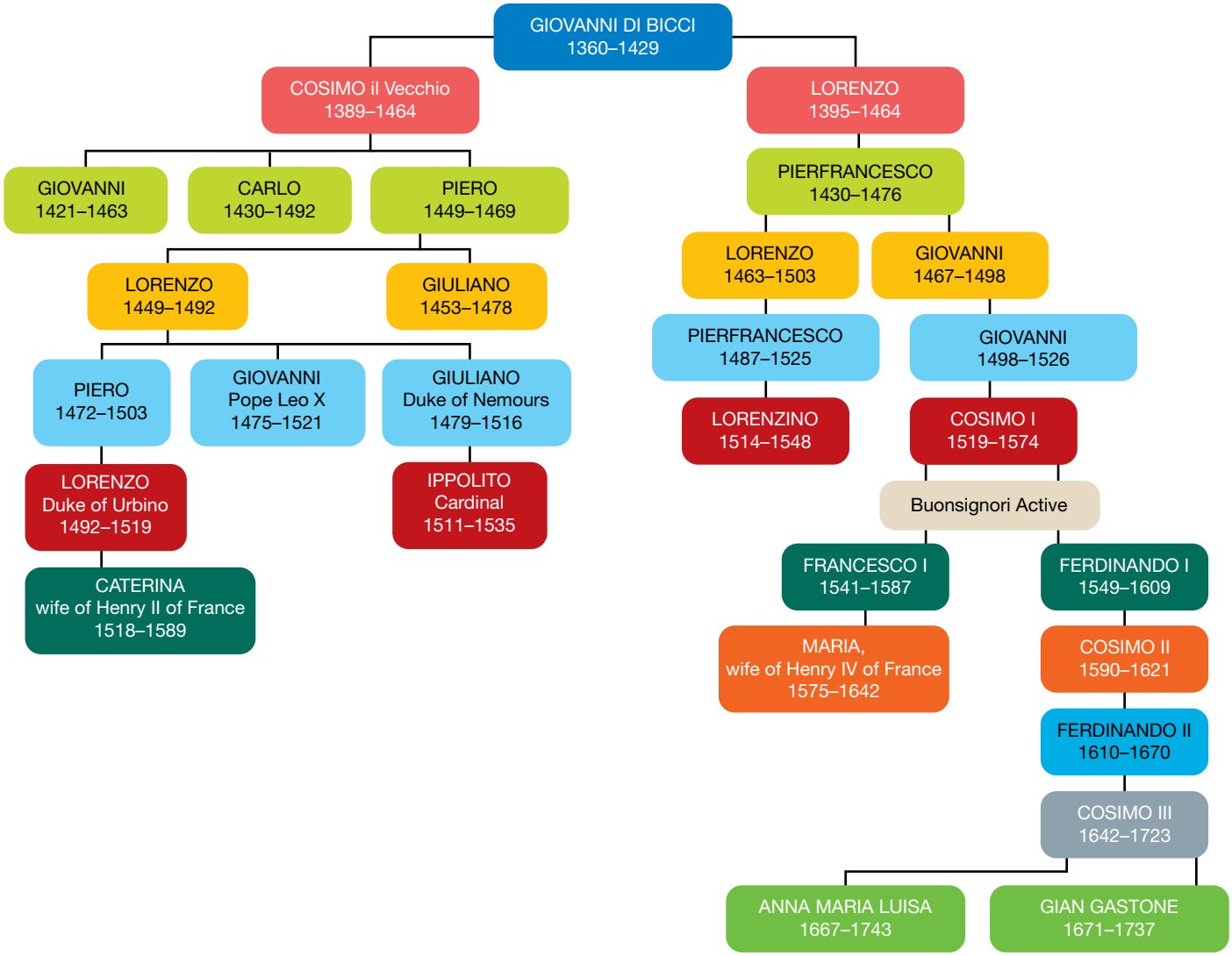
Under the Medici family, Florence prospered as an important centre for finance and ideas. The city was opened up to new philosophies from other areas and these ideas became evident in the art and writing the city produced.

Various Medici family members were huge supporters of the arts and they commissioned artists. This means that they asked artists to produce art especially for them in exchange for payment. This allowed artists to focus on their work without having to worry about money. Some of the artists that the Medici family patronised included Michelangelo, Raphael, Brunelleschi, Leonardo da Vinci and Donatello. The Medici also supported science, sponsoring scientists such as Galileo Galilei.

The Medici as rulers

The wealth and success of Renaissance Florence, guided by rich patrons such as the Medici and the artists they supported, became a model for other European societies. The new rulers were governments led by wealthy merchants and bankers.

Florence during this time was governed as an independent republic for the people and by the people. The government was run by a council called the ***signoria***, made up of nine men. The head of the *signoria* was the ***gonfaloniere***, who was chosen every 2 months in a lottery. To qualify for the top job, candidates had to be male, aged over thirty, a member of one of the main guilds in Florence (such as merchant traders, lawyers or bankers) and not have any debts. Although not a perfect democracy (more than 75 per cent of the population actually had no say in who governed them), it worked well for a period. By 1537, however, the republic had all but disappeared and rule was by a hereditary monarchy (passed from father to son) from the Medici family dynasty.



4.6.2 A simplified Medici family tree

Activities

Remembering and understanding

1. Who is regarded as the founder of the Medici family's political fortunes?
2. Explain how the ruling of Florence changed from the Middle Ages to the Renaissance period.

Applying and analysing

3. Write a job advertisement for a *gonfaloniere* in Renaissance Italy. List the job requirements and values of the ideal candidate.
4. Imagine you are involved in developing an exhibition on the Renaissance. Write a series of up to four museum exhibit labels outlining the significance of the Medici family to the city of Florence.

Evaluating and creating

5. As a group you have been asked to speak at a history conference on the topic: 'The Medici: ordinary or extraordinary?'
   - **a** Work in groups of four to research the Medici family and its importance to the Renaissance period.
   - **b** Prepare a mind map of your researched information.
   - **c** Use your mind map to prepare a presentation for the conference. This could take a number of forms, for example a PowerPoint presentation or a debate.
   - **d** Have each group present their findings to the 'conference' (class).

4.7 Legacy of the Renaissance

New discoveries, thoughts and ideas

The Renaissance was a period of rebirth of old beliefs and thoughts and the inspiration for new discoveries. The Italian Renaissance influenced the culture, economics, politics and religion of Europe.

Culture

Humanism was born during the Renaissance period and had an impact on many areas, including education, art, architecture and science. Many of the greatest artists and philosophers existed during the Renaissance, often sponsored by rich patrons who allowed them to concentrate on their creativity. Many of the works created during this period are still regarded as among the most significant and influential of all time.

New ideas and ways of thinking emerged as a result of the focus placed on humans rather than the Church. Some of these ideas, including those of Earth's place in the universe, were considered controversial and in conflict with the ideas of the Church. Many of these new ideas spread to the rest of Europe and formed the basis of the Scientific Revolution, which still affects our lives today.

Economics

Under the powerful Medici family, banking began to flourish in Florence. Many modern banking practices were developed during this time, and the basics of modern taxation systems were established.

During the Renaissance, economies began to be based more on commerce and trade than agriculture. The increase in trade developed a new type of economy—one based on money. Previously, people had traded goods for other goods. During the Renaissance, people began using coins to buy goods. Money changers were needed to convert money from one currency to another, and to lend money. Bankers became important and other European nations, such as Spain and England, modelled parts of their own economies on those of the Italian city-states.

Politics

Many new ideas on diplomacy (meaning a focus on building cooperative and peaceful relationships with other countries through negotiation and tact) were developed or adopted during the period of the Renaissance. In the Italian city-states the way in which government was run changed from the medieval feudal structures towards a more inclusive type of democracy.



4.7.1 *The Moneychanger and His Wife* by Dutch painter Marinus van Reymerswaele, 1539. Modern banking practices had their origins in the Renaissance.

The Renaissance in England

The Renaissance did not reach England until the late fifteenth century, and reached its height there during the reign of Queen Elizabeth I (1558–1603), especially in music and literature.

The availability of the printing press at this time meant that Greek and Latin classics were available to a wider range of people, and began to be translated into English. Among the many writers of this golden age in English literature were Edmund Spenser, Christopher Marlowe, Ben Johnson and William Shakespeare.

A wide range of musical styles and genres flourished in the English Renaissance era. Again, the invention of the printing press enabled more widespread distribution of music and musical theory texts. Famous English composers of this period were John Dowland, Thomas Tallis and William Byrd.

The Reformation

The Reformation, which began in 1517, is one of the most immediate effects of the Renaissance period. In some ways this new movement was a natural progression from the Renaissance. The development of new ideas under humanism created a climate where people could challenge age-old values and the teachings of the Catholic Church under the Reformation.

Theologians, or scholars of religion, criticised the Catholic Church for many reasons. They argued against its immense power, the widespread corruption within the Church and the idleness and extravagance that characterised the lives of many clerics, despite their having taken vows of poverty.

Martin Luther

Martin Luther, a German monk who was a professor of theology at Wittenburg University, set up his own church in 1521. His followers came to be called Protestants because they protested against the Catholic Church.



4.7.2 A stained glass portrait of Martin Luther

Skills builder

Understanding chronology

An understanding of chronology means that you understand when things happened and in what sequence. One of the tasks you are required to be able to do is to list events in the order in which they happened. It can also be useful to know what was happening in other parts of the world at the same time.

1. Look at the timeline at the beginning of this chapter. Can you add three more events that happened in Italy between 1397 and 1610?
2. Do some research and see if you can discover three important events that happened in England between 1397 and 1610.
3. Create your own timeline.
   - **a** Create a timeline of your life starting with the year in which you were born.
   - **b** For every year of your life look for an event that happened somewhere in the world and add it to your timeline.

Activities

Remembering and understanding

1. List the four areas of society that have been affected by the Renaissance.
2. How is the period of the Reformation linked to the Renaissance?

Applying and analysing

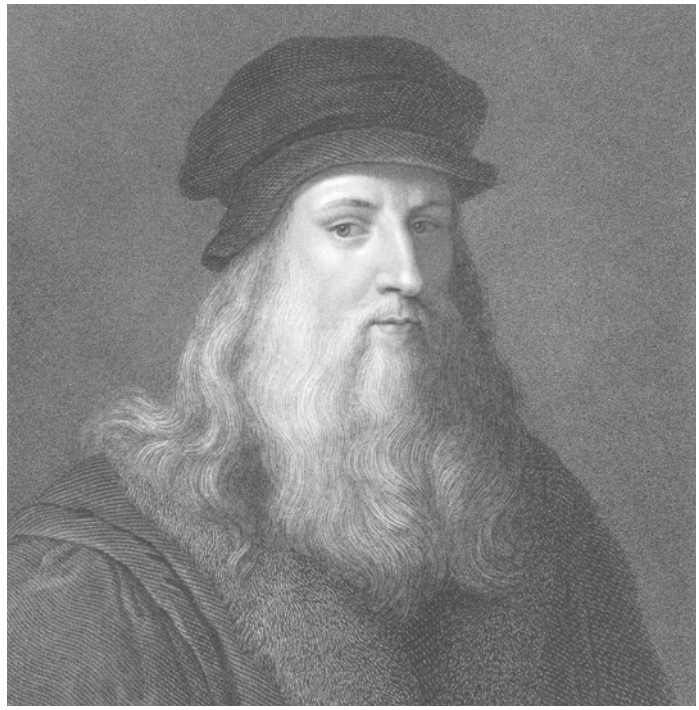
3. Draw a concept map explaining the impact of the Renaissance and the contributions it has made to society.
4. Examine Source 4.7.1.
   - **a** Describe the painting in your own words and explain what is happening.
   - **b** What might be learnt by examining such a source?

4.8 Significant individuals

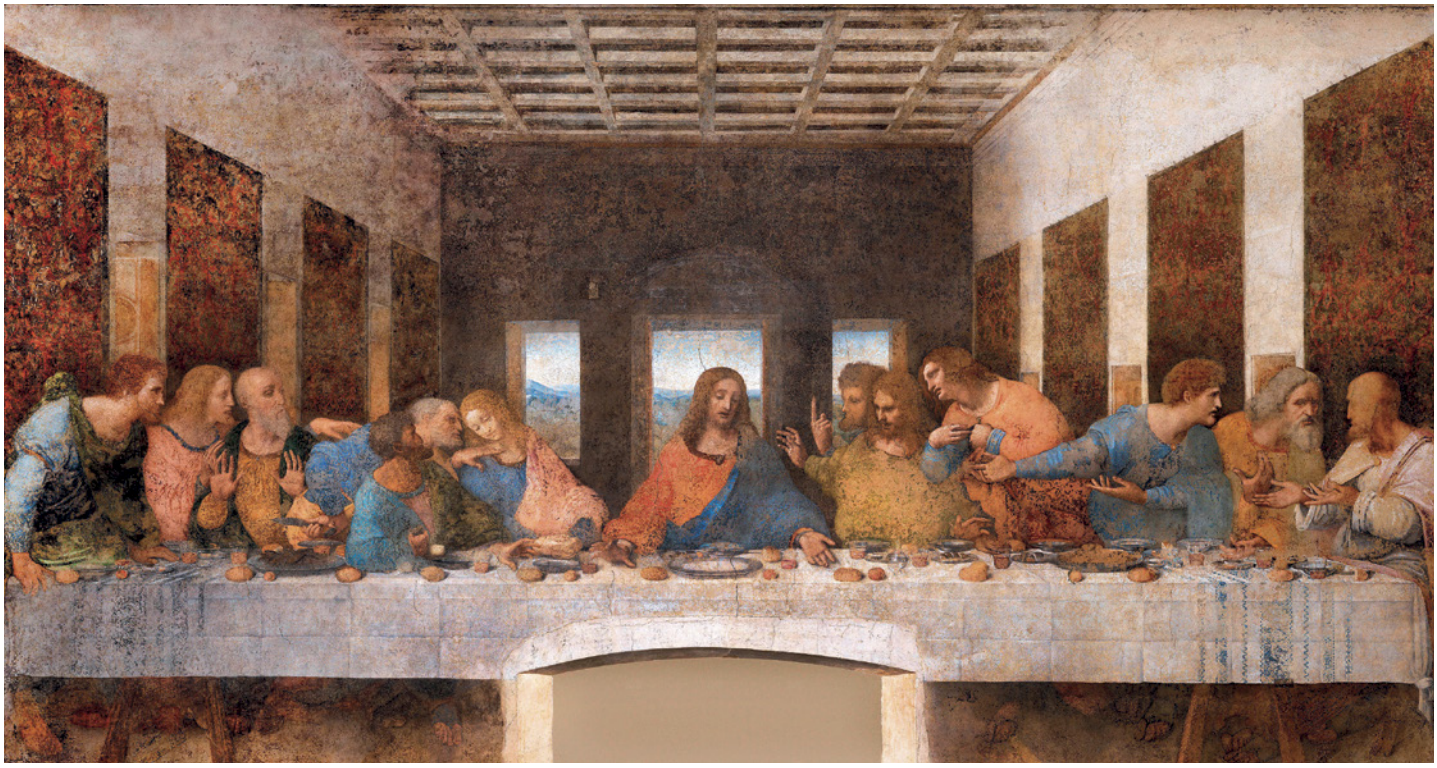
Leonardo da Vinci

Leonardo da Vinci was a painter, sculptor, inventor, engineer, mathematician, architect, philosopher and military adviser. He was regarded as the epitome (the best possible example) of a 'Renaissance man', able to do all things.

Born in 1452, Leonardo was concerned with the laws of science and nature. At the age of fourteen, da Vinci began as an apprentice with the artist Verrocchio. He learnt many technical skills for the next 6 years, and at the age of twenty had qualified as a master artist in the Guild of Saint Luke. Leonardo's first commission came from Lorenzo de' Medici and from this he began working in the Duke of Milan's court where he created *The Last Supper*. His best known painting (and possibly the most famous artwork in the world), the *Mona Lisa*, was privately commissioned, although it was never delivered and was with Leonardo when he died.



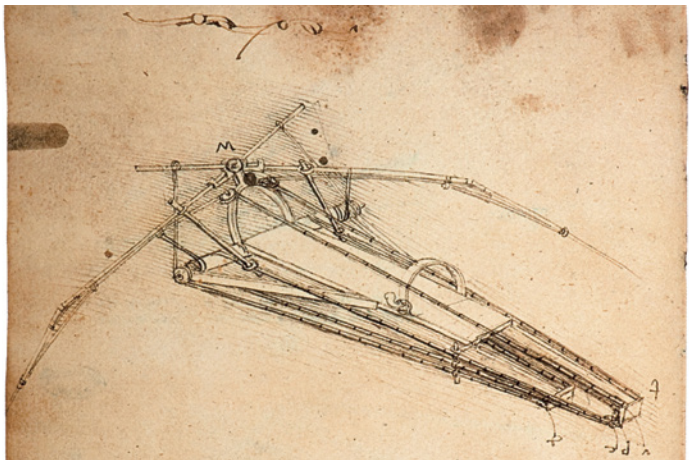
4.8.1 Leonardo da Vinci was known as a Renaissance man.



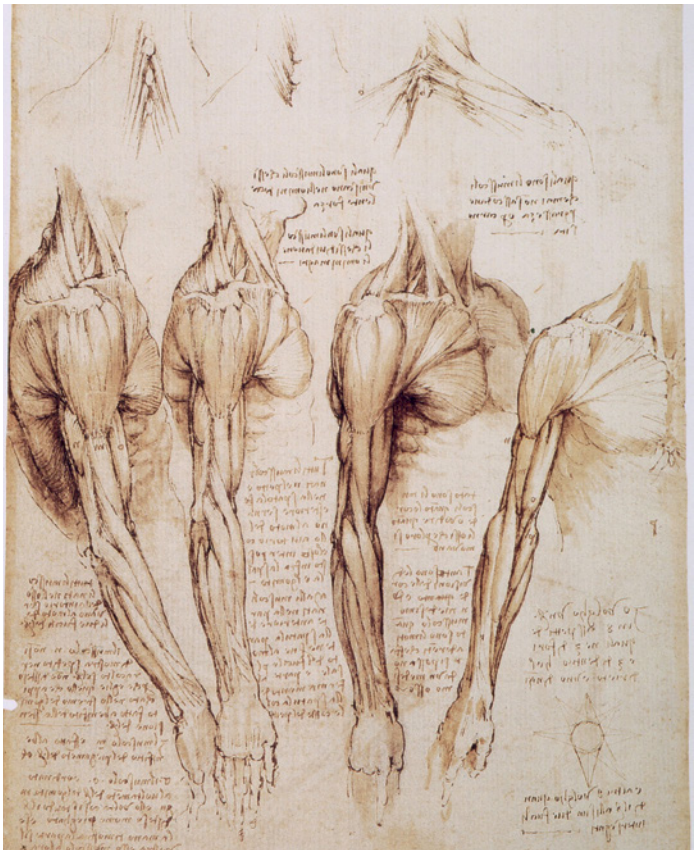
4.8.2 Leonardo da Vinci's *The Last Supper*, 1498, a mural painting in the Convent of Santa Maria delle Grazie, Milan, Italy

Leonardo's notebooks

Throughout his life he kept detailed notebooks that outlined his scientific interests and mechanical ingenuity, which were centuries ahead of his time. His designs for inventions included the aeroplane, the helicopter and other flying machines, the parachute, a submarine, an armoured car or tank, a machine gun and contact lenses. Most of the inventions were never made, but his sketches exhibit a remarkable genius that has been matched by few people since.



4.8.3 Leonardo da Vinci's design for a flying machine, 1488



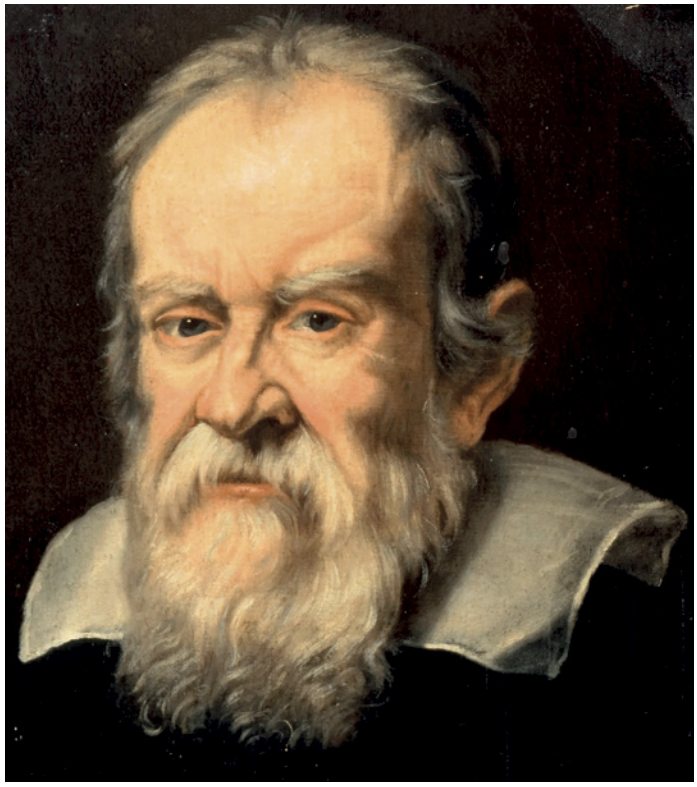
4.8.4 Da Vinci's pen-and-ink study of the muscles in the arm, shoulder and neck in 1510–11. As well as inventing machines, he was also fascinated by anatomy and undertook detailed studies of the human body.

Galileo Galilei

Galileo Galilei was a mathematician, physicist, philosopher and astronomer. He is considered the father of modern science.

Born in 1564, Galileo began his studies in a Jesuit monastery at the age of eleven. In 1581, at the age of seventeen, he entered the University of Pisa to study medicine. At the age of twenty, Galileo became instantly famous when he discovered the law of the pendulum. Galileo was believed to have been sitting in a cathedral when he noticed a lamp swinging overhead and used his pulse to time large and small swings, discovering that the period of each swing was exactly the same. This law was eventually used to regulate clocks.

Although Galileo left university before completing his degree, he continued to study mathematics and conducted studies on objects in motion. He published a number of books outlining his theories from his experiments. Galileo also proved the law of constant acceleration by dropping balls from the leaning tower of Pisa. Before this, the accepted view was that of Aristotle who claimed that heavier objects fall faster than lighter objects.



4.8.5 A portrait of Galileo Galilei

Galileo's theories

In 1609, Galileo built his own telescope and began to study the universe. He discovered the moons of Jupiter and confirmed Copernicus's views that the Earth was not the centre of the universe. Galileo published his views in a small book called *Starry Messenger* and went on to view the edges of Saturn's rings and spots on the surface of the sun. Unfortunately the views of Galileo contradicted the religious beliefs of the time and he was accused of **heresy** (a belief that contradicts a religious one), but was later found innocent.

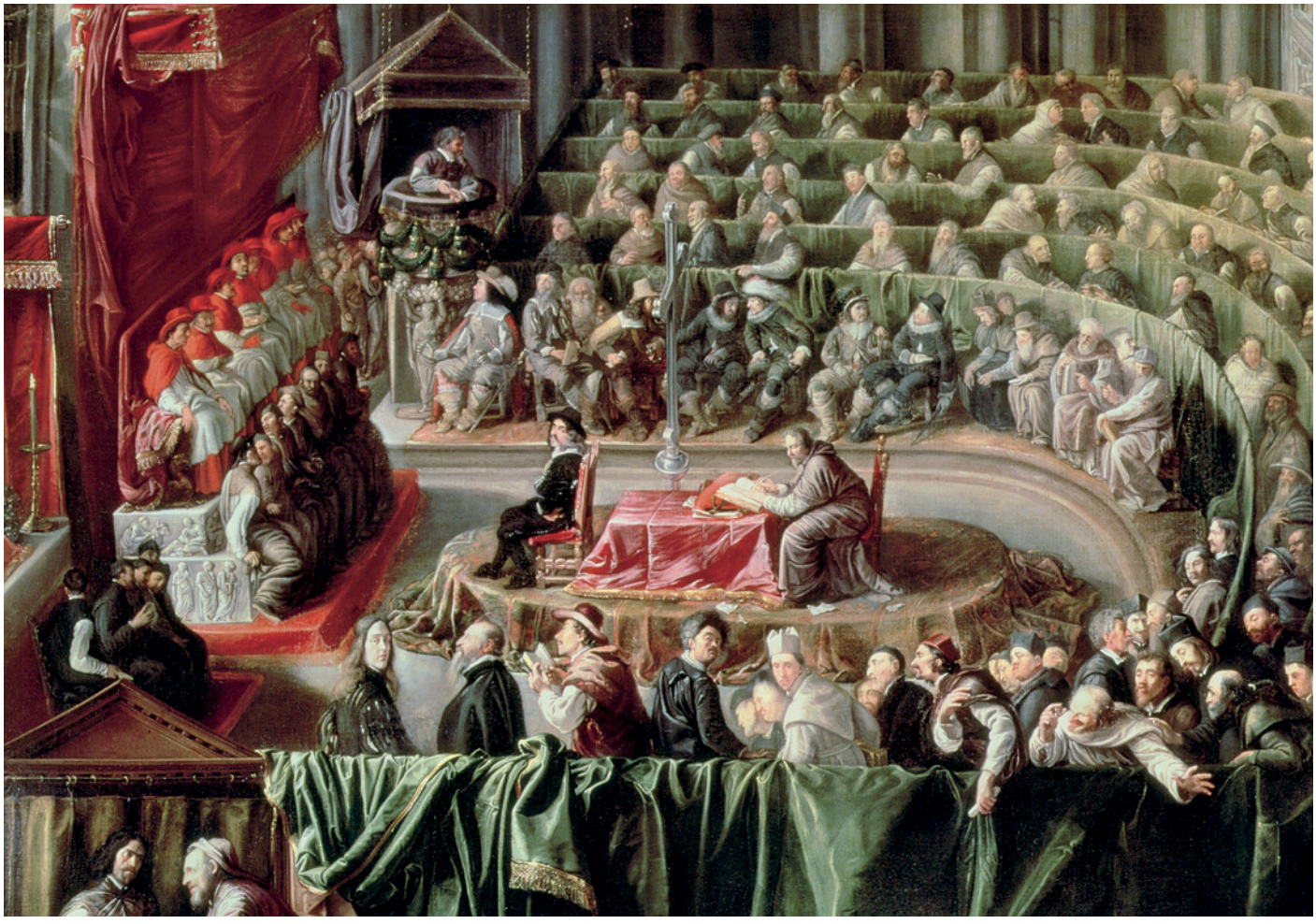
In the years that followed, Galileo continued to study the heavens and eventually published a book that discussed the Copernican theory. The Pope ordered the book banned. Aged 68, Galileo was threatened with torture, and is reputed to have confessed that he had been wrong to say that the Earth moves around the sun. Legend has it that after he made his confession he then uttered the words 'And yet, it moves.'

> The Bible shows the way to go to heaven, not the way the heavens go.

4.8.6 A quote by Galileo



4.8.7 Galileo improved on the telescope and used it to study the universe.



4.8.8 A painting representing the trial of Galileo in 1633

Activities

Remembering and understanding

1 Why was Leonardo da Vinci known as a 'Renaissance man'?

2 Examine Source 4.8.2.

- **a** Describe the scene depicted in the source in your own words, including the figures in the painting, the colours and what is taking place.
- **b** Explain how this painting is reflective of the change in painting style during the Renaissance.

3 Explain why Galileo Galilei was considered the father of modern science.

Applying and analysing

4 Use the information in this unit to create a flow chart of key events in the life of both Leonardo da Vinci and Galileo Galilei.

5 Use the text and the relevant sources in this unit to explain why the Catholic Church opposed Galileo's ideas on the universe.

6 Both da Vinci and Galileo are regarded as progressive thinkers for their times. Who would you choose for your generation? Write a one-page report detailing the person you believe has made the most significant contributions to the modern era and explain why.

7 Examine Source 4.8.6.

- **a** Summarise the message of the quote in your own words. Explain its meaning.
- **b** Explain how Galileo's words demonstrate the new views of humanism during the Renaissance.

Evaluating and creating

8 Write a newspaper feature entitled 'The Renaissance Man' or 'The Renaissance Woman'. In your report, argue who you believe best deserves the title of Renaissance man or woman for their contribution to the period.

- **a** Choose a significant person of the Renaissance period. Some examples include:
  - Leonardo da Vinci
  - Michelangelo
  - Niccolò Machiavelli
  - Cesare Borgia
  - Lucrezia Borgia
  - Galileo Galilei
  - Johannes Gutenberg
  - Francesco Petrarca
  - Caterina Sforza.
- **b** Research your significant person and make notes about them using a suitable note-taking format.
- **c** Compare and contrast the achievements of your significant person with others of the Renaissance period to develop your argument.

LS 4C



The Spanish conquest of the Americas H6

Christopher Columbus's arrival in the Americas in 1492 AD resulted in a clash of cultures and civilisations that would have long-lasting effects on the peoples of both Europe and the Americas. Within a few decades of Columbus's arrival, the civilisations of **Mesoamerica** and South America had been plundered and destroyed with no thought to the rights of the **indigenous peoples**. Meanwhile, the Spanish created a rich empire that would dominate the region for nearly 400 years.

OVERVIEW QUESTIONS

- **H6A** What sorts of societies existed in the Americas before Christopher Columbus arrived?
- **H6B** How were the powerful Aztec and Inca empires eventually defeated?
- **H6C** How did Spain benefit from its conquests?
- **H6D** What were the long-term effects of the Spanish colonisation of the Americas?

H6.0.1 A nineteenth-century illustration by Gallo Gallina depicting the meeting between Hernán Cortés and Moctezuma II in Mexico, 1519

LS Before you begin

GLOSSARY

barter a system of trade where goods and services of equal value are swapped or exchanged without the use of money

chinampas land reclaimed for farming by anchoring cages filled with rocks and dirt to the lake floor and then planting trees; also called 'floating gardens'

colonisation to take over an area of land and settle

conquistadors Spanish for 'conqueror'; refers to soldiers from sixteenth-century Spain who helped take control of the Americas

El Dorado a mythical city made of gold, believed by the Spanish to be somewhere in the Americas

encomienda a system whereby Spanish colonists in the Americas forced indigenous people to work for them and took the natural resources of the area

epidemic a rapid outbreak of a disease, infecting a much higher number of people than usual

Great Exchange the transport of goods across the Atlantic between Europe, Africa and the Americas

haciendas large farms set up during the sixteenth century by the Spanish in the Americas

indigenous people(s) people who lived in a place for a very long time before other people came to live there

Mesoamerica literally 'middle America', a geographical and cultural area that included present-day Mexico and part of Central America (Guatemala, Honduras, El Salvador and Belize)

New World the Americas

Old World particularly Europe, but also Asia and Africa, which were known to Europeans before the discovery of the Americas

pre-Columbian the period of time before the arrival of Christopher Columbus in the Americas

Renaissance from the French word for 'rebirth', a revival of interest in knowledge and learning, based on classical Greek and Roman philosophy and scientific explorations

Sapa Inca Inca ruler

tribute a payment to a ruling force as a sign of submission or loyalty

Timeline

The Spanish conquest of the Americas

The clash between the Old World of Europe and the New World of the Americas had implications across the globe as the Spanish, and other European nations, proceeded to plunder the riches of these new lands, disregarding the rights of the indigenous populations.



Christopher Columbus presenting gifts to the first Native Americans to greet him on his landing in America in 1492

1420s
Tenochtitlán becomes the dominant city in the Valley of Mexico

1450–1470
Machu Picchu is built

AD 1000 1100 1200 1300 1400 1500

1248
Aztecs arrive in the Valley of Mexico

1325
The Aztec city of Tenochtitlán is founded

1438–1533
The Inca Empire controls the west coast of South America



Hernán Cortés meeting Moctezuma, the last emperor of the Aztecs

1492
Christopher Columbus lands in the Americas

1502
Moctezuma II, the last Aztec emperor, is crowned

1513
Balboa leads an expedition to the Pacific

1519
Hernán Cortés and his conquistadors land in Mexico

1520
Moctezuma II is killed

1521
Tenochtitlán falls; the Spanish build Mexico City on the ruins

1533
Francisco Pizarro captures the Inca capital Cuzco

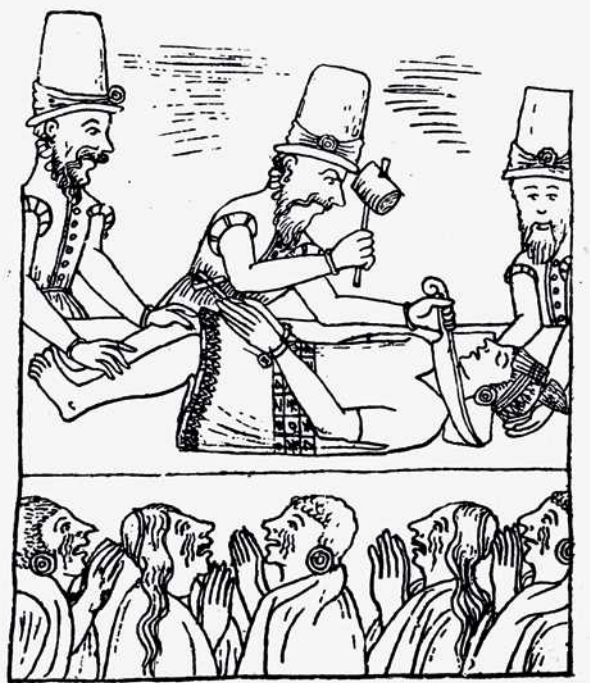
1546
Spanish defeat the Mayas

1572
The Spanish execute the last Inca emperor, Tupac Amaru

1600
The Mesoamerican population decreased to 1 million

1821
Spanish rule ends in Mexico

1501 1600 1700 1800 1900 2000 AD



The capture and beheading of Tupa Amaru I, the last Inca king, in 1572. Tupa Amaru I is an Inca hero, as he represents the fight for a free Inca state.

H6.1 Pre-Columbian life in the Americas

Early history

Radiocarbon dating of cave paintings in Brazil suggests that humans existed in South America about 25 000 years ago and in the southernmost tip of South America by 9000 BC. These skilled hunters gradually became farmers who cultivated wild crops. Settled communities eventually developed into cities, many of them as large as those in ancient Egypt and Mesopotamia that existed at the same time.

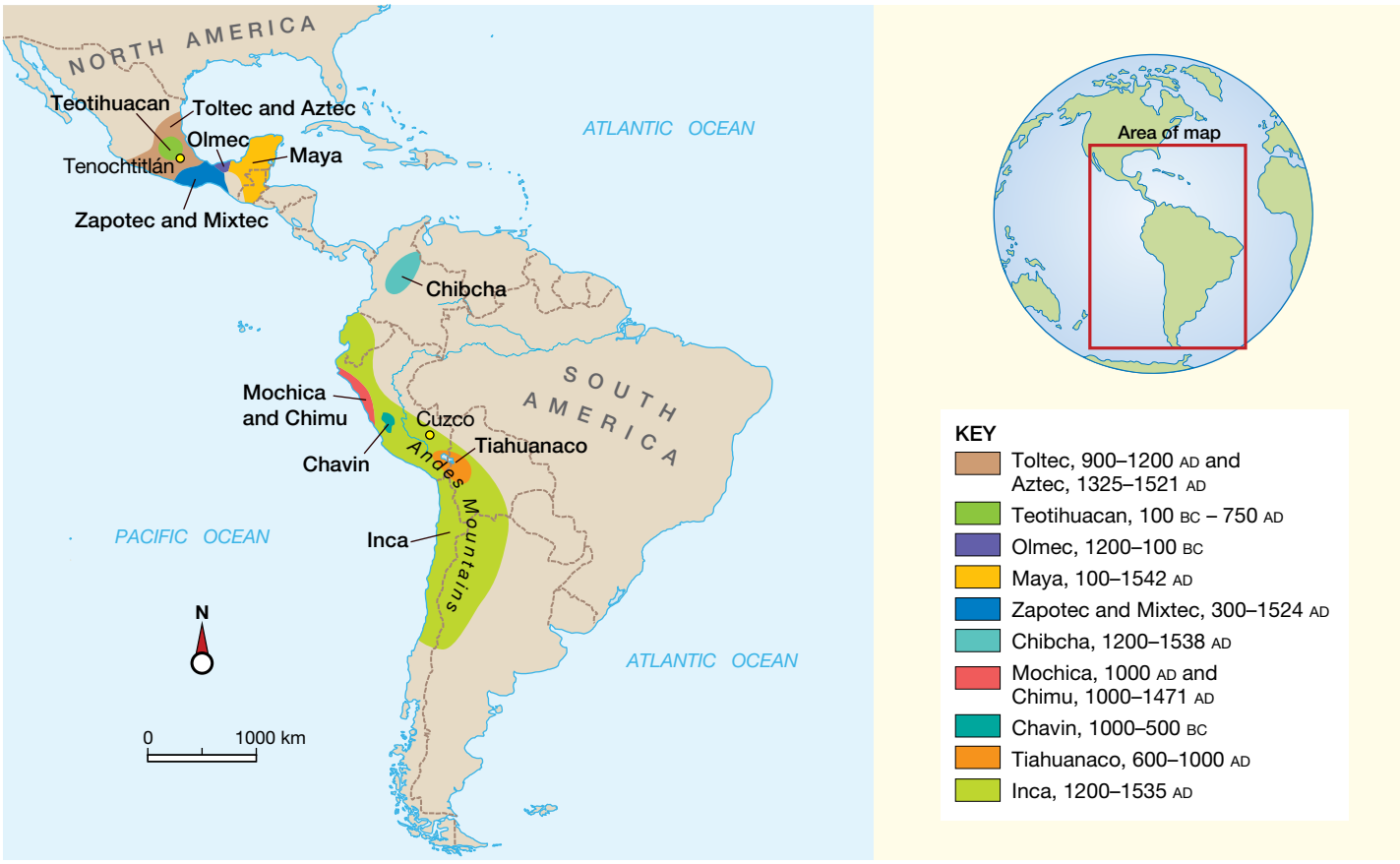
The Aztecs

In Mesoamerica (roughly present-day Mexico), a number of civilisations dominated the region at different times. In 1248 AD, the Aztecs arrived in the Valley of Mexico and, shunned by the local tribes, built their city Tenochtitlán by the lagoon of Lake Texcoco in 1325. They quickly became rich, travelling by boat on the lagoon to trade with other tribes and constructing ***chinampas*** or 'floating gardens' to increase crop production.

Through alliances, intermarriage and wars, the Aztecs became the most powerful civilisation in the Valley of Mexico. During the fifteenth century, the Aztecs extended their control of the region through warfare, the use of terror and the development of rigid laws to create an empire.

The Incas

The Inca civilisation controlled the Andes region from 1438 to 1533. The Inca Empire grew through the use of diplomacy (meaning a focus on building cooperative and peaceful relationships with others through negotiation and tact) to unite tribes along the west coast of South America. Inca conquerors invited local leaders to join their empire, explaining the benefits of belonging. When necessary, the Incas fought successful military campaigns and placed garrisons of Inca soldiers in the conquered area. The Incas focused on constructing great cities, terraces for farming, irrigation canals and roads. Their rule was accepted because they respected local chieftains and customs, educated their sons and carried out public works.



H6.1.1 The extent of the Aztec and the Inca empires in **pre-Columbian** America



H6.1.2 A sixteenth-century illustration of Aztecs constructing a *chinampa*, with other gardens already planted in the background

Social structure

Both the Aztecs and the Incas had a rigid class system. This created strict divisions between people in society, regulating everything from a person's job to their clothing and food.

The emperor

An emperor or king led both Aztec and Inca societies. The emperor was seen as a demigod (an important person who is admired as if they were a god) and the head of the state religion. Royals intermarried with local rulers to gain control over their lands. Inca kings had one wife (usually their sister) and possibly hundreds of concubines (mistresses). The heir to the Inca throne was the son of the king judged most suited to becoming the monarch. In Aztec society, the heir was chosen from the royal family and the choice had to be confirmed by high-ranking priests.

Nobles

Nobles were people related to the king. They were appointed as administrators of the state, commanders of the army and high priests. Nobles owned the best land, lived in large houses, had servants and often did not have to pay tax.

Ordinary people

Some higher ranking people were chosen as regional army commanders, temple priests, architects, administrators and army generals. A 'middle class' was made up of accountants, artisans, musicians, army captains and merchants. In the Aztec Empire, the merchant traders were also spies.

Towards the bottom of the social system were farmers. The *ayllu*, a clan of Inca families living together, had strong bonds and a duty to work together to farm the land allocated to them, herd animals and make sure everyone in the clan flourished. In Aztec society there was an even lower class made up of landless peasants and slaves.

Activities

Remembering and understanding

1. Construct a social pyramid showing the structure of either Inca or Aztec society from the information in this unit.
2. Construct a PMI table and identify three facts each for the Incas and the Aztecs.

Applying and analysing

3. Examine Source H6.1.2. How does it show the inventiveness of the Aztecs?
4. Create a Venn diagram to compare and contrast the methods used by the Aztecs and the Incas to build their empires.

H6.2 Life in an Aztec city

Founding Tenochtitlán

The Aztecs believed that their society was destined for greatness. According to their founding myth, in 1325 their god Huitzilopochtli sent an eagle, perched on a cactus and devouring a snake, to guide them to the founding site of their city Tenochtitlán, 'place of the cactus', on Lake Texcoco.

Although swamplands around Lake Texcoco were infested with snakes, the Aztecs were resourceful and the location presented practical advantages. There was drinking water, irrigation, shellfish and waterfowl. The Aztecs used the lake for transportation and its mud to build highly productive *chinampas*, which were used as farmland or as foundations for houses.

The lake and swamp offered protection from the more powerful surrounding cities, the Tepanec people's city of Azcapotzalco and the Acolhuas people of Texcoco city. A 5-kilometre stone aqueduct brought drinking water into the city.

In the 1420s, Tenochtitlán became the dominant city in the Valley of Mexico.



H6.2.1 The city of Tenochtitlán on Lake Texcoco (located in present-day Mexico). An illustration based on **conquistador** Hernán Cortés's 1524 letters, in *Civitates Orbis Terrarum*, an atlas published in 1594

Government and laws

The emperor

The *tlatoani*, the 'great speaker' or emperor, had two key roles: to expand the lands controlled by the Aztecs and to carry out religious duties and rituals such as sacrifices. These were more important than the needs of his people. Aztec emperors ruled using force and terror.

Justice

The emperor established all of the laws. From 1428, laws and customs were carefully codified and strictly enforced to control the population, regulating even the size of jewellery people could wear. Aztec judges settled disputes at local courts and a high court held within the palace.

There were no prisons, but punishments ranged from shaving heads, destruction of houses or slavery, to death by drowning, stoning or being skinned alive. Criminals were considered unworthy of being sacrificed.

Did you know?

Aztecs believed most crimes were caused by drunken people. People found intoxicated were sentenced to a period of slavery for their first offence and strangled for their second.

Economy

Aztec society was based on farming. A group of related families, called a *calpulli*, farmed a communal plot of land. The staple crop was corn. They also grew fruits and vegetables, including capsicum, tomatoes and avocadoes. Aztecs traded by transporting food locally by boats on human-made canals. They conducted trade beyond the mountains but only with luxury goods: feathers, cocoa, shells, gold, jade and cotton textiles. Aztecs had no coinage (money). They sometimes used cocoa beans and lengths of cloth as currency (a system of money), but business was mostly done by **barter**—a system where goods of equal value are exchanged.

Daily life

The lives of Aztec people varied depending on their social class.

Homes

The wealthy had homes made of stone and stucco with several rooms, a courtyard with a fountain and a steam room for purification. Poorer Aztecs had homes made of adobe (sundried brick made from clay) with dirt floors, no windows and little furniture.

Food

Cornflour was used to make *tlaxcallis* (*tortillas* in Spanish), with vegetables and fish or other lake animals. The nobility also ate cocoa, deer, waterfowl and dogs.

Clothing

Ordinary people wore clothes made from cactus and palm fibres. The elite wore cotton clothes with decorated sandals. Men wore lip plugs and the nobility wore gold armbands and anklets.



H6.2.2 A modern illustration of an Aztec family

Growing up

Children assisted with daily chores from a very young age. Boys attended school between six and fifteen, learning to read and write but mostly to get ready for war. Girls learnt domestic duties such as grinding corn and weaving. All children learnt songs, dances and rituals of the Aztec religion.

By the age of twenty, a marriage was arranged between two families. The ceremony involved the tunics of the newlyweds being tied together and a feast followed by four days of prayer. Men could have more than one wife and widows were expected to remarry.

Activities

Remembering and understanding

1 Study Source H6.2.1 and make a list outlining the positives and negatives of building a city on an island in a lake.

2 Divide your page using a large X. In the sections labelled 'looks like', 'sounds like', 'feels like' and 'thinks like', describe daily life in Tenochtitlán.

Applying and analysing

3 In your notebooks, complete the table using the dot points below.

Cause	Effect
	Aztecs saw themselves as destined to be great and powerful
strict laws	
	physical punishments
	people of different social classes easily identified
mountainous environment	

- controlled the population
- long-distance trade of luxury goods only
- no prisons
- rules about type of clothing and jewellery that could be worn
- survived hardships in their early history

4 In small groups, debate the topic: 'The Aztec people achieved the greatness for which they believed they were destined'.

H6.3 Life in an Inca city

The Inca city of Cuzco

An Inca myth describes the first **Sapa Inca** (the Inca ruler), Manco Capac, son of the creator sun god, wandering the land, testing the soil with his magic golden staff. He found it to be fertile in the Cuzco Valley and drove out the original inhabitants to establish the city of Cuzco.

For the Incas, Cuzco was the capital of the empire but also a holy city. It was built 3400 metres above sea level in the Andes Mountains. The vast network of narrow cobbled roads linked Inca holy sites and connected the provinces controlled by the Incas. This road system included suspended bridges, stairways carved in rock, and postal stations with storehouses and walls to protect travellers from wind-driven desert sand.

Machu Picchu

Machu Picchu is located north-west of Cuzco, high up in the Andes Mountains. Mostly intact, it provides historians with a picture of the way Inca cities looked. Machu Picchu was built between 1450 and 1470, and abandoned in 1572 when the last Sapa Inca was defeated by the Spanish conquistadors. In 1911, American explorer and historian Hiram Bingham rediscovered Machu Picchu. It became a UNESCO World Heritage site in 1983.

The Incas left no written records, and local knowledge of the 'lost city' was forgotten over time. This has made it difficult to describe its function. Some historians believe it enabled Sapa Inca Pachacuti to control the economy of the region; others see it as a sacred religious site, a defensive stronghold or a retreat location for nobles.

The platform on the mountain top was extended and levelled with earthworks. The city was divided into four sections of granite and thatched-roof buildings linked with ramps and stairways:

- an urban centre where elites lived
- the royal residence
- a ceremonial area with temples and a plaza
- farming areas with storehouses.

Did you know?

Over a million people visit Macchu Pichu each year, trekking to the mountain-top site to see the remains of the Inca city. It is widely considered to be one of the great wonders of the world.



H6.3.1 The citadel of Machu Picchu was built between two peaks, its terraced gardens allowing inhabitants to take advantage of the mild climate.

Economy

The Inca economy was based on agriculture. Most of the population were farmers. They used mainly a digging stick with a fire-hardened point, but also hoes and spades. The staple crop was potatoes, which could withstand (survive) the harsh frosts.

The Incas also grew corn to make flour, popcorn, porridge and an alcoholic beverage. Other crops included squash, beans, peanuts, capsicum, tobacco, cotton and quinoa.

Although there was limited arable (fertile) land and irregular rainfall, the Incas produced two crops a year by using irrigation water brought via canals and terracing the steep hills to prevent erosion. They used the llama as a working animal, its wool to make rope and bags, and its dung to fertilise the fields. The Incas did not use coinage; instead they bartered and swapped labour for food and goods.

Tradesmen

Inca tradespeople included:

- stonemasons, who worked with granite and limestone
- metal smiths, who worked with gold, copper, tin and bronze to produce items from ceremonial objects to fishhooks
- textile workers, who created fine textiles with elaborate patterns.



H6.3.2 With no system of writing, the Incas used this device, called a *quipu*. The number and position of knots in the strings allowed storytellers and historians to record and recite information about history, religious myths, censuses, taxation and soldiers. These respected people played a central role in daily and ceremonial life.

Daily life

The daily lives of the Incas varied according to people's social status and role in the community.

Homes

Ordinary people had mudbrick, turf or stone single-room houses with thatched roofs. Many homes were built around a common courtyard. Nobles had larger homes made of stone, with bathrooms and running water, and surrounded by gardens.

Food

Ordinary people ate two meals a day, usually vegetable stews with bread or maize cakes and occasionally some meat, such as roasted guinea pig, served on pottery plates. The nobles used silver and gold plates and ate a much greater variety of foods.

Clothing

Women and male textile workers spun and wove cotton and wool. The more elaborate the design and colouring, the higher the rank of the person wearing the clothing. Women wore long dresses and men wore short tunics. Both men and women wore sandals made of leather or plaited grass.

Activities

Remembering and understanding

1 List three to five aspects of life in an Inca city.
2 Outline the ways that the Incas adapted to the environment of the west coast of South America.

Applying and analysing

3 Examine Source H6.3.1. Write a list of the advantages and disadvantages of building Machu Picchu on this site.
4 Evaluate the importance of roads to the Incas. Consider the large cost required to build them and why they were not wide.

LS H6A

H6.4 The beliefs of the Aztecs and the Incas

Religion

Both the Aztecs and the Incas were polytheistic, which means that they worshipped many gods. Both societies added new religious elements from conquered peoples into their own practices. The Aztec god Huitzilopochtli and the Inca sun god Inti were the most important deities (gods). The Aztecs and Incas had official state religions and saw their emperors as closely linked to the gods. Nature was a key part of religion.

Aztec sacred objects

The Aztecs worshipped figurines of their gods and used special objects when performing rituals, which included dances, orchestras, sacrifices and festive meals. Ritual items were stored in a small chamber under the pyramid or in a building at its base. Spanish conquistadors Hernán Cortés and Bernal Díaz del Castillo described the dark, smoky interiors of temple houses at the top of pyramids that held the sacred images and relics of gods.

Inca sacred objects

The Inca worshipped objects that contained holy magic, called *huaca*. There were 328 *huacas* held in Cuzco alone, which included any place connected with a past ruler, an unusually shaped item, boulders and streams. Inca sacred objects also included the preserved bodies of deceased people of importance. The dead were believed to help the living, and tombs were periodically reopened to offer gifts.

Temples

Both the Incas and the Aztecs built structures of worship and ritual to honour their gods. Remains of these temples can still be seen today.

Aztec temples

Temple pyramids dominated the centre of the Aztec city of Tenochtitlán. The central pyramid was 150 metres high with 115 steps to the top where two temples honoured Huitzilopochtli, the god of the sun and war, and Tlaloc, the god of rain. The second highest temple honoured Quetzalcoatl, the feathered god of wisdom and fertility. Other temples honoured deities such as Xipe Totec, the god of springtime, where Aztec priests would dance dressed in freshly stripped human skins.



H6.4.1 Pyramid-shaped temples at the ancient city of Teotihuacan, used for centuries by the Aztecs. In the background is the Pyramid of the Sun, built on a lava tube cave.

Inca temples

Cuzco was the centre of Inca religion. The royal family made offerings inside temples filled with statues and holy objects. Ordinary people prayed outside. When an emperor died, noble family members continued to attend to his mummy. Their palace essentially became a temple and the royal mummies attended ceremonies. Their attendants, inspired by the dead Incas, advised the reigning Sapa Inca. The numerous Inca religious festivals held in and around temples were organised using a complex calendar.



H6.4.2 Aztec human sacrifice, an illustration from *The History of the Indies of New Spain* by Diego Durán on the history and culture of the Aztecs, 1581

Sacrifice to the gods

Both cultures believed in the need to keep their many gods strong so they could continue to maintain the fragile balance of the universe. Fasting and sacrificing material goods and animals were common practices. The Incas sacrificed white llamas, while the Aztecs favoured quails.

Aztec human sacrifice

The Aztec people believed that human sacrifice ensured that the sun would continue to rise. The practice of human sacrifice also helped them to control their empire as it instilled (caused a feeling of) terror in conquered peoples.

It was considered an honour to be chosen for sacrifice, although it is hypothesised (suggested) that drugs, alcohol, exhaustion and hunger helped to make victims obedient. The most common manner of death was to remove the heart from a living victim, who was then pushed down the temple steps.

The heart was placed in a fire for the god Huitzilopochtli. The body was then eaten as part of a feast and the skull placed on racks in the temple. Spaniards Díaz and Cortés counted 100 000 skulls in Xocotlan in 1521.

Aztec religious games

The Aztecs held games to honour their deities. They played a game called *tlachtli*, similar to modern basketball, in the temple grounds. It was meant to mimic gods playing ball with the stars. Occasionally, the losing team was sacrificed. Another game was *volador*. Four men, dressed as birds, would jump off a platform at the top of a tall pole. The rope tied around their feet caused them to spiral down the pole, mimicking the flight of the gods.

Activities

Remembering and understanding

1 Describe the Incas' relationship to their deceased emperors.

2 a Explain the reasons why the Aztecs sacrificed humans.

b Explain why people about to be sacrificed did not try to fight for their lives.

Applying and analysing

3 Draw and label a diagram of what the Aztec game of *volador* might have looked like.

4 Use a Venn diagram to identify the similarities and differences between Aztec and Inca beliefs and religious practices.

H6.5 The Spanish arrive in the Americas

The Age of Exploration

During the mid-fifteenth to early seventeenth centuries, Europeans undertook a period of intense exploration and **colonisation**. Colonisation refers to the formation of a settlement or colony by a group of people who seek to take control of territories or countries. It usually involves large-scale immigration of people to a 'new' location, and the expansion of their civilisation and culture into this region.

The return of soldiers from the Holy Lands following the Crusades of the twelfth and thirteen centuries brought new goods and ideas into Europe. This sparked a movement, known as the **Renaissance**, because it involved a 'rebirth' of intellectualism and inquiry. At the same time, the ancient Silk Road came under threat so that goods from the east became harder to obtain in Europe. Explorers from countries such as Spain, England, France and the Netherlands set out in search of new routes to Asia, as well as new destinations and territories. By the early seventeenth century, European maps included the Americas, Australia, Asia and southern Africa.

Reasons for Spanish exploration

Economic

European rulers and the new class of wealthy city dwellers wanted to add to their wealth with luxury items. Trade in spices (used for flavour and to preserve meats in a time before refrigerators), silk, dyes, silver, gemstones and porcelain from Asia was threatened as the Silk Road became too dangerous to travel. By the mid fifteenth century there was also a shortage of gold in Europe and this caused monarchs to encourage voyages of exploration, trade and conquest.

Religious

A desire to spread Christianity, which was being hampered by the growth of Islam in Asia Minor, encouraged voyaging further afield. Conquistadors saw themselves as saving the souls of conquered peoples in the newly discovered lands.

Intellectual

A new thirst for knowledge sparked a desire to explore the world. This was encouraged by popular accounts of travellers, such as Marco Polo's 17-year stay in China in the late thirteenth century.



H6.5.1 A tapestry detail showing Spanish Queen Isabella giving Christopher Columbus money and jewels to fund exploration across the Atlantic Ocean to secure a route to Asia and the spice trade

Political

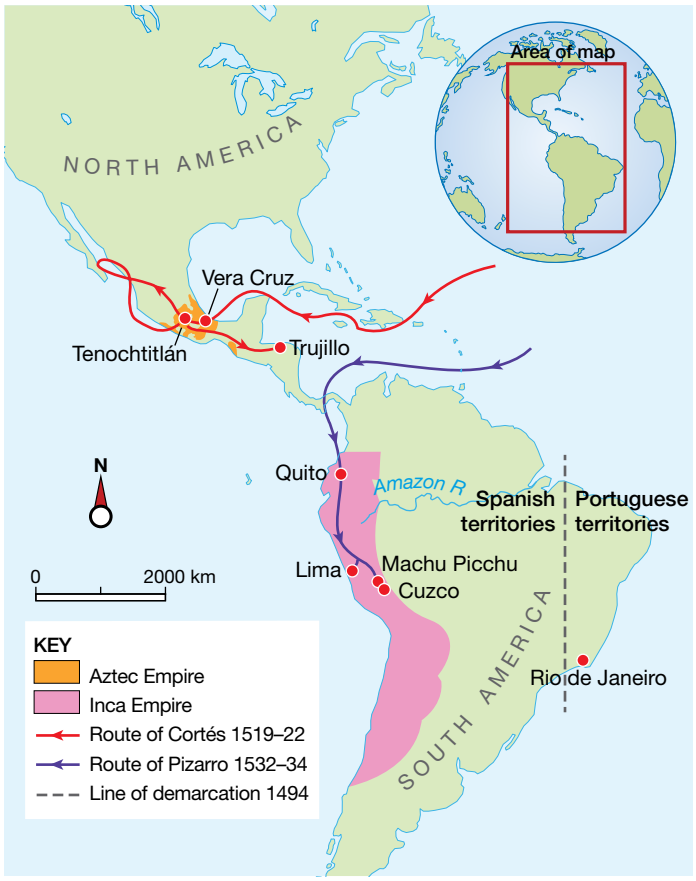
Under the unifying force of Christianity, Spaniards shared a common political goal. The explorations provided King Ferdinand II and Queen Isabella I with an outlet for ambitious nobles who may have threatened the stability of the new Spanish nation.

The arrival of Columbus

Christopher Columbus (1451–1506) was an Italian navigator and explorer who was sponsored by the queen and king of Spain to find a new route to Asia. The development of the caravel (a small but fast ship) combined with improved navigational methods allowed Columbus and other explorers to travel long distances over open water, out of sight of land. The caravel had a shallow keel, three

masts and triangular sails, which meant it was highly manoeuverable (easy to move and change direction), could sail into the wind or up shallow rivers, and was safer than previous ship designs. Christopher Columbus had three caravels: *Santa María*, *Pinta* and *Niña*.

In 1492, on his first voyage, Columbus arrived at the Bahamas (a group of islands in the Caribbean Sea) and then Cuba, instead of the East Indies (present-day Japan, China and India) as he had intended. Over three more voyages, Columbus visited other locations near the archipelago (a large group or chain of islands) that joins North and South America, claiming them in the name of the Spanish throne. This was the beginning of four centuries of exploration, conquest and colonisation by the Spanish in the Americas.



H6.5.2 The various routes of the Spanish conquistadors in the Americas

Societies conquered by the Spanish

By 1508, Cuba had become an important base for the Spanish to further explore and take possession of the Americas. Ships brought groups of conquistadors, settlers, supplies and new products, including sugar cane, cattle, horses and sheep. There were a number of empires in the Americas that the Spanish managed to conquer with relatively small numbers of men and military resources. This was partly due to the conquistadors' will to win, their luck and the indigenous peoples' lack of immunity to European diseases. The Spanish were further assisted by their horses, steel armour and guns.

The Spanish invaded Yucatán, a part of the Maya territories, in 1517 and in 1518, but initially were easily defeated by the Mayas. It took 170 years for the Spanish to defeat the various independent states of the Mayas, which they achieved by 1546. Panama was the first mainland American location to be brought under the control of the Spanish. However, they eventually controlled most of South and Central America, and even much of what is now the United States of America.

Cortés conquers the Aztec Empire

In 1519, the Spaniard Hernán Cortés (1485–1547) sailed from Cuba, where the Spanish were established, with 11 ships, 100 sailors, 508 soldiers, 16 horses and a number of small cannons to the mainland. He made contact with the Mayas in Yucatán and then set out to explore the interior of present-day Mexico. Cortés soon found that a number of Aztec subject states were unhappy and formed an anti-Aztec resistance. At the same time, the Aztec emperor Moctezuma II had news of Cortés's landing and sent emissaries (messengers) with gifts to invite him to Tenochtitlán. Initially it was believed that Cortés was the feathered serpent god Quetzalcoatl returned to claim his land.

Cortés took Moctezuma hostage and when the Spanish used their cannons, violence broke out in the city. The conquistadors were forced to flee the city in July 1520, finding refuge with their allies, the Tlaxcala. They returned with more Spanish soldiers and indigenous allies, and besieged the city for 80 days. During this time, the Aztec Empire was weakened by European diseases, particularly smallpox. This killed some key leaders and exacerbated (made worse) food shortages and the feeling that the Aztec civilisation was fated to end.

Cortés eventually took control of the city by August 1521. This marked the end of Aztec resistance in the Valley of Mexico.



H6.5.3 An unknown seventeenth-century artist painted this scene depicting the Aztecs defending Tenochtitlán against Cortés and his conquistadors.

Pizarro conquers the Inca Empire

In 1530, Francisco Pizarro (1475–1541), mayor of the Spanish town of Panama, sailed to the northernmost tip of the Inca Empire in present-day Peru. He had heard tales of riches and gold that would be found in a mystical land called **El Dorado**.

Pizarro had no knowledge of the huge Inca Empire and its advanced civilisation. The population of the Inca Empire was between six and twenty million by the early sixteenth century, with 50 000 to 100 000 people living in Cuzco city. However, he arrived in Inca territory at a time when the empire had been seriously weakened by a civil war and the spread of European diseases from Colombia. The Sapa Inca Atawallpa was a weaker ruler than his predecessor and underestimated the threat the Spanish posed to their civilisation.

In 1532, Atawallpa agreed to meet with Pizarro at Cajamarca. The Sapa Inca arrived, carried in a litter (a couch suspended between shafts) decorated with parrot feathers. He was attended by bodyguards covered in sheets of gold but without weapons. Pizarro ambushed Atawallpa at this meeting. His 168 Spanish mercenaries and explorers slaughtered 10 000 Inca warriors and took Atawallpa hostage. Pizarro demanded a huge ransom of gold and silver in return for Atawallpa's release, which the Incas paid 8 months later.

However, the Spanish went back on their word and executed the Sapa Inca. Pizarro had the advantage of having read the account by Cortés of his defeat of the Aztecs and used this knowledge to help him conquer the Incas.

Unlike the Aztecs, the Incas held out against the Spanish. It was not until 1572 that the Spanish destroyed the last stronghold of Vilcabamba, where 20 000 Incas had retreated. They captured the last Sapa Inca, Tupac Amaru I, along with other nobles, and publicly beheaded them in Cuzco.

Geographical factors influencing Spanish conquest

The conquistadors experienced a variety of challenges when conquering such peoples as the Aztecs and the Incas due to the geographical features of the Americas. The Americas stretch almost 13 000 kilometres north to south, and include extremely varied environments. The climate, deserts, dense rainforests and high altitudes of the Andes mountain range all influenced Spanish conquest. The conquistadors, isolated from Europe, had compasses but no maps and relied on local people as guides.

The Inca Empire, for example, was well protected by seas, jungles and high mountain ranges, all of which were formidable obstacles for the Spanish. When the Spanish first arrived in Inca territory they were also not prepared for the vastness of the empire (it spread along the west coast of Ecuador up to northern Chile and was centred in Peru). By the time the Spanish arrived, the empire was already in a weakened state from the ravages of disease and civil war. This greatly assisted the Spanish in their successful conquest.

Skills builder

Understanding chronology

An understanding of chronology means that you understand when things happened and in what sequence. One of the tasks you are required to be able to do is to list events in the order in which they happened. It can also be useful to know what was happening in other parts of the world at the same time.

1 Look at the timeline at the beginning of this chapter. Can you add three more events that happened in the Americas between 1248 and 1821?

2 Do some research and see if you can discover three important events that happened in Spain between 1248 and 1821.

3 Create your own timeline.
   - **a** Create a timeline of your life, starting with the year in which you were born.
   - **b** For every year of your life look for an event that happened somewhere in the world and add it to your timeline.

Activities

Remembering and understanding

1 **a** What was the Age of Exploration?
   b What factors triggered it?

2 Who were each of the following people? Also list one important fact for each.
   - **a** Christopher Columbus
   - **b** Hernán Cortés
   - **c** Moctezuma II
   - **d** Francisco Pizarro
   - **e** Atawallpa

3 How did the geographical features of the Americas affect the Spanish in the campaign to conquer pre-Columbian societies?

Applying and analysing

4 Use a Venn diagram to identify the similarities and differences in the way the Aztecs and Incas were conquered.

5 The Aztecs and Incas far outnumbered the conquistadors, yet the Spanish were victorious.
   - **a** List the factors for Cortés and Pizarro successfully taking control of the Americas.
   - **b** Rank your factors in order of importance, providing a reason for their position in your list.

LS H6B

Evaluating and creating

6 Compare and contrast the leadership of Hernan Cortés and Francisco Pizarro. Both men defeated the leaders of the empire they had invaded, respectively Aztec emperor Moctezuma II and Sapa Inca Atawallpa. Conduct further research on the two Spanish leaders and prepare a comparison of them on a poster or multimedia presentation. Include:
   - the personal attributes (qualities) of each man
   - their motives, beliefs and values
   - a SWOC analysis of the leadership of both men. Draw up the following table to organise your ideas to identify their successes and failures as leaders
   - an image of each man and a quotation from a primary source.

	Cortés	Pizarro
Strengths (of decisions/ actions)		
Weaknesses (of decisions/actions)		
Opportunities (for changing the course of history)		
Consequences (of decisions/actions)		

H6.6 First contact

Cortés: A god?

The initial reaction of the Aztecs to first contact was to see Cortés as the god Quetzalcoatl. Emperor Moctezuma II thought the god who had once ruled the Valley of Mexico had returned. Quetzalcoatl was said to have white skin and a beard, be opposed to human sacrifice and have vanished across the sea near Veracruz—where Cortés had landed. In addition to the eight omens observed, it was Year 1 Reed of the new Aztec calendar (1519), a year when it was believed gods could return to destroy Aztec civilisation. The *Florentine Codex*, written during 1545–90 by Spanish Franciscan friar Bernardino de Sahagún in his research on the indigenous populations of the Americas, describes how Moctezuma sent three sets of clothes to have Cortés dressed as a god and honoured appropriately. Moctezuma and his advisers were convinced that they faced a crisis.



H6.6.1 An illustration created in 1892 showing the first meeting between Cortés and Moctezuma in Mexico on 8 November 1519

Gold and 'El Dorado'

The conquistadors' expectation that the Americas would offer great riches was confirmed by their initial impressions. The luxurious dress of leading Aztec officials and their custom of presenting lavish gifts to visitors on first contact seemed to Cortés and his conquistadors proof that 'El Dorado' did exist.

The Aztecs noted the conquistadors' reaction when Moctezuma's ambassadors presented them with gifts of gold necklaces and precious feathers.

> Like monkeys they grabbed the gold. It was as though their hearts were put to rest, brightened, freshened. For gold was what they greatly thirsted for; they were gluttonous for it, starved for it, piggishly wanting it.

H6.6.2 An extract from the *Florentine Codex*, a research project documenting the culture and history of the Aztec people, written during 1545–90 by Franciscan friar Bernardino de Sahagún and his Aztec assistants

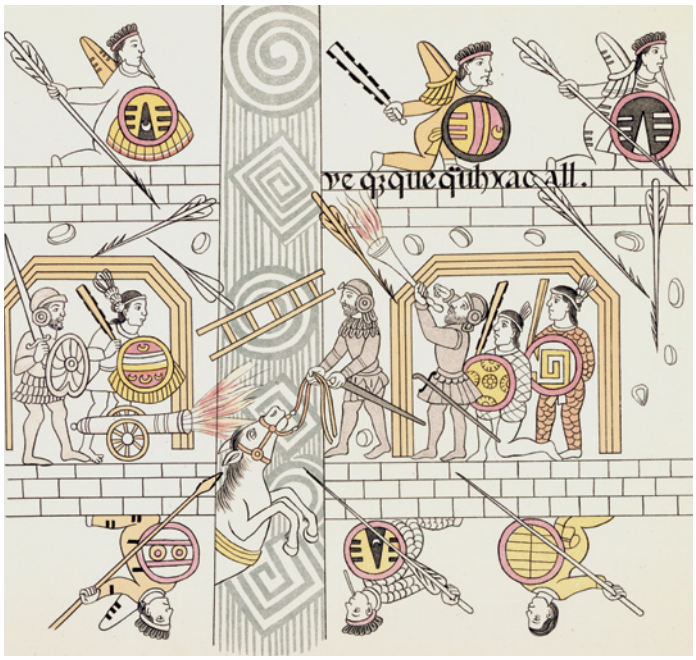
When the Spanish reached the shore of Lake Texcoco, their immediate impression was that all their fantasies of wealth, glory and fame could come true. Cortés's secretary Gómara wrote about their first impressions of the city of Cholula.

> Viewed from without, it is one of the most beautiful cities imaginable, many-towered, with its temples which ... are as many as there are days in the year ... Within the boundaries of the city the land is rich and covered with farms, which are irrigated, and it is so thickly populated that not a palm's breadth is unoccupied ...

H6.6.3 An extract from *Cortés: The Life of the Conqueror by His Secretary*, Francisco López de Gómara

Did you know?

During his conquest of Tenochtitlán, the Aztec capital, Cortés was given women as slaves. One of these women, Malinalli, was the daughter of a noble Aztec family and became his mistress. She was given the name Marina, but the Spaniards often referred to her as 'La Malinche'. She learnt Spanish and acted as an interpreter between the Spaniards and the indigenous peoples. La Malinche played a significant role in the Spaniards' campaign in the Americas.



H6.6.4 An illustration showing the Spanish with their iron lances and steel swords fighting the Aztecs

Assessments of military capabilities

Despite the large numbers and fierce appearance of the indigenous people, Cortés very quickly saw the advantage his conquistadors, horses, cannons and war dogs gave him over the Bronze Age technology of the indigenous warriors. Even greatly outnumbered, Cortés's soldiers were able to steadily kill local warriors with little to no casualties of their own in many battles. The *Florentine Codex* indicates that the Aztecs saw the Spanish as men made of iron who created widespread fear and dread.

Opinions on the cruelty of Aztec and Spanish society

The Spanish widely publicised their disgust at the ritual bloodletting and human sacrifice they saw in Aztec society. Their belief in the need to convert the indigenous people to Christianity was strong, but witnessing these local customs justified their perspective of the Aztecs as uncivilised.

The Aztecs saw the Spanish punishment of burning at the stake and their use of steel swords as equally horrifying. Attacking unarmed people was against their rules for the conduct of war—the taking of human life was controlled and highly ritualised in Aztec society.

In April 1520, conquistador Alvarado was responsible for ordering a massacre during a spring festival, which took the Aztecs by surprise.

> The Spanish attacked the musicians first, slashing at their hands and faces until they had killed all of them. The singers—and even the spectators—were also killed. This slaughter in the Sacred Patio went on for three hours.

H6.6.5 An extract from the writings of an anonymous author in Tlatelolco, 1528

Activities

Remembering and understanding

1 Outline the reasons why the Aztecs thought that Cortés was a god.

2 Explain why Cortés and his conquistadors thought that they had found El Dorado.

Applying and analysing

3 Examine Source H6.6.4. Make a list of the weapons of the Spanish and those of the Aztecs. Why do you think Cortés thought he would be able to defeat the Aztecs?

4 The Spanish saw the Aztecs as an inferior culture. Discuss whether or not the Aztecs thought the same of the Spanish.

Evaluating and creating

5 Create a memorial as part of a ceremony held to honour either the Aztec or the Inca culture. The subject of the memorial could be a person, a place or an event relevant to the pre-Columbian Aztec or Inca civilisations. Your finished product can be an artwork including a sculpture or painting, or a multimedia item such as an interactive display or a short film. You must include:

- the finished multimedia presentation or model of the final artwork or a detailed visual of the memorial with a written description of what it will look like, the materials it will be built from and its dimensions
- a 50- to 100-word paragraph explaining why the memorial commemorates the Aztec or Inca culture
- a 50-word explanation for your choice of support of the memorial.

LS H6B

H6.7 Impacts of the conquest

Immediate impact

The conquest of the Americas by the Spanish, and later by other nations from the **Old World**, had significant immediate consequences. The Spanish thought they had a right to take the land from the indigenous peoples and saw themselves as members of a superior civilisation and the bringers of salvation through Christianity. The lives of indigenous peoples were forever changed as they lost their freedom, land, resources and in many cases their lives.

Steel, gunpowder and horses

The Spanish conquistadors who accompanied Cortés and Pizarro to the Americas found Bronze Age civilisations. The Aztec and Inca warriors had never seen horses, steel weapons, armour or gunpowder. Their bows and spears were no match for the muskets and cannons of the Spanish. Cortés's demonstrations of European firepower made a frightening impression on Moctezuma's diplomats, causing them to fall to the ground. Despite the limited supply of gunpowder, its noise and power had a major psychological impact on the indigenous peoples and helped the Spanish make up for their lack of numbers.

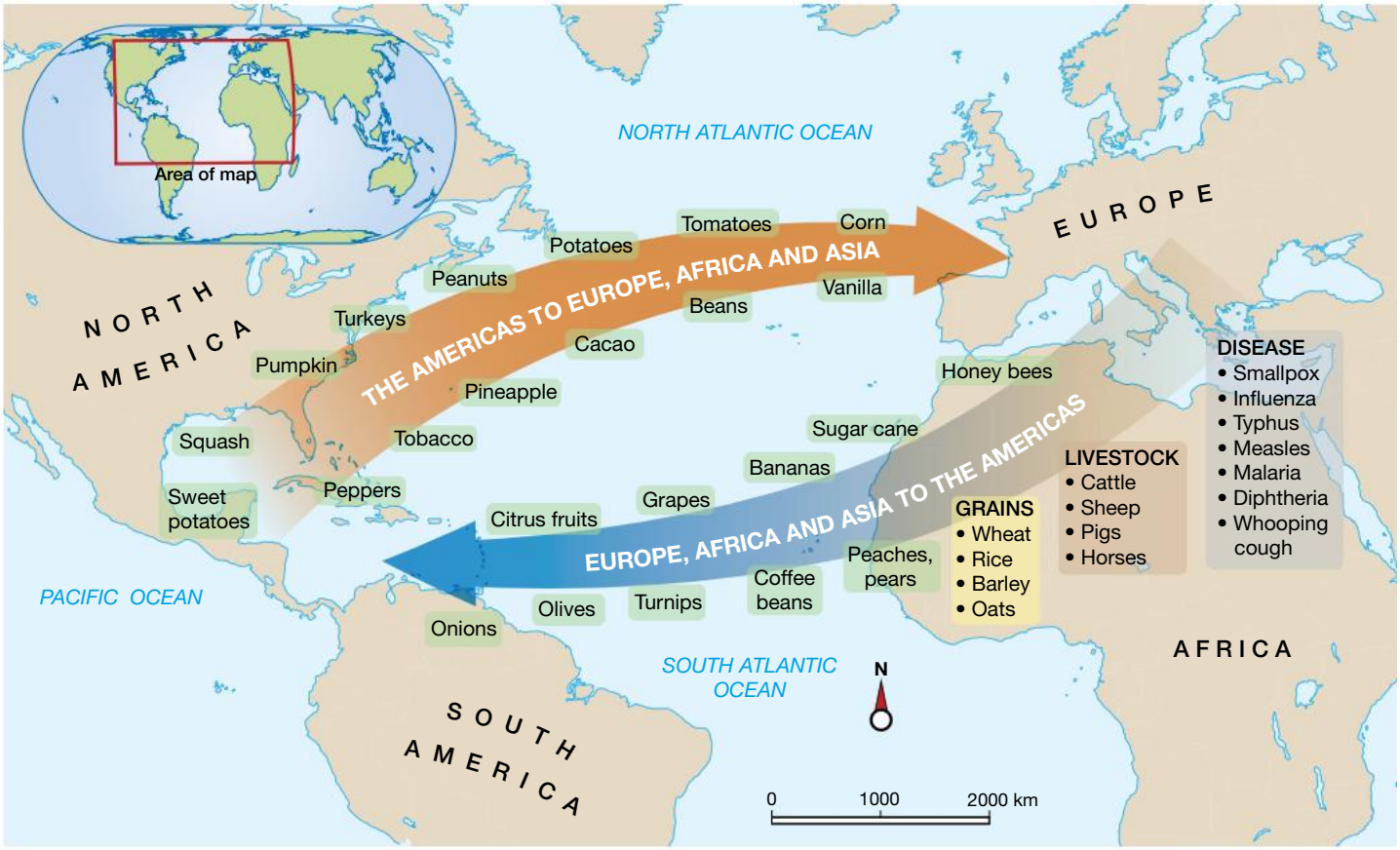
Did you know?

The emperor Manco Inca Yupanqui forced Spanish soldiers that had been captured to teach his warriors how to use horses, weapons and muskets. He also forced Spanish captives to make gunpowder. This, combined with their knowledge of the land and use of guerrilla tactics (a type of fighting where small groups of warriors make surprise attacks and quickly withdraw to safety), enabled the Incas to resist the Spanish for 40 years until 1572.

Further impacts

The Great Exchange

The Spanish conquest of the Americas resulted in widening the varieties of foods available around the world. The transport of goods across the Atlantic between Europe, Africa and the Americas was called the **Great Exchange**.



H6.7.1 The Great Exchange or the Columbian Exchange: a variety of goods (and diseases) that travelled between continents



H6.7.2 Columbus at the court of King Ferdinand II and Queen Isabella in February 1493. In this 1893 illustration, Columbus presents treasures and indigenous people from the Americas.

In Europe

Europeans were introduced to new foods from the **New World** such as potatoes, tomatoes, corn, beans and cocoa. Tobacco became very popular in Europe. It was thought to be able to cure a variety of health problems.

In the Americas

The impact of the introduction of new foods and animals by the Spanish in the Americas varied:

- Cash crops of sugar cane required more irrigation and intensive farming to grow. (Cash crops are sold for income, rather than for personal use.)
- Larger animals offered a more efficient means of transportation than had traditionally been available.
- Spanish wheat provided fewer calories than the traditional staple, maize, and as a result, less energy to perform physical work.
- Chickens provided a new food source that did not disrupt native plants and animals.
- Horses, sheep, goats and cattle destroyed native crops and overgrazed the land.
- Sheep provided a new source of materials for clothing to add to the local cotton.
- Deforestation carried out by the Europeans resulted in massive water run-off in the rainy season, transporting the topsoil of the valleys into the lakes, which flooded nearby towns.
- Spanish attempts to drain the lakes in Mexico to create more land for farming failed, as the soil was not suited to growing crops. These attempts also ended effective traditional canoe transport.

LS H6C

Wealth from conquest

The Spanish conquistadors went in search of riches in the New World. They did not find cities of gold as described in stories of El Dorado. However, they did find a land that they could plunder for its natural resources and human labour.

In taking control of much of the Americas and enslaving the indigenous populations, Spain became the wealthiest nation in Europe during the sixteenth century. This had long-term effects around the world.

Activities

Remembering and understanding

1 a What was the immediate impact of the Spanish conquest of the Americas?
  b List two long-term impacts.
2 What role did gunpowder play in conquering the Americas?

Applying and analysing

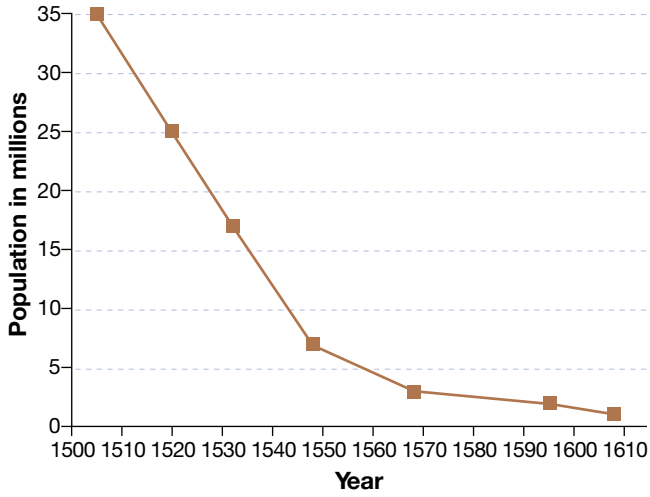
3 a Use a two-column table to categorise the eight dot points on the impact of new foods and animals in the Americas into positive and negative changes.
  b Compare the impact of the Great Exchange on Europe with that on the Americas. Do you think one continent clearly benefited more than the other? Provide reasons for your judgement.
4 How would you have modified (changed) Spanish actions after their conquest to minimise the effect on (meaning to reduce the harm to) traditional Aztec and Inca lifestyles?

H6.8 Long-term effects of colonisation

Disease and population change

A dramatic population decline

It is estimated that the Inca Empire population was between six and twenty million, and the Aztec Empire between five and twenty-five million in 1519, before the arrival of the Spanish. By 1600, the population in Mesoamerica had dropped by 95 per cent to just one million. The Inca population fell to 1.3 million by 1570 and 600 000 by 1630. While some died in warfare, it is thought that as many as 90 per cent were killed by diseases.



H6.8.1 Population decline in Mexico, 1500–1610

Epidemics and their impact on the indigenous peoples

Many **epidemics** arrived with the Spanish landing. In Mesoamerica, smallpox, typhus, measles, influenza, cholera, yellow fever and mumps spread rapidly through indigenous populations. A large number of people died because they had not been exposed to these diseases before and therefore lacked the immunity of the Europeans.

> Large bumps spread on people; some were entirely covered. They spread everywhere, on the face, the head, the chest, etc. [The disease] brought great desolation; a great many died of it.

H6.8.2 Symptoms of smallpox and its effects, from the *Florentine Codex*, written during 1545–90 by Franciscan friar Bernardino de Sahagún and his Aztec assistants

The impact of epidemics was not just the loss of life—it was psychological and social too:

- Without enough labourers, harvests were left to rot and fields were not cultivated.
- The devastation of the indigenous peoples by the epidemics seemed to support the Spanish idea that God was punishing indigenous populations for their religious practices and encouraged acceptance of European superiority and religion.
- The indigenous social structure shrunk from five classes to one class of commoners.

Lack of control over resources

By the mid-sixteenth century, Spanish landowners and clergy governed Mesoamerica. Colonists were granted plots of land by the Spanish king, dispossessing indigenous peoples. The Spanish created large tobacco and coffee farms, called **haciendas**, and opened mines where indigenous peoples worked for little or no wages. Initially, the Spanish maintained traditional Aztec and Inca systems of **tribute** (a payment to a ruling force as a sign of submission or loyalty).

In Peru, the Spanish set up dense urban settlements, underground mining, mills and sugar factories, which destroyed the traditional Inca lifestyle. A system called ***encomienda*** was established, which took away the rights of the Incas and used them as a cheap labour force. This system was so corrupt that in 1550 Spanish King Charles V reformed it to provide the Incas with some rights.

Tribute, farms and mines brought great wealth to the Spanish, and indigenous people became the poorest members of society. The Spanish controlled all resources and labour in the Americas. The effects of this dispossession are still being felt today. The indigenous peoples of these regions are still fighting for their right to self-rule and to preserve their culture and heritage.

Slavery

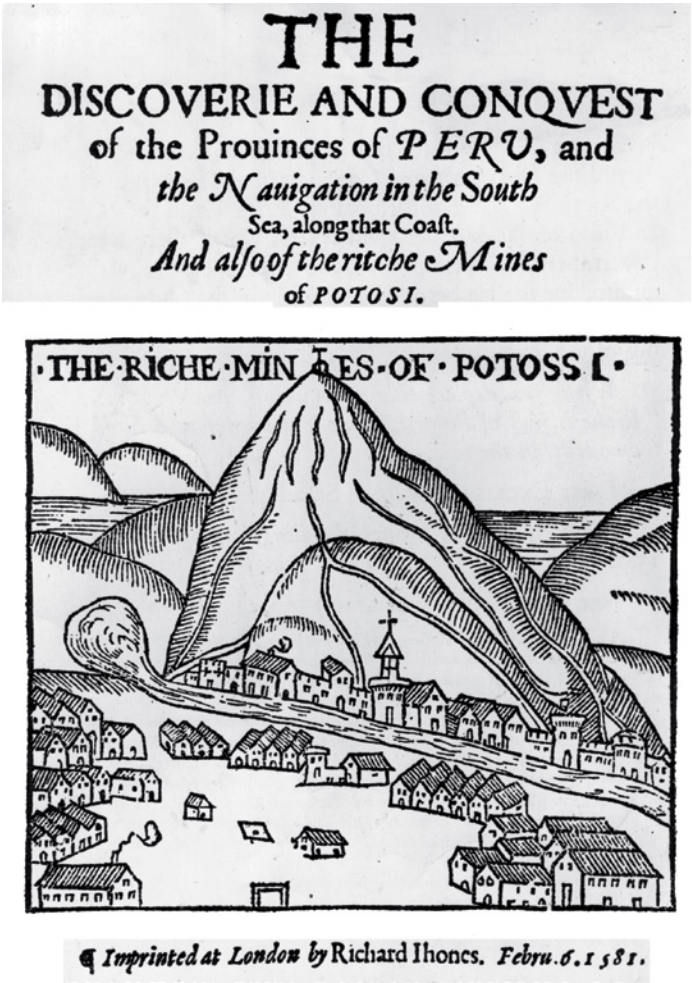
War, disease and workplace deaths of indigenous peoples meant that the Spanish immigrant landowners soon needed another source of labour to cultivate cash crops of coffee, tobacco, sugar cane, cocoa and cotton. To meet this demand, they found a new source of workers—slaves from Africa. Enslaved Africans were used not only in agriculture, but also in mining and development of settlements and defence. In the period 1520–1700, over half of all enslaved Africans brought to the New World disembarked in Spanish America.

The slave trade created divisions in society based on racial background, which are the roots of modern racism.

Cultural change

Defeat meant that the indigenous peoples had no power to maintain their culture at anything above a local level. Within a generation, the indigenous priesthood was extinct, statues of gods and temples were destroyed, and public religious observances ended. On the surface, Spanish Christianity had destroyed traditional ideas about the nature of the world. Despite this, some elements of traditional indigenous culture have survived.

The Spanish conquest of the Americas was the beginning of the Age of Empires and the precursor to (or forerunner of) modern globalisation. No longer were continents isolated from each other commercially, economically or philosophically.


THE
DISCOVERIE AND CONQVEST
of the Prouinces of PERV, and
the Nauigation in the South
Sea, along that Coast.
And also of the ritche Mines
of POTOSI.

·THE·RICHE·MIN ES·OF·POTOSS I·

¶ Imprinted at London by Richard Ihones. Febru.6.1581.

H6.8.3 An illustration of the silver mines of Potosí, Bolivia, c. 1581. By 1650, nearly eight million people had died mining the richest source of silver in the Americas. From *The Strange and Delectable History of the Discovery and Conquest of the Provinces of Peru* by Agustín de Zárate

Activities

Remembering and understanding

1 What was the greatest killer of indigenous people after the arrival of the Spanish?
2 Outline the ways in which the Inca way of life was destroyed.

Applying and analysing

3 Consider Source H6.8.2. Is the *Florentine Codex* a primary or secondary source? Do you think it would be a reliable source for a historian studying disease as an impact of colonisation?
4 Archaeologists have uncovered a slave graveyard in Mexico that was used for 150 years from 1550. Design a plaque to be placed at the site in which you explain in 100 to 200 words the long-term impact of colonisation.
5 Use a fishbone diagram to explain the impact of the conquest on the Aztecs or Incas as well as the wider world, such as the introduction of new diseases, horses and gunpowder in the Americas, and new foods and increased wealth in Europe.

Evaluating and creating

6 You have been commissioned to produce a documentary exploring the statement: 'The Spanish conquest of the Americas was a turning point in social and political world history'. Produce four detailed storyboards judging the effects of the Spanish conquest of the Americas. Include an evaluation of:
- at least one social and one economic change experienced
- one change that occurred within the Americas and another internationally
- at least one sentence for each storyboard that will be the narrator's voice-over during the documentary.

LS H6D

H6.9 Significant individuals

Moctezuma II

Moctezuma, the ruler of the Aztecs, was born in about 1466 and ascended the throne in 1502. He ruled over an empire reaching from the Gulf of Mexico to the Pacific Ocean, incorporating up to six million people.

When Cortés arrived in the Americas in 1519, Moctezuma was immediately informed and he sent emissaries to meet the newcomers as they battled their way from the coast, inland. When Cortés arrived in Tenochtitlán in November 1519, he was overawed with Moctezuma's power and magnificence.

> Touching Mutezuma's service and all that was remarkable in his magnificence and power, there is so much to describe that I do not know how to begin to even recount some part of it; for, as I have already said, can there be anything more magnificent than that this barbarian lord should have all the things to be found under the heavens in his domain, fashioned in gold and silver and jewels and feathers; and so realistic in gold and silver that no smith in the world could have done better, and in jewels so fine that it is impossible to imagine with what instruments they were cut so perfectly; and those in feathers more wonderful than anything in wax or embroidery.

H6.9.1 An extract from Cortés's 'Second Letter' sent to Spanish king Don Carlos in 1520

Moctezuma, for his part, welcomed Cortés and his conquistadors, and they lived as his guests for several months.

> When this long ceremonial salutation had been completed, Motecuhzoma spoke to Cortés through his translator, Marina. He welcomed Cortés to his city, telling him that he was overjoyed to receive him ... The Aztec king told Cortés to rest and make known his needs, which would be provided for in great abundance.

H6.9.2 An extract from Diego Durán's *The History of the Indies of New Spain*. Diego Durán was a sixteenth-century Dominican friar who wrote a history of the Aztec world before the Spanish conquest.

However, some time during this period, Cortés succeeded in placing Moctezuma under house arrest. Cortés then had to leave the city briefly, and when he came back he found the Aztecs in revolt. In the battles that followed, Moctezuma was killed. The details of his death are unclear: he may have been killed by the Spanish or by his own people, who blamed him for losing the empire.

Moctezuma ruled for 18 years. In 1581, Spanish historian Diego Durán described him as 'mature, virtuous, generous, of invincible spirit' and 'a monarch so powerful that he had been feared, served and obeyed in all of this New Spain'. However, many historians have been critical of his failure to stop the Spanish conquest of Mesoamerica.



H6.9.3 The *penacho* or feather headdress allegedly worn by Aztec emperor Moctezuma II

Vasco Núñez de Balboa

Vasco Núñez de Balboa (1475–1519) was a Spanish explorer and conquistador. In 1500, he set out for South America, exploring the coast of present-day Colombia, in the north-west of South America. In 1510, he established the first permanent European settlement on the mainland of the Americas at Santa María la Antigua del Darién in present-day Panama.

In 1513, Balboa led an expedition from Darién across the Isthmus of Panama, the narrow piece of land that links North and South America. He was looking for a new sea, and for gold. While he was unsuccessful in his search for gold, he found the South Sea, known now as the Pacific Ocean, becoming the first European to successfully lead an expedition to the Pacific from the Americas. He claimed the Pacific and all its shores for Spain.

In 1519, after a brief trial, Balboa was found guilty of treason, and was beheaded, near Darién, Panama. He protested his innocence to the end, declaring that he always sought to serve his king and increase his empire.

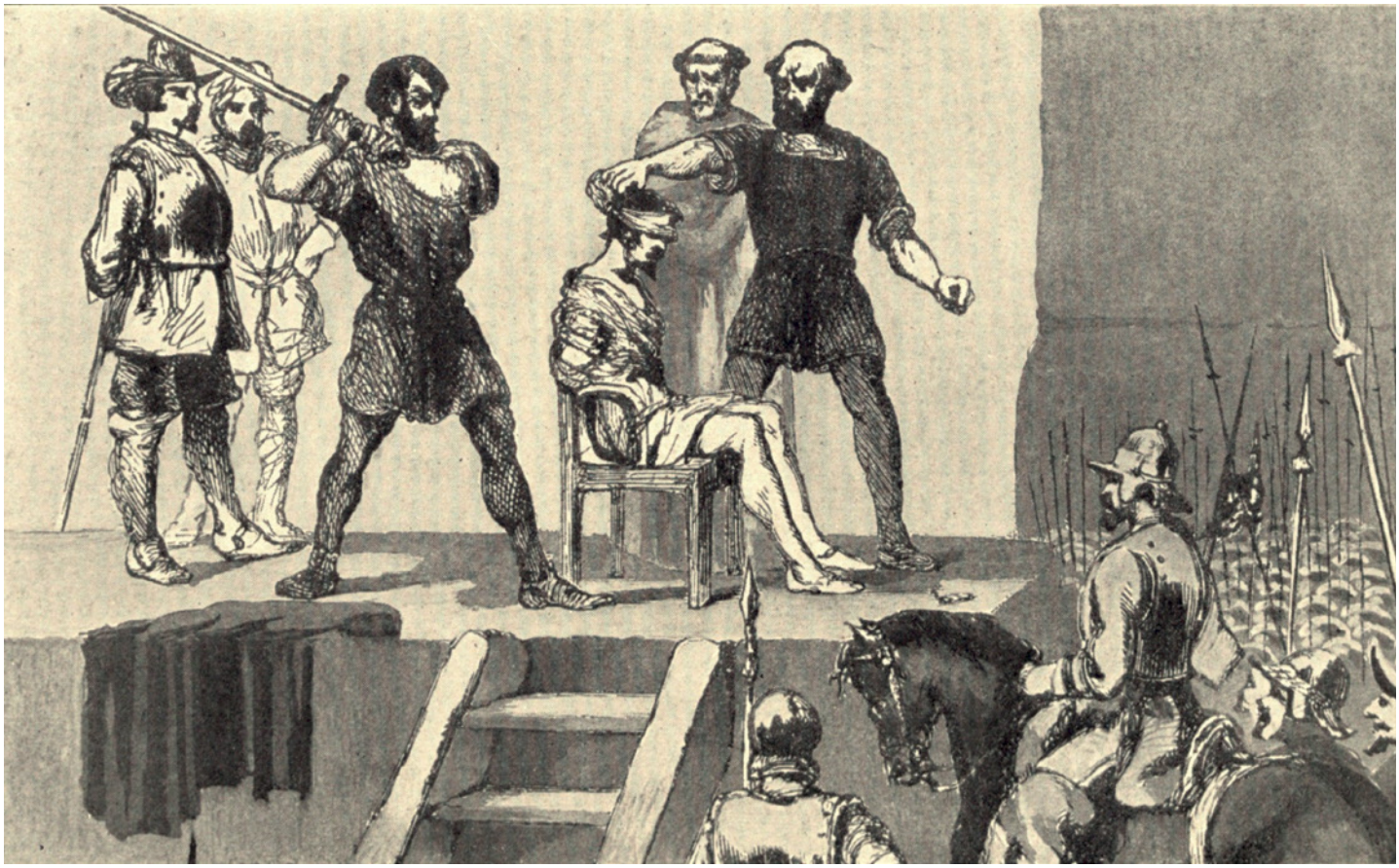
Activities

Remembering and understanding

1 Describe Moctezuma's court.
2 Explain Balboa's achievements in Spanish America.

Applying and analysing

3 Consider Source H6.9.1. Do you think Cortés would have been surprised when he met Moctezuma? Why?
4 Do you think Cortés and Balboa were explorers or invaders? Give reasons for your answer.



H6.9.4 The execution of Balboa, 1520



Geography toolkit 5

Geography is concerned with the changes taking place in all living and non-living elements of the Earth's surface and atmosphere. The elements interact to produce the diverse landscapes that make up the world around us. Geographers are concerned with the world's people, communities and cultures. Of particular interest are the ways in which the activities of people impact on places.

In this chapter we reflect on how people view their place in the world. These worldviews help geographers understand people's attitudes towards the natural world and its resources. We also learn how to read maps and draw a cross-section, and find out about the use of different types of photographs in studying our world.

OVERVIEW QUESTIONS

- **5A** How do people's worldviews affect the way they interact with the natural, managed and built environments?
- **5B** What types of maps and photographs are used by geographers, and what are the conventions used in their creation?
- **5C** What are the key skills involved in the interpretation of maps?

GLOSSARY

aspect the direction a slope faces

contour interval the difference in height between two contour lines on a map

contour lines lines on a map that join places of equal height above sea level

distribution patterns the spatial arrangement of the population or number of objects per unit of area

ecology the study of the environment and how plants, animals and humans live together and affect each other

elevation the height of a point or place above sea level

environment our total surroundings, such as the living and non-living features of the Earth's surface and atmosphere; this includes features that are altered or created by people

ground-level photographs photographs taken from the ground

legend the part of a map that explains the meaning of the symbols used in the map; sometimes referred to as the key

location the position of a feature or place on the Earth's surface

oblique photographs photographs taken from above the ground, with the camera pointed at an oblique (slanted) angle to the ground; often a horizon cannot be seen

relief in geography, a term describing the shape of the land, including height and steepness

scale the relationship between distance on a map and actual distance on the Earth's surface

spot heights the exact altitudes or heights above sea level of points on the Earth's surface

thematic maps maps designed to illustrate a particular theme (e.g. annual rainfall or the location of oil resources)

topography the shape of the land

vertical photographs photographs taken from above the ground, with the camera lens pointed directly down on the area being photographed

5.0.1 The Wave, Paria Canyon, USA. These sandstone formations were initially eroded by water run-off. After the water dried up, they continued to be eroded by wind and sand.

5.1 Key concept: Environmental worldviews

Defining worldviews

Worldviews determine how people see their place in the world. They are reflected in people's behaviour and the decisions they make. Knowledge of people's environmental worldviews is important because it helps geographers understand the various attitudes that people have towards the natural world and its resources.

Perspective

A worldview is a point of view, or perspective. It can be held by an individual, though when accepted and shared by many it becomes a belief system that is widely acknowledged. An environmental worldview is concerned with how the Earth and all its species and resources are managed.

Establishing worldviews

Conflicts arise when people hold different environmental worldviews. For example, people will often disagree about whether an environmental problem should be solved or ignored. People have different points of view or opinions about the worth of other species and the extent to which they should be protected.

A person's environmental worldview is determined by:

- how they think the world works
- what they think is their role in the **environment**
- what they think is the correct environmental behaviour.



5.1.1 A sign at Kinglake National Park, Victoria

Different worldviews

There are a number of competing environmental worldviews. These views may be classified as human-centred, stewardship-based and nature-centred. These views are explained below and summarised in Table 5.1.2.

Human-centred worldview

This worldview is based on the belief that humans are the most important species and have several traits that set them apart from other species. For example, those with a human-centred worldview try to control nature through technology. They believe they are the masters of nature, and that other species have a value only if they are considered useful to humans.

As human needs are considered the most important, the impacts of economic growth and development on the natural world are not important. Technology is seen to be the solution to problems of potential environmental damage.

Stewardship-based worldview

People with this worldview believe that humans should be caring stewards (managers) of the natural world. They recognise that humans use resources but are aware that these resources may run out and should be managed carefully. Any development must not threaten the Earth's life support systems on which humans and other species and ecosystems depend.

Indigenous people acted as stewards, as they traditionally had a close spiritual connection with the land and its creatures. They were grateful for what they were able to take and treated the natural world with respect. Any hunting or gathering was done well within the recovery limits of species. With this worldview they managed the environment successfully for thousands of years. While many indigenous people now no longer practise traditional hunting and gathering, they still hold this worldview.

Nature-centred worldview

People with a nature-centred worldview believe that nature exists for the benefit of all species on Earth, not just humans.

Humans are considered equal with other species, and all species have a value separate from any material benefit humans may get from them. Those with a nature-centred worldview believe every species has a right to life and does not have to be useful to humans to justify its continued existence. Humans also have an ethical (moral) responsibility to guard against the extinction of any species.

The deep **ecology** movement goes even further, claiming that humans have no right to interfere with the richness and diversity of the natural world.

5.1.2 Comparing worldviews

Human-centred worldview	Stewardship-based worldview	Nature-centred worldview
Humans are separate from the rest of nature and can manage nature to satisfy their ever-increasing needs and wants.	Humans have an ethical responsibility to be responsible stewards of the Earth and its resources.	Humans are part of nature and totally dependent on it for our wellbeing.
Technological advances will enable humanity to overcome any adverse (negative or harmful) impact on the natural environment.	The supply of natural resources is plentiful but they should be used carefully to avoid waste.	The Earth's resources are limited and should not be wasted.
There is no limit on future economic growth.	Sustainable forms of economic growth should be encouraged ahead of those that are environmentally damaging.	Sustainable forms of economic activity should be encouraged. Activities that degrade the Earth's resources should be discouraged.
Our future wellbeing depends on how well we manage the Earth's life-support systems.	Our future wellbeing depends on how we manage the Earth's life-support systems for our benefit and that of the rest of nature.	Our future wellbeing depends on our developing an understanding of how nature sustains itself.

Spotlight

Douglas Tompkins

Douglas Tompkins is a wealthy American environmentalist and former businessman who founded the clothing companies North Face and Esprit. He went on to sell these businesses when he became concerned about the environmental impact of the fashion industry. Tompkins used his wealth to promote the importance of conservation, especially the protection of areas of exceptional environmental quality. His first project was Pumalin Park in Chile. There he purchased a 3200-square-kilometre area of temperate rainforest, high peaks, lakes and rivers. Without Tompkins's intervention, this area might have been exploited to generate power, or for industry or agriculture. The Chilean government has since declared it a nature sanctuary. Tompkins also established the Foundation for Deep Ecology.



5.1.3 Pumalin Park, Chile, is an area of exceptional beauty and unique forest ecosystems.

Activities

Remembering and understanding

1. Define the term 'worldview'.
2. Explain how a person's environmental worldview is determined.
3. Describe the three different types of environmental worldviews.
4. Explain why conflicts arise between people with differing environmental worldviews.

Applying and analysing

5. Determine your own worldview by considering the following: What is more important, the health of the Earth's natural world or the wellbeing of people? Write a short explanation of your opinion.
6. Study Table 5.1.2. Which of the various descriptions most closely matches your worldview? Which of them most closely reflects the worldview of your parents?

5.2 Maps

Types of maps

Maps range from the very simple to the very complex. Cartographers (map makers) use symbols, shading and colour to simplify reality and show how the features of the Earth's surface are arranged and distributed. Some common types of maps are:

- *topographic maps*—detailed, large-scale maps that illustrate selected features of the physical environment
- *weather maps*—map weather events and changes as they occur
- ***thematic maps***—illustrate a particular theme, such as annual rainfall or the location of oil resources (see Figure 5.2.1)
- *street maps*—detailed maps that focus on a smaller area in an urban centre.

Elements of maps

The essential elements of a map are:

- a border
- an orientation or direction indicator
- a **legend** or key, to explain symbols used
- a title
- a **scale**, to indicate the relationship between distance on the map and actual distance on the Earth's surface
- a source, to tell us where the information in the map came from.

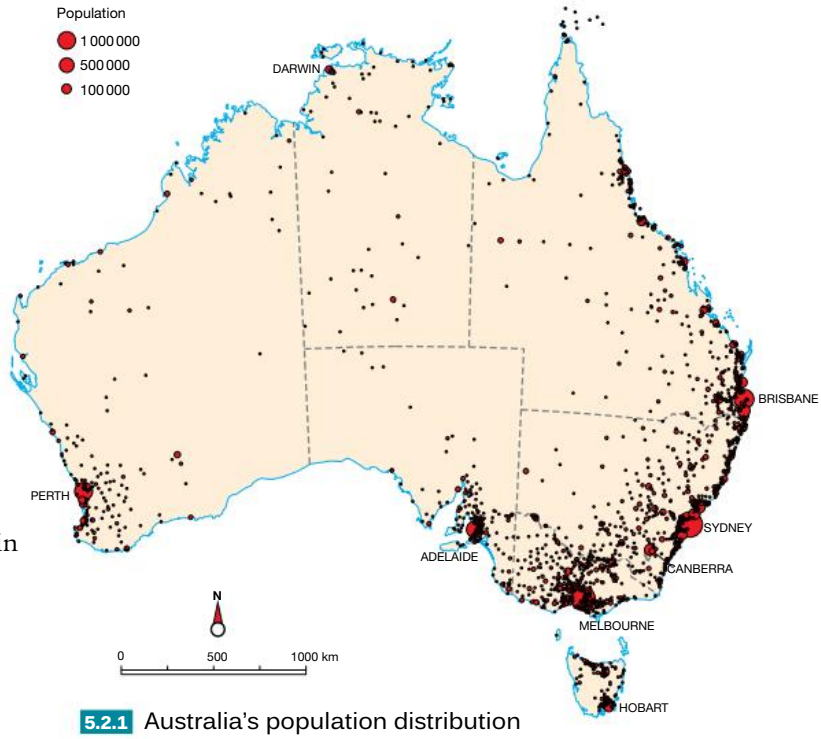
A good way to remember the essential elements of a map is the term 'BOLTSS'—**b**order, **o**rientation, **l**egend, **t**itle, **s**cale and **s**ource.

Quadrants

To help us to locate features on maps, geographers sometimes express **location** (position) in terms of quadrants. The quadrants are named for the points of the compass.

north-west quadrant	north-east quadrant
south-west quadrant	south-east quadrant

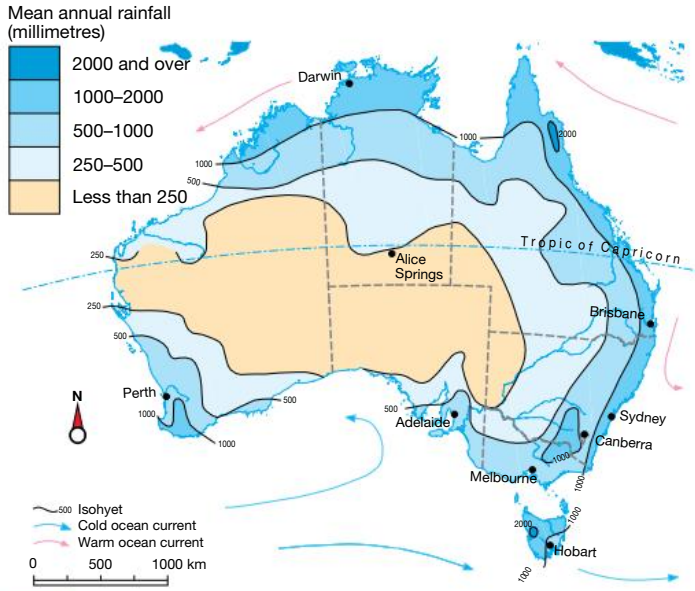
5.2.2 The quadrants of a map



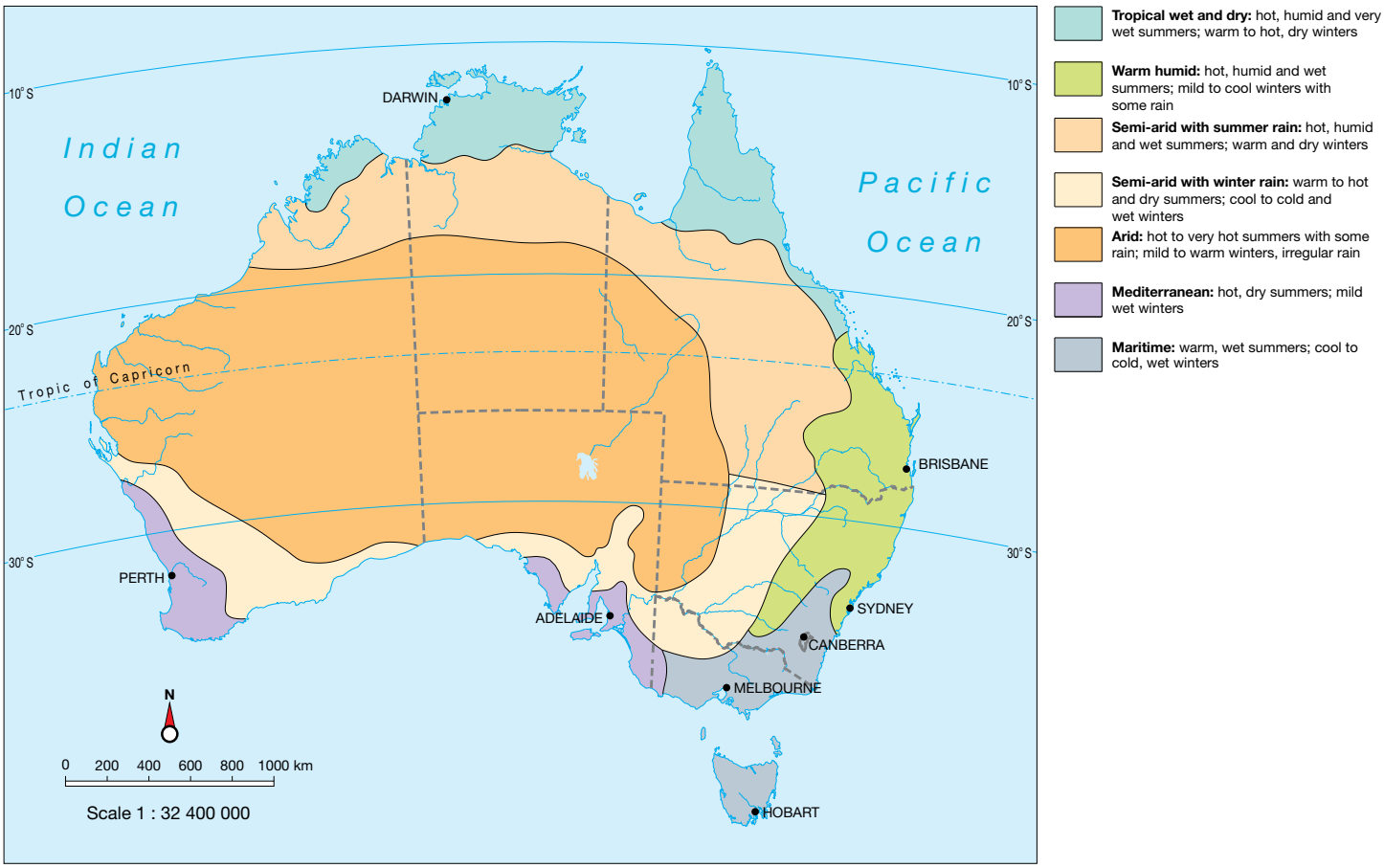
5.2.1 Australia's population distribution

Patterns between maps

Maps help us to identify **distribution patterns** (the spatial arrangement of objects per unit of area) in landscapes. Figures 5.2.3 and 5.2.4 show a strong link between arid (dry) zones in Australia and regions that receive less than 250 millimetres of rainfall per year. Locations that receive over 2000 millimetres of rainfall per year have a tropical or maritime climate. In contrast, areas that receive less than 250 millimetres of rainfall per year have a semi-arid climate.



5.2.3 Australia's annual rainfall



5.2.4 Climate regions of Australia

Activities

Remembering and understanding

1 Name four types of maps.
2 List the elements of a map.

Geographical skills

3 Study Figure 5.2.1 and do the following tasks.
   a Name the quadrant/s that include cities of over 1 000 000 people.
   b Name the quadrant/s in which the least people live.
4 Study Figure 5.2.4 and do the following tasks.
   a Name the quadrant/s in which the maritime climate zone is located.
   b Name the quadrant/s in which the Mediterranean climate zone is located.
5 Study Figures 5.2.3 and 5.2.4, and do the following tasks.
   a Is there a link between tropical zones and areas receiving more than 1000 millimetres of rainfall per year? Explain.
   b Is there a link between semi-arid zones and areas receiving 250 to 500 millimetres of rainfall per year?
6 Study Figures 5.2.1 and 5.2.4, and answer the following questions.
   a Is there a link between areas with low population and arid zones? Explain.
   b Is there a link between areas with low population and warm humid climate zones? Explain.
7 Study Figures 5.2.1 and 5.2.3, and discuss the following statement. 'There is a strong link between rainfall areas greater than 500 millimetres per year and the location of large cities in Australia.'

5.3 Topographic maps

Topography

A topographic map is a detailed, large-scale map of part of the Earth's surface, showing selected features of the physical and human environments. These include the height, shape and slope of the land; vegetation; and a range of human features. Collectively, these features are known as **topography**.

Relief, height and slope

Because of their large scale, topographic maps show a greater variety of information about places. Their scale allows topographic maps to show individual buildings, small rivers and creeks, and even dams, fences and telephone lines. In addition, topographic maps show **relief**, which is a general term describing the shape of the land, including its height and steepness.

The main techniques that cartographers use to show relief are **spot heights** (the exact altitudes of points on the Earth's surface), **contour lines** (that join points of equal height above sea level) and contour patterns, layer colouring and landform shading.

Spot heights

Spot heights are shown on maps as black dots, with the height written next to them (see Figure 5.3.1). A spot height gives the exact height above sea level of the particular location or feature.

Contour lines

Contour lines join points of equal height above sea level. They provide information about the shape and slope of the land, and the height of features above sea level. The **contour interval** is the difference in height between two adjacent contour lines (lines that are next to each other) on a map.

The spacing of the contours on a map shows the steepness of slopes. Areas where contour lines are close together have steep slopes. Areas where contour lines are widely spaced are very flat.

Contour patterns

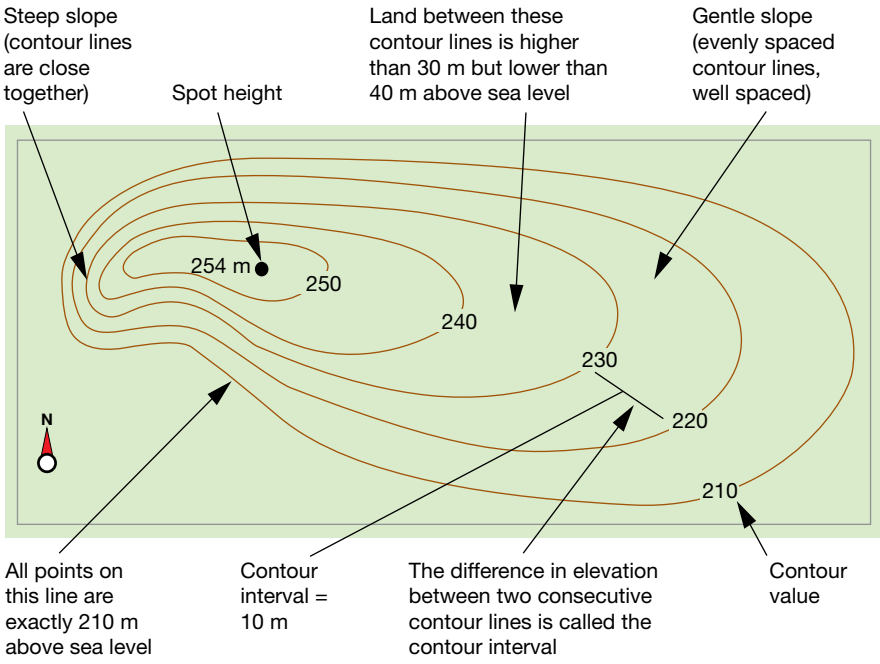
Each type of topographic feature is represented by its own distinctive contour pattern (see Figure 5.3.2).

Layer colouring

Layer colouring is a simple and effective way of showing relief on maps. It involves filling in the area between selected contours with different colours. It is often used in conjunction (combined) with spot heights, and sometimes with landform shading.

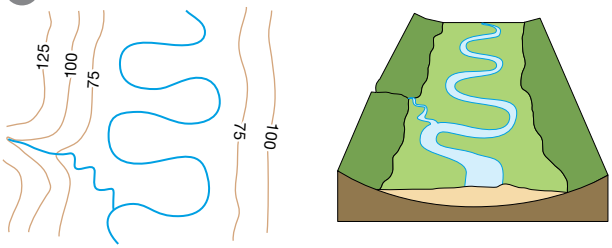
Landform shading

Shading can be applied to maps so that colours darken as **elevation** (height) increases. Landform shading is sometimes used in conjunction with contour lines.

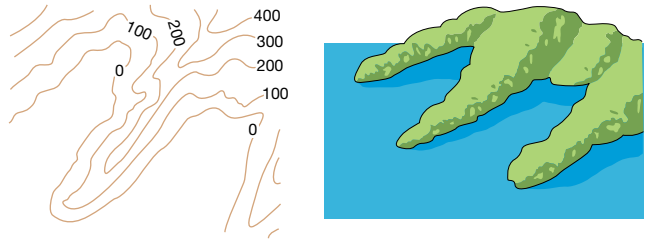


5.3.1 Contour lines

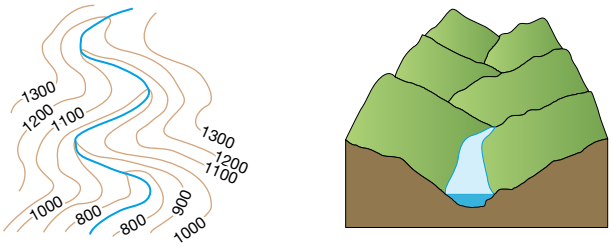
a flood plain



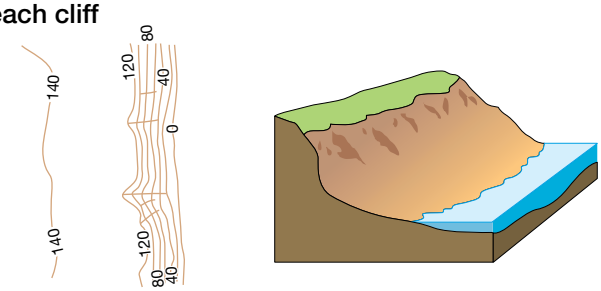
b drowned coastline



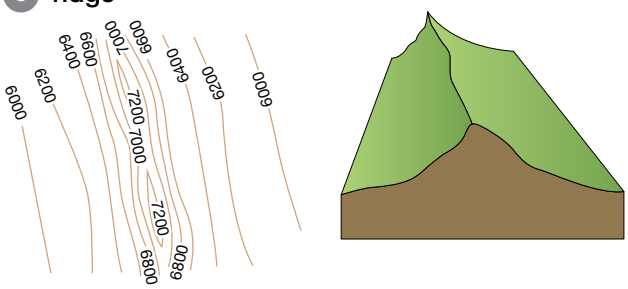
c interlocking spurs



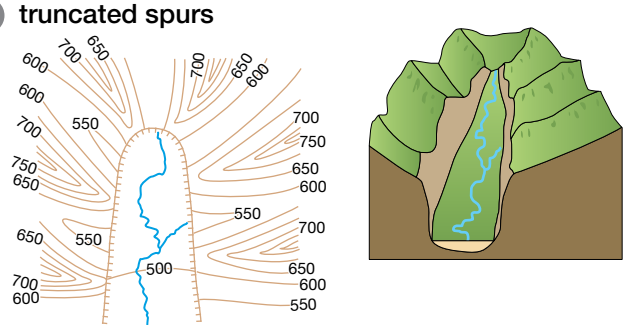
d beach cliff



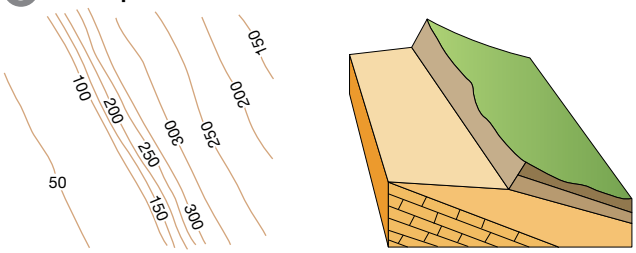
e ridge



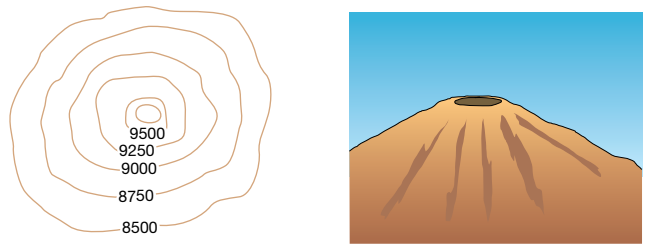
f truncated spurs



g escarpment



h conical mountain



5.3.2 Reading contour lines can tell a lot about the type of landforms.

Aspects of a slope

Slope refers to the height and pattern of the land. **Aspect** refers to the compass direction that a slope faces. There are north-facing, south-facing, east-facing and west-facing slopes. When there is no slope (the land is flat), there is no aspect.

Activities

Remembering and understanding

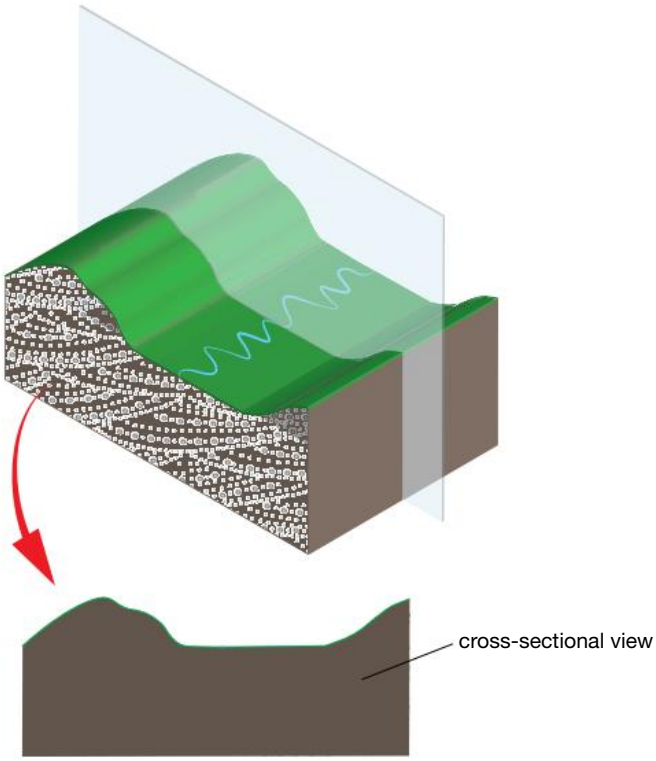
1. Explain what topographic maps are. What do they show?
2. State what contour intervals are used for.
3. List and explain the various ways relief is shown on maps.
4. State what is meant by the term 'aspect'.

5.4 Drawing cross-sections

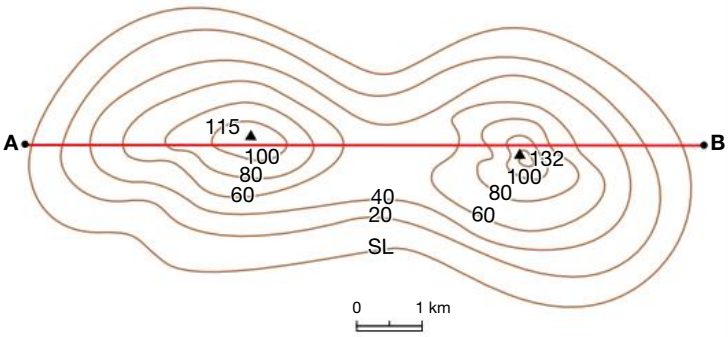
Cross-sections

A cross-section provides a side view, or profile, of a landscape. This view allows us to see how the shape of the land influences land uses, such as settlement, drainage and vegetation.

A cross-section is shown in Figure 5.4.1. Cross-sections are drawn from topographic maps, such as the one in Figure 5.4.2. They show the shape of the land.



5.4.1 A cross-section shows a side view, or profile.



5.4.2 Twin peaks and a saddle

Skills builder

Calculating vertical exaggeration

Calculating vertical exaggeration shows how much a cross-section has been exaggerated (made larger) vertically.

The vertical exaggeration of a cross-section is given as a number. For example, 5× means that the vertical scale is five times greater than the horizontal scale. A value of 1× indicates that horizontal and vertical scales are identical. This means that the cross-section has no vertical exaggeration.

To calculate the vertical exaggeration (VE) of a cross-section we use the following formula:

$$VE = \frac{\text{Vertical scale (VS)}}{\text{Horizontal scale (HS)}}$$

The scale used on the vertical axis of the cross-section

The scale of the map from which the cross-section was drawn

Answers must be expressed as a single number. Vertical exaggeration has no units of measurement, nor is it expressed as a fraction.

For example, to calculate the vertical exaggeration of the cross-section shown in Figure 5.4.3a:

$$VE = \frac{VS}{HS} = \frac{\text{1 cm represents 20 m}}{\text{1 cm represents 1 km}}$$

Make sure that the same unit of measurement is used on the top (numerator) and bottom (denominator) of the formula.

$$VE = \frac{VS}{HS} = \frac{\text{1 cm represents 20 m}}{\text{1 cm represents 1000 m (1 km)}}$$

$$VE = \frac{\frac{1}{20}}{\frac{1}{1000}}$$

Invert the denominator and then multiply:

$$VE = \frac{1}{20} \times \frac{1000}{1}$$

$$= \frac{1000}{20}$$

= 50 times (50×)

Constructing cross-sections

To draw a cross-section, follow the steps below and refer to Figure 5.4.3.

1 Locate the two points on the map between which the cross-section is to be made. Label these points 'A' and 'B' (see drawing a).

2 Place the straight edge of a piece of paper along an imaginary line joining points A and B. Mark points A and B on your paper (see drawing b).

3 Mark the position where your paper crosses each contour line. Write the value of each contour line on your piece of paper (see drawing b). You may have to estimate the height of your starting and finishing points.

4 On graph or squared paper, draw the horizontal and vertical axes for your cross-section. The length of the horizontal axis should equal the distance between A and B. The vertical axis should use a scale that does not exaggerate your vertical scale too much. You don't want a range of low hills looking like the Himalayas!

5 Place your piece of paper along your horizontal axis. In pencil, lightly plot the contour points and heights as if you were drawing a line graph (see drawing c).

6 Join the dots with a single, smooth curved line.

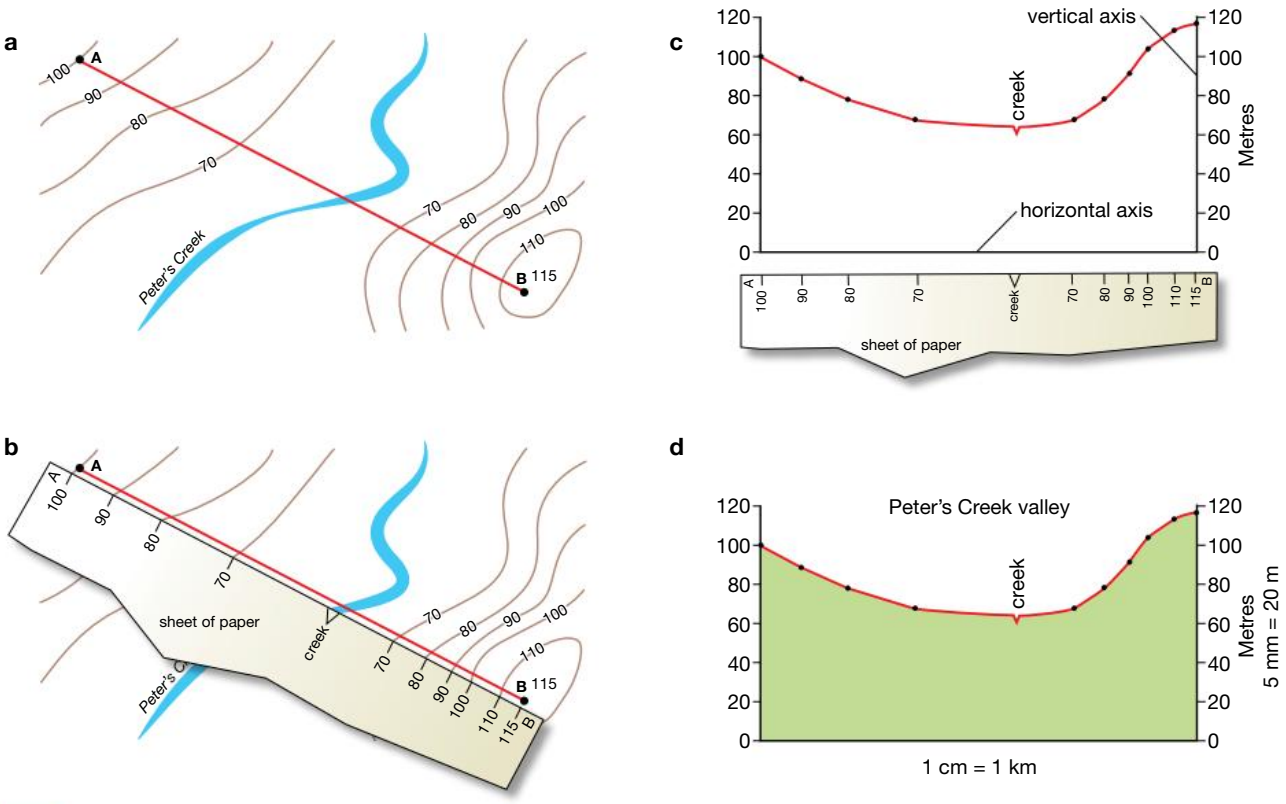
7 Label any features intersected by your cross-section, such as rivers and major roads (see drawing d).

8 Finish off your cross-section by:

a shading in the area below the landform you have drawn

b labelling the scale on the horizontal and vertical axes

c giving it a title.



5.4.3 Drawing a cross-section

Activities

Remembering and understanding

1 Describe what a cross-section shows.

2 Explain how a cross-section might be useful to geographers.

Geographical skills

3 Study Figure 5.4.2. Construct the cross-section A–B. Calculate the vertical exaggeration of the cross-section you have drawn.

5.5 Latitude and longitude

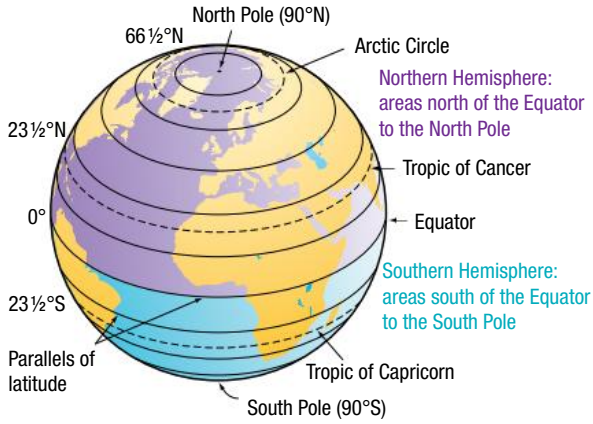
Locating places and features

Most of the maps you will use in your study of geography include lines of latitude and longitude. These allow you to quickly and accurately locate places and features on the Earth's surface.

Latitude

Lines of latitude are imaginary lines that run in an east–west direction around the Earth. Because lines of latitude are parallel to each other, they are often referred to as parallels of latitude.

The most important line of latitude is the Equator (0°). The Equator divides the Earth into two halves: the Northern and Southern hemispheres. All other lines of latitude are either north or south of the Equator.

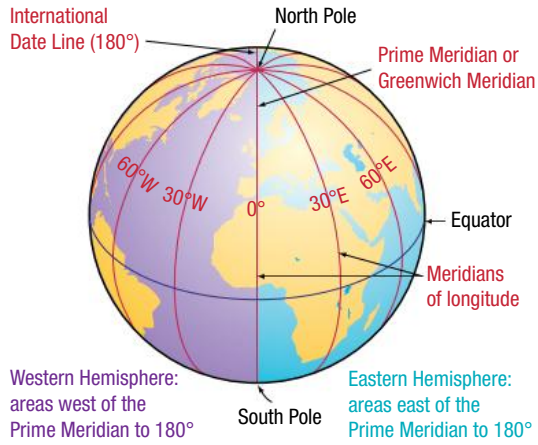


5.5.1 Lines of latitude are sometimes called parallels of latitude because they run parallel to each other.

Longitude

Lines of longitude (see Figure 5.5.2) run in a north–south direction. They are not parallel to one another because they all converge, or meet, at the North and South poles. Any number of these lines can be drawn on a map. These imaginary lines are called meridians of longitude.

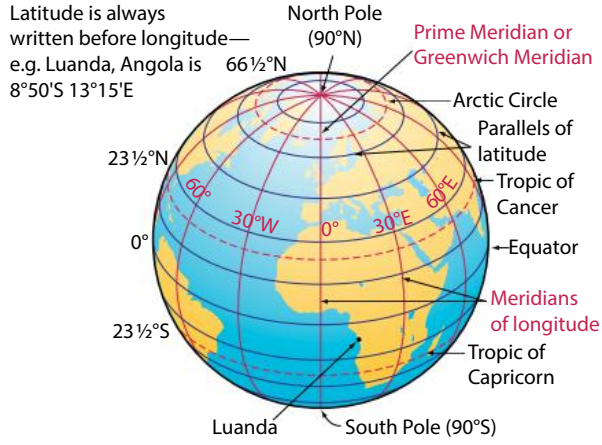
The most important line of longitude is the Prime Meridian (0°), which passes through Greenwich Observatory in London, United Kingdom. All other lines of longitude are located either to the east or to the west of the Prime Meridian. The International Date Line (IDL) is on the opposite side of the world, at 180°. There is a change of day at the IDL. The Prime Meridian and the IDL divide the Earth into two halves: the Western and Eastern hemispheres.



5.5.2 Meridians of longitude meet at the North and South poles.

Latitude and longitude

Together, lines of latitude and longitude form a grid that allows you to pinpoint places on the Earth's surface.



5.5.3 Lines of latitude and longitude form a grid around the Earth.

Did you know?

In 2011, Samoans lost a day when the country decided to move to the other side of the International Date Line.

Skills builder

Finding places using latitude and longitude

If you are given the latitude and longitude (or coordinates) of a place and asked to identify it, follow the steps below.

1. Using a world map, find the general location of the latitude and longitude you have been given.
2. Turn to a map of the region or continent, and locate the latitude and longitude more accurately.
3. Check your answer by finding the place name in the index of the atlas. Most atlas indexes include the latitude and longitude of each place.

Kobe in Japan, for example, has a latitude of approximately 35° north of the Equator and a longitude of approximately 135° east of the Prime Meridian. To be even more accurate, each degree (°) can be divided into smaller units, called minutes (′). There are 60 minutes in each degree. Kobe's location using degrees and minutes is latitude 34°40′ north, longitude 135°12′ east.



5.5.4 This map extract of Japan shows latitude and longitude, as well as features of the biophysical and built environments.

Activities

Remembering and understanding

1. Define the terms 'parallel of latitude' and 'meridian of longitude'.
2. Explain the difference between parallels of latitude and meridians of longitude.
3. Describe the location and significance of the Prime Meridian and the International Date Line.

Geographical skills

4. Study Figure 5.5.4. Name the feature located at each set of coordinates.
   - **a** Physical environment features
     - **i** 36°05′N 133°00′E
     - **ii** 42°30′N 132°00′E
     - **iii** 35°23′N 138°42′E
     - **iv** 38°20′N 138°30′E
     - **v** 41°20′N 140°15′E
     - **vi** 42°N 129°E
     - **vii** 33°30′N 135°45′E
   - **b** Human environment features
     - **i** 35°40′N 139°45′E
     - **ii** 34°23′N 132°27′E
     - **iii** 31°00′N 130°30′E
     - **iv** 38°15′N 140°52′E
     - **v** 43°05′N 141°21′E
     - **vi** 35°02′N 135°45′E

5.6 Photographs

Types of photographs

Photographs are very important to geographers. A photo of an area of the Earth can give a geographer an idea of what it looks like without needing to visit it. Photographs record a landscape as it exists at a particular time. They can also be used to record fieldwork observations.

Geographers group photographs in three different categories: ground-level, oblique and vertical.

- **Ground-level photographs** are taken from the ground. Features in the foreground will appear larger than those in the background. Large objects in the foreground may block out features in the middle and background.
- **Oblique photographs** are taken from above the ground, with the camera pointed at an oblique (slanted) angle to the ground. They are similar to ground-level photographs in that features in the background will appear smaller than those in the foreground. Often a horizon cannot be seen.
- **Vertical photographs** are taken from above the ground, with the camera lens pointed directly down on the area being photographed. Features across the photograph will not be distorted, although it will be hard to estimate their height.

Interpreting photographs

When interpreting photographs, look for:

- the main features being shown
- relevant information given with the photograph, such as a caption or written information
- evidence of location and time
- clues to scale and living conditions
- features that seem out of place, as they may require further reading or investigation.



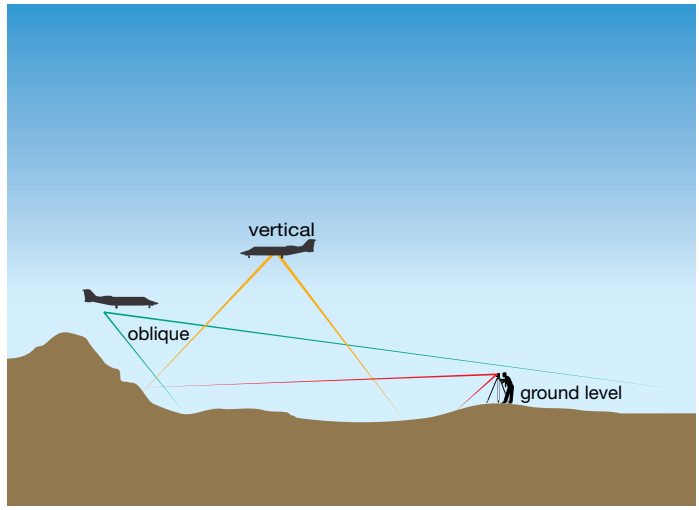
5.6.1 A ground-level photograph, Serengeti National Park, Tanzania



5.6.2 An oblique photograph, Dubrovnik, Croatia



5.6.3 A vertical photograph, Tokyo, Japan



5.6.4 Taking ground-level, oblique and vertical photographs

Skills builder

Photo sketching

Being able to sketch from photographs allows you to make a quick summary of the information shown in an image. It also enables you to highlight and annotate (add notes of) the key elements of the feature or place photographed. Photo sketches can be used to illustrate reports and displays.

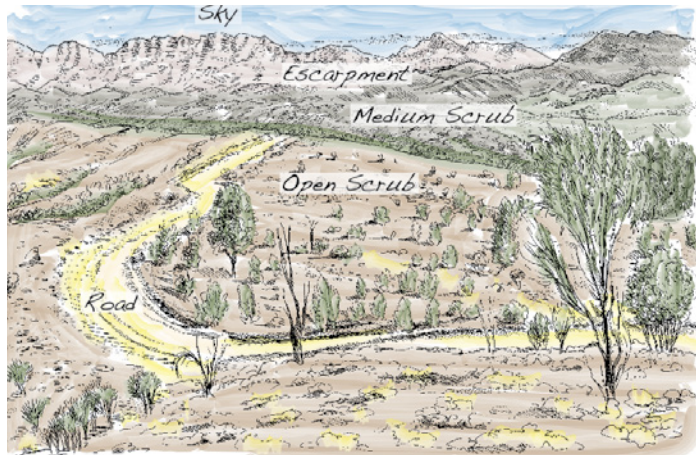
Use a soft pencil on blank paper. A photo sketch should not reproduce everything in the photograph. Pick out the main features of the photograph, and sketch in their shape. Include the features you want to highlight. Always place your sketch within a frame that is in the same proportions as the original photograph. Annotate your sketch to point out the main features, or to indicate a changing feature or some important link between features.

For ground-level photographs it may be useful to divide your photograph into three areas: foreground, middle ground and background. Before you begin sketching, lightly pencil these three areas into your frame. The features of each area can then be sketched in. Begin with the background, followed by the middle ground and then the foreground.

Ground-level photo sketches can be annotated or coloured to highlight particular features. You can see both of these techniques in Figure 5.6.6, which is a sketch of Figure 5.6.5.



5.6.5 A ground-level photo, Flinders Ranges, South Australia



5.6.6 A sketch of Figure 5.6.5

Activities

Remembering and understanding

1. Explain why photographs are important to geographers.
2. State how ground-level photographs differ from oblique photographs.

Applying and analysing

3. Study Figures 5.6.1–5.6.4, then answer the following questions.
   - a. Which type of photograph:
     - i. shows excellent detail about the foreground?
     - ii. eliminates (gets rid of) any distortion to the shape of an area covered by features?
     - iii. best shows the shape of the landscape?
   - b. Which type of photograph would be most suitable for showing:
     - i. a plan view of your school?
     - ii. a crowded shopping centre?
     - iii. areas affected by flooding?
     - iv. the height of a new building?
4. Study Figures 5.6.1 and 5.6.2. Compare the two locations by interpreting the photos.

Evaluating and creating

5. Study Figure 5.6.2, then complete the following tasks.
   - a. Construct a photo sketch of the image. Label Dubrovnik's harbour, marina and fort.
   - b. Describe the site of Dubrovnik.



Landscapes and landforms

6

Landscapes are made up of the physical elements of the Earth's surface and the cultural overlay of human activity, some of which stretches back thousands of years. Landscapes reflect the interactions of place and people over time, and are important in shaping national identity. They contribute to our 'sense of place' and form the dynamic (ever-changing) backdrop to our lives. Landforms are the natural features of the Earth's surface.

OVERVIEW QUESTIONS

- **6A** What processes are responsible for the formation of landscapes and landforms?
- **6B** In what ways are landscapes and landforms valued?
- **6C** In what ways do humans impact on landscapes?
- **6D** Why do we need to protect landscapes and how can this be done?

LS Before you begin

6.0.1 Landscapes, like this one in Hallstatt, Austria, include natural physical elements and features associated with human activity, such as buildings.

GLOSSARY

conservation the development and application of management practices to conserve, protect and (where possible) restore landscapes

crust the thin outer layer of the Earth (the lithosphere)

deposition the accumulation or build-up of sediment by the action of erosional agents (water and wind)

erosion the wearing down, transportation and deposition (removal) of material by water, wind and ice

fault the fracturing or breaking of rock along lines of physical weakness

fold the buckling of rock due to pressure

habitats areas inhabited by a particular species of animal or plant

landforms natural features of the Earth's surface, such as mountains, valleys, lowlands and volcanoes

landscape the overall appearance of an area resulting from the interaction of landforms, soils, vegetation and changeable elements (such as weather) with human elements (such as transport networks and settlements)

mantle the layer between the Earth's core and its crust

national identity qualities that develop over time and represent a country's society and people; common beliefs and ideas about identity that people feel they share with others in their society

plate margins the areas where the Earth's plates meet

plates segments of the Earth's crust that are slowly moving due to convection currents (movement generated by heat) in the mantle

preservation the protection of landscapes (and environments and habitats) from loss or damage

rock cycle the recycling of material in the Earth's crust

weathering the physical or chemical breakdown of rocks into smaller pieces that do not undergo transportation from their original position

6.1 Landscapes and landforms explained

Landforms

Landforms are the natural features of the landscape. They include valleys, plateaus, mountains, cliffs, plains, hills, dunes and glaciers.

Landscapes

'**Landscape'** is the term used to describe the features of an area. It includes the biophysical elements of landforms (the natural features), the living elements of land cover (such as soils and vegetation), the human elements and the changeable elements (such as weather conditions).

Culture and landscapes

Landscapes combine physical features with an 'overlay' of human activity, as shown in Figure 6.1.1. This overlay may have accumulated, or collected, over thousands of years. It can often be easily recognised as elements of managed and constructed (or built) environments. Sometimes, however, evidence of human activity is hard to see. For example, when a river is dammed, its flow changes, which impacts on all species living in and near the river.

Geographers seek to explain how and why places have changed over time. Landscapes are the product of the interaction of people and place. They play an important role in creating what geographers refer to as 'sense of place'—the qualities that distinguish one place from another. Landscapes also play a role in shaping people's personal, local and national identities.



Natural elements



Living elements



Human elements



Changeable elements

6.1.1 Elements of a landscape

Spotlight

Antarctica's biophysical landscape

Antarctica is unique for being almost completely covered by glacier ice. The continent's ice sheet is, on average, 2450 metres thick and contains about 90 per cent of the world's fresh water. The coastline is mostly bordered by ice shelves, which are thick platforms of floating ice. Many of these are created by glaciers, which are rivers of dense ice that are constantly moving because of their own weight.

Only about 0.4 per cent of Antarctica is not covered by ice and snow. These areas occur because of their size and location. For example, some high mountain peaks (called nunataks) rise above the ice sheets, and in some places their steep slopes are lashed by strong winds that prevent snow collecting. Dry valleys are also free of ice and are found in very arid areas at high altitude.

Antarctica has many mountain peaks, a lot of which are higher than 4000 metres above sea level. The highest mountain is Mount Vinson at 4892 metres above sea level. Antarctica also has several islands, both large and small. Some are permanently connected to the mainland by ice. Others are only connected in colder months, when more than half of the Southern Ocean surrounding Antarctica freezes over. Nearly all of this sea ice melts in summer.

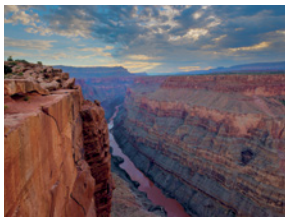


6.1.2 Much of Antarctica's biophysical landscape is formed by glaciers such as this one, originating from the melting Larsen B ice shelf on the Antarctic Peninsula.

Types of landscapes

The Earth has a vast range of biophysical, managed and constructed landscapes (see Table 6.1.3). The Earth's biophysical landscapes are those largely unaffected by human activity. They include its icy polar regions, its great mountain ranges and vast deserts, the savanna grasslands, coastal and reef landscapes, and the tropical and boreal forests. There are also a number of managed and constructed landscapes. These include the world's various agricultural landscapes, and its industrial and urban landscapes.

6.1.3 Landscapes are made up of natural features or landforms, the living elements of land cover, changeable elements such as weather, and human activities (which are sometimes very obvious and sometimes more difficult to see).

	River landscapes are shaped by the eroding, transporting and depositing forces of the water over thousands of years. Sometimes they are altered by human activities (e.g. damming).		Savanna landscapes are most often characterised by grasslands or woodlands. They are shaped by their rocks and soils, as well as by the winds and fires that commonly occur on the surface.
	Coastal landscapes are constantly changing. They are shaped by the sea's waves and tides, and are dominated by landform features such as headlands, cliffs, arches, sand dunes, sand bars and spits. Coastlines are also altered by human activities (e.g. buildings, piers, ports, sea walls).		Agricultural landscapes are products of human activity. They are areas that have been cleared for planting or grazing animals, and often have built irrigation, roads and fences.
	Mountainous landscapes are characterised by large, tall landforms that rise abruptly and usually form peaks. They are steeper than hills. They form over thousands of years. Sometimes they are altered by human activities (e.g. ski lifts, tourism, buildings).		Industrial landscapes are dominated by human activities (e.g. factories, ports, roads).
	Karst landscapes are formed by the erosion of soluble rock, such as limestone. They are characterised by rocky ground, underground rivers, sinkholes and caves. They are popular sites for tourism.		Urban landscapes are dominated by human activities (e.g. buildings, roads).

Activities

Remembering and understanding

1 Define the terms 'landscape', 'landform', 'overlay of human activity' and 'sense of place'.

2 Explain why human activity can be difficult to observe. Give an example.

Applying and analysing

3 Identify the typical 'Australian' landscape. What are the elements of the landscape that make it uniquely Australian?

4 Study Table 6.1.3.

- **a** Identify the differences between biophysical, managed and constructed landscapes.
- **b** Rank the landscapes from the one you find most appealing to the one you find least appealing.
- **c** Discuss the criteria you used when determining your ranking.

6.2 The changing Earth

Destruction and formation

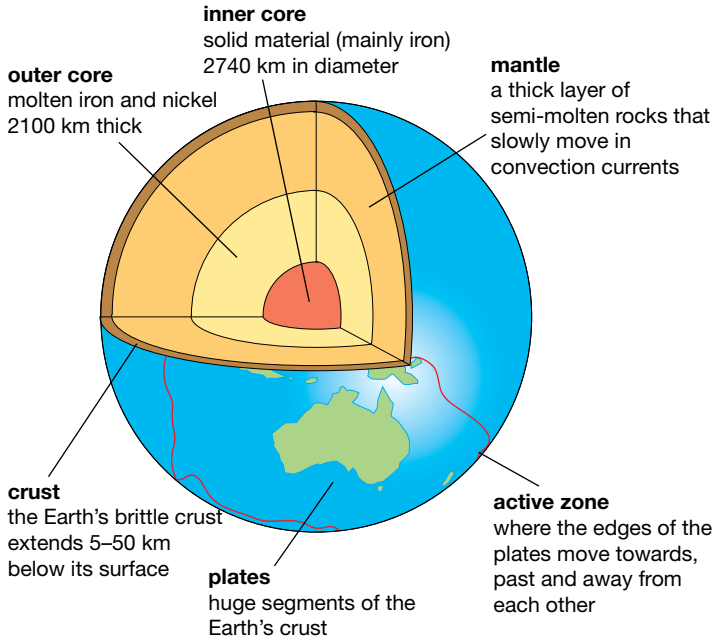
Forces deep within the Earth cause the movement of tectonic **plates** (enormous segments of the Earth's surface). In turn, this creates new landforms. Without these new landforms, the Earth's surface would have long ago been reduced to a flat, featureless plain. This is because it would have been worn down by the processes of **weathering** and **erosion**.

Plate tectonics

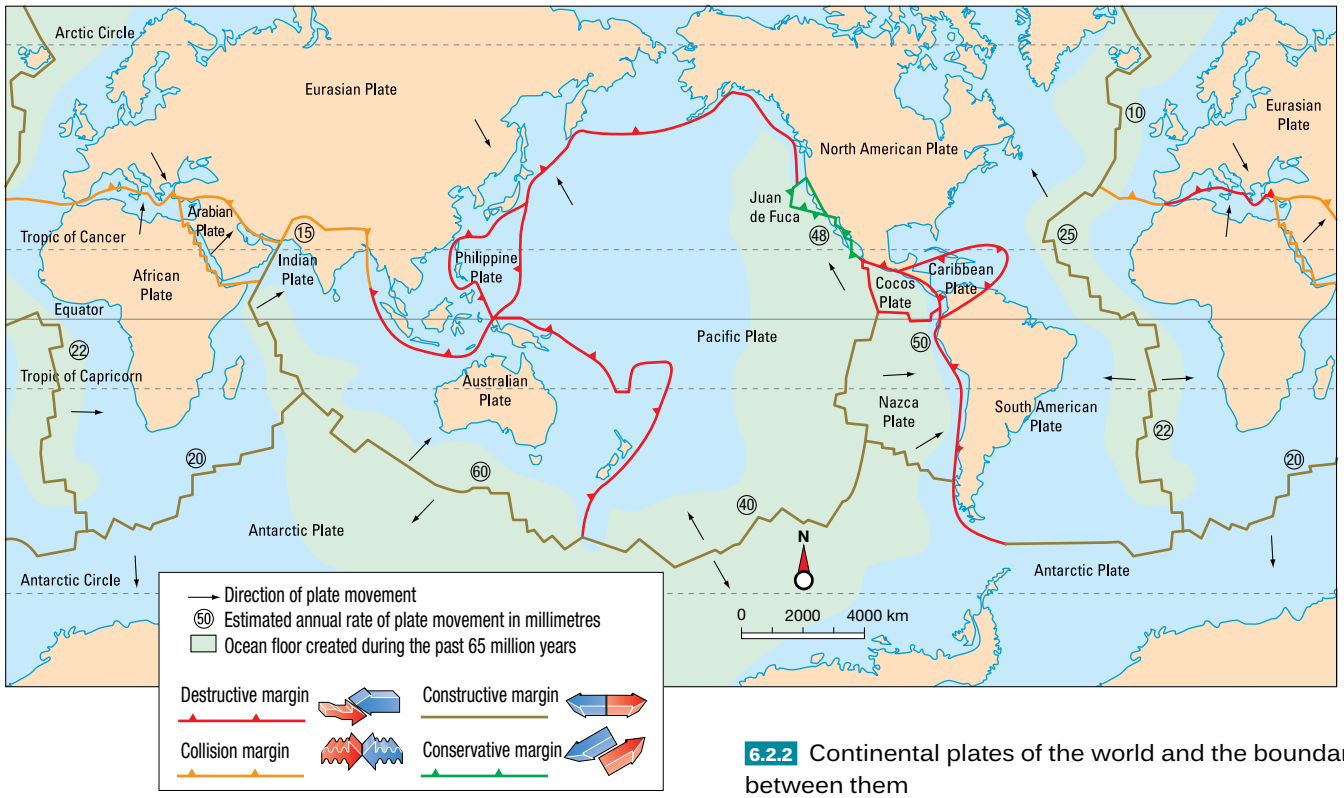
The Earth's thin outer layer, or **crust**, is broken into eight vast segments or plates (and several smaller plates). They travel slowly across the face of the planet at a rate of about 15 centimetres per year. This movement is caused by currents deep within the liquid layer between the Earth's core and crust, known as the **mantle** (shown in Figure 6.2.1). This process is known as plate tectonics, or continental drift.

Continents on the move

Scientists believe that all the Earth's continents were once part of one large supercontinent, known as Pangaea (a Greek word meaning 'all lands'). Pangaea consisted of two main areas: Gondwanaland (Australia, Antarctica, Africa, India and South America) and Laurasia (Asia, Europe, Greenland and North America). These two main areas began to move apart and break up about 200 million years ago. Over time they 'drifted' to their present locations.



6.2.1 The internal structure of the Earth



6.2.2 Continental plates of the world and the boundaries between them

Types of plate movements

Each of the Earth's plates moves in a different way. Two plates may meet at:

- a divergent plate boundary (where one plate moves away from another plate)
- a transform plate boundary (where one plate moves past another plate)
- a convergent plate boundary (where one plate moves towards another plate).

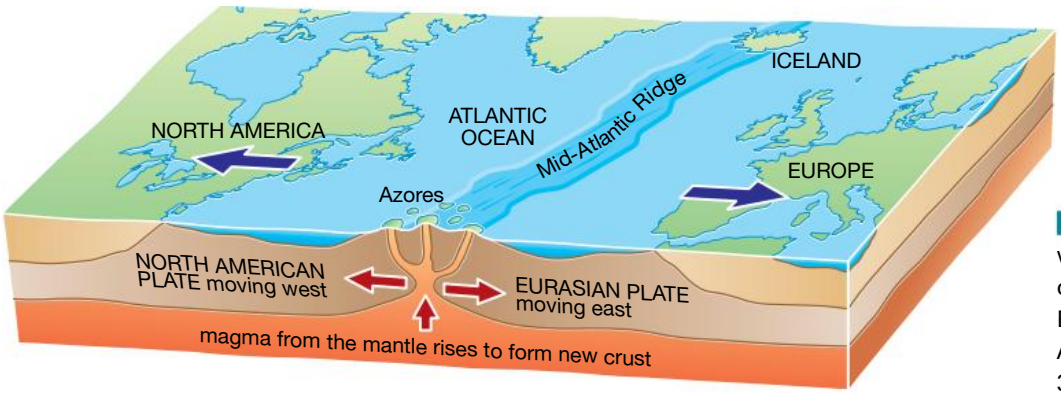
The places where the plates meet are known as **plate margins** or plate boundaries. These are often areas of great stress and activity. Many of the Earth's earthquakes, volcanoes and fold mountains are located at the plate margins. Figure 6.2.2 shows the location of the Earth's plates and the directions in which they are moving.

Divergent plate boundary

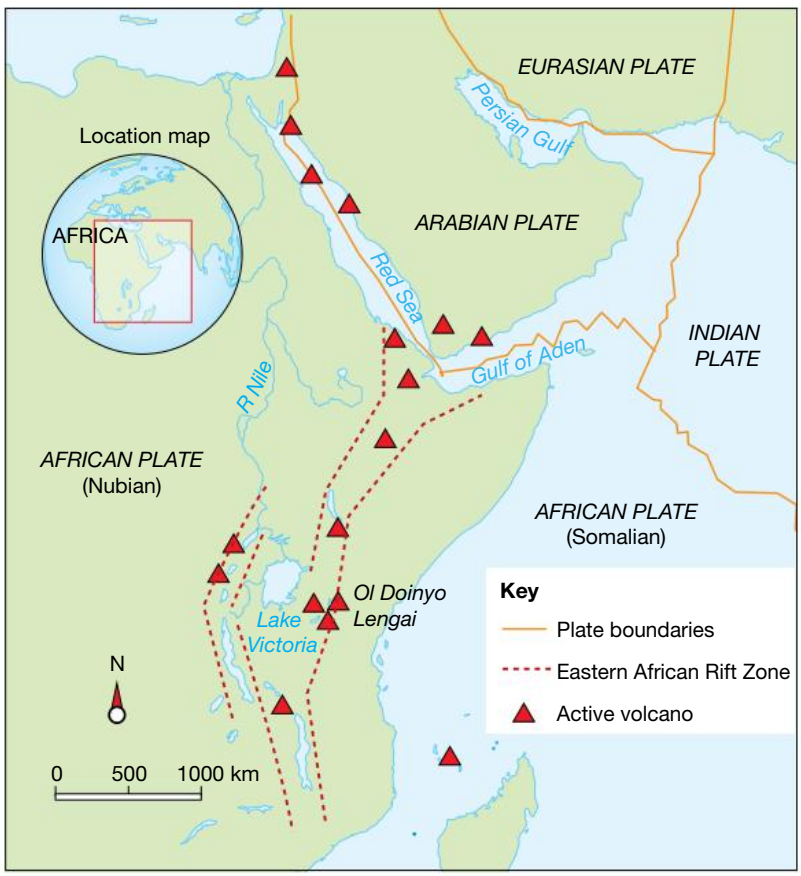
Constructive plate margins

When two plates move away from each other (or diverge), magma rises from the mantle to form new crust. This creates a line of underwater volcanoes along what is called a **mid-ocean ridge**. Sometimes these volcanoes become large enough to emerge above sea level as volcanic islands. An example of a constructive zone is the Mid-Atlantic Ridge (see Figure 6.2.3). It was formed by the separation of the North American and Eurasian plates.

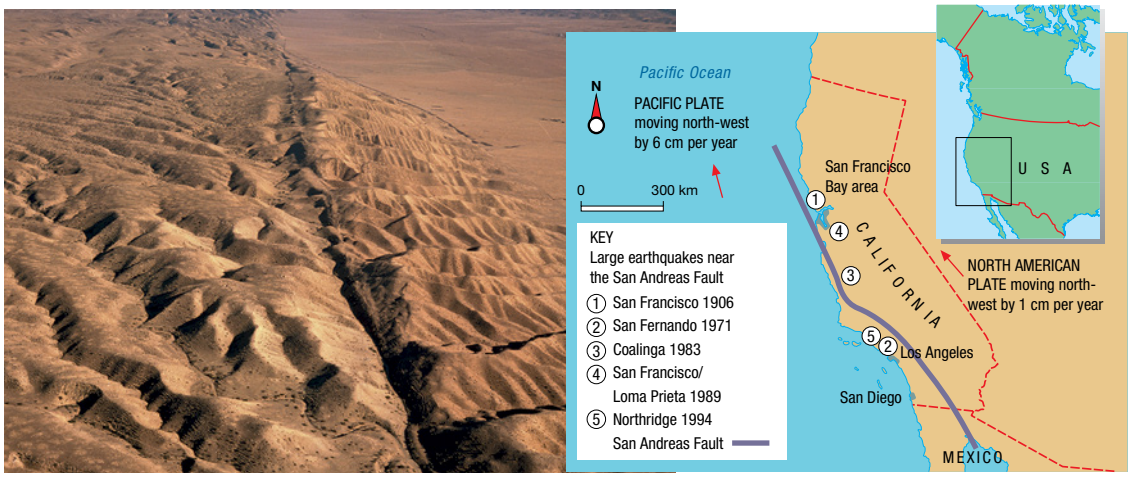
Constructive margins can also be found on land. The East African Rift Valley (see Figure 6.2.4) continues to widen, with new land being created on the floor of the valley.



6.2.3 The Mid-Atlantic Ridge was formed by the separation of the North American and Eurasian plates. Each year the Atlantic Ocean widens by about 3 centimetres.



6.2.4 The East African Rift Valley was formed through the rifting (tearing apart) and separation of the African, Arabian and Indian tectonic plates.



6.2.5 California's San Andreas Fault is a conservative plate margin.

Transform plate boundary

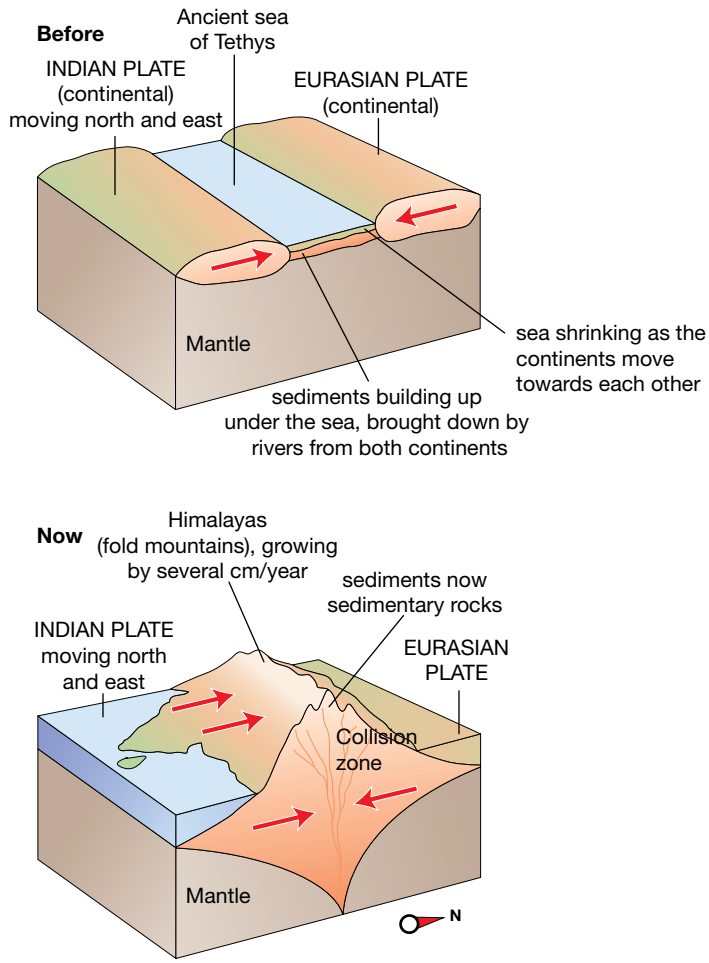
Conservative plate margins

Conservative plate margins occur where two plates move past one another. For example, the San Andreas Fault in California marks the point where the North American and Pacific plates meet. Although the two plates are moving in the same direction, the Pacific Plate is moving faster. This causes the plate margins to 'grind' past each other. The tensions between the two plates build up over time. When this tension is suddenly released, an earthquake occurs. Minor earthquakes occur almost daily along the fault, but major earthquakes, causing loss of life and destruction of property, are less frequent. The last major earthquake was the 1994 Northbridge earthquake. It measured 6.6 on the old Richter scale and killed 60 people (see Figure 6.2.5).

Convergent plate boundary

Collision plate margins

When two plates made of continental crust move towards one another they create a collision zone (see Figure 6.2.6). Because neither plate can sink beneath the other, their crusts crumple upwards to form fold mountains. The Himalayas is an example of a fold mountain system (see Figure 6.2.7). These mountains formed as a result of the collision between the Indian and Eurasian plates. Sometimes pressure builds up over time. Eventually the crust breaks, sending out shock waves in the form of sudden movements in the Earth's crust, known an earthquake.



6.2.6 A collision plate margin

Did you know?

At 8850 metres above sea level, Mount Everest is the highest point on the Earth's surface. However, it is not the world's highest mountain. From base to peak, Mauna Kea on Hawaii measures 10 023 metres, but 5818 metres of this mountain is below the surface of the Pacific Ocean.



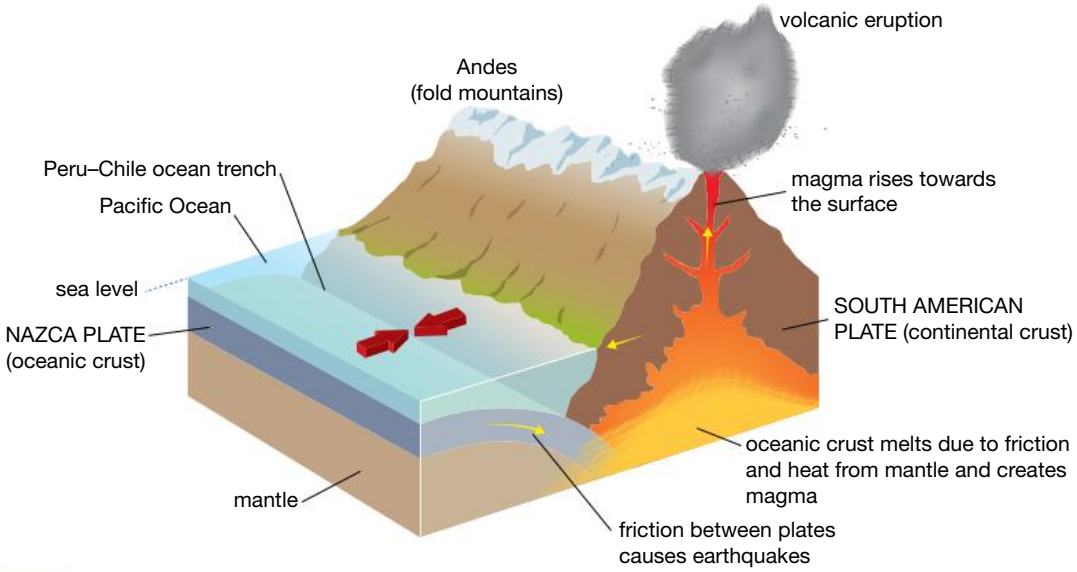
6.2.7 The Himalayan Mountains are still increasing in height. As the Indian Plate moves into the Eurasian Plate (at a rate of about 5 centimetres a year), this forces the mountain ranges higher.

Destructive plate margins

Destructive plate margins occur where a plate made of heavy (dense) oceanic crust moves towards a plate consisting of lighter (less dense) continental crust. The heavier oceanic crust is forced down under the lighter continental crust. This forms a deep-sea trench (see Figure 6.2.8).

As the oceanic crust pushes beneath the continental crust, it melts. This is due to the friction (resistance) that builds up between the two plates, as well as the increase in temperature as it reaches the Earth's mantle. This creates magma, which can escape to the surface along lines of weakness in the Earth's crust, called **faults**. This forms a volcano. Volcanic eruptions at destructive plate margins can be very violent.

Because the plates do not slide smoothly past each other, there is often an enormous build-up of pressure. If the crust breaks, shock waves are sent out in all directions, causing an earthquake.



6.2.8 A destructive plate margin

LS 6A

Activities

Remembering and understanding

1 List the processes involved in the movement of the Earth's crust. Explain the causes of this movement.
2 List the types of plate margins or boundaries.
3 Describe what happens to the Earth's crust in a collision zone.

Geographical skills

4 Study Figure 6.2.2.
  a Name two plates that are colliding, moving towards each other, moving away from each other and moving past each other.
  b Identify the plate that is moving the greatest number of millimetres per year.
5 Study Figure 6.2.5. Explain why parts of California experience earthquakes.
6 Study Figures 6.2.6 and 6.2.8. Write a paragraph comparing the formation of the Himalayan mountain range and the Andes Mountains.

6.3 Rocks and the rock cycle

Rock types

Rocks are classified into three different types: igneous, sedimentary and metamorphic.

Igneous rocks

Igneous rocks form when molten material (magma) cools and becomes solid, or solidifies. There are two main types of igneous rocks. They have the same chemical composition but differ in structure depending on where the magma cooled. Intrusive igneous rocks are rocks that form slowly in the Earth's crust (underground). Extrusive igneous rocks form when the magma erupts from a volcano and then cools quickly above ground. Igneous rocks are recognised by their crystal-based structure. The crystals in intrusive igneous rocks are large, due to the slow rate of cooling. Those in extrusive igneous rocks are small because of their faster rate of cooling. Granite (which features relatively large crystals) is an example of an intrusive igneous rock. Basalt (characterised by small crystals) is an example of an extrusive igneous rock.

Sedimentary rocks

Sedimentary rocks form when eroded material carried in water settles to form sediment (deposits or residue). Over millions of years, successive layers of sediment build up on top of one another. These layers are slowly compressed and bond to form sedimentary rocks. These layers of rocks can be folded (buckled) and faulted (broken) by forces within the Earth's crust.

Sedimentary rocks have a layered appearance and often contain fossils of plants and animals that were trapped in the sediment as it was deposited. Sandstone is an example of a sedimentary rock.

Metamorphic rocks

Metamorphic rocks are formed when existing igneous and sedimentary rocks are compressed and heated without melting. They have the same chemical composition as the rocks from which they were made. Metamorphic rocks are often shiny and hard, and sometimes peel off in layers. Slate and marble are examples of metamorphic rock.

Rate of erosion

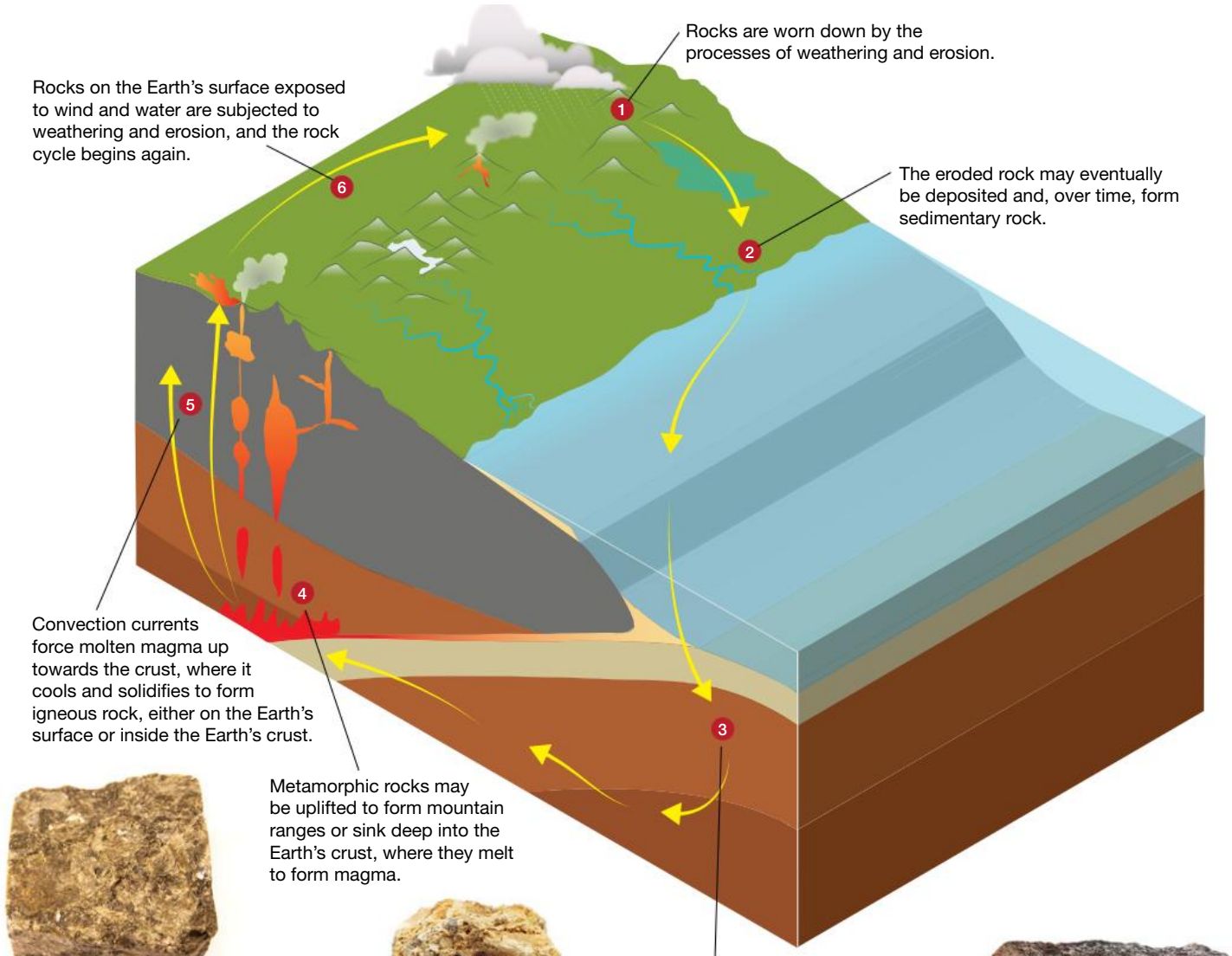
Rocks erode at different rates, depending on their hardness. Differential erosion occurs when softer rocks erode faster than more resistant, harder rock. Figure 6.3.1 shows a landform feature characteristic of differential erosion. The softer sedimentary rock has been eroded at a faster rate than the hard caps of these stone pillars.

The rock cycle

Figure 6.3.2 shows the rock cycle. The **rock cycle** is the process of material from the Earth's crust being recycled to form new rocks.



6.3.1 Rock pillars (known as hoodoos) in Alberta, Canada. The pillars consist of soft sedimentary rock capped by a piece of harder rock. Hoodoos form in semi-arid regions that experience occasional heavy downpours. The rain erodes the softer material, leaving behind columns of rock under hard caps.





igneous rock



sedimentary rock



metamorphic rock

6.3.2 The rock cycle

Activities

Remembering and understanding

1 Outline the differences between intrusive and extrusive igneous rocks.

2 Explain how sedimentary and metamorphic rocks are formed.

3 State what differential erosion is.

4 List the different stages of the rock cycle.

Applying and analysing

5 Study Figure 6.3.2. Create your own annotated illustration of the rock cycle.

6.4 Mountain building

Mountains

Mountains are defined as landform features that rise abruptly, and are impressive and noticeable when compared with surrounding landscapes. Factors taken into account when defining such landforms include elevation (height), relief, steepness and mass.

Location and formation

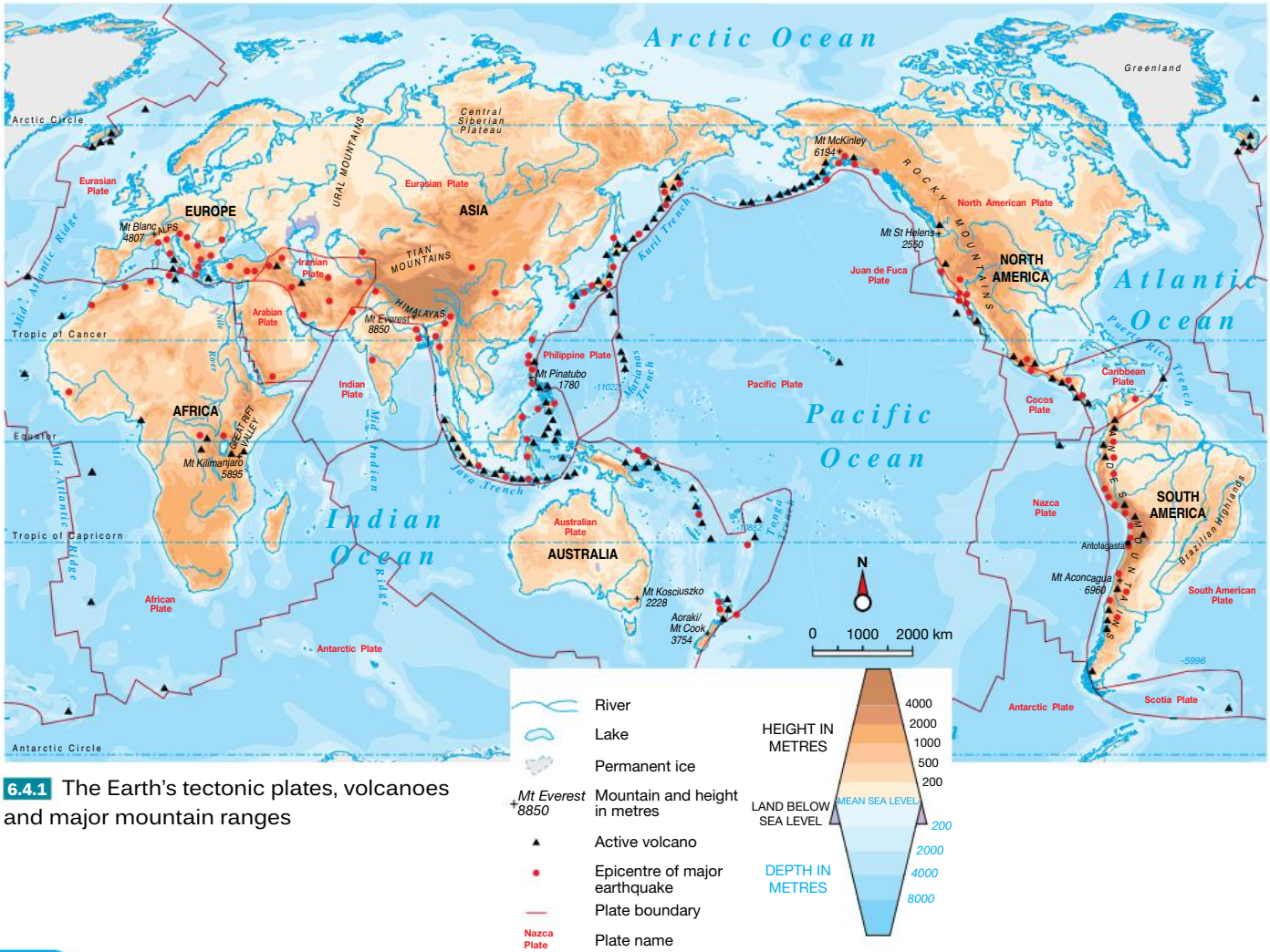
Figure 6.4.1 shows the location of the world's great mountain ranges—the Andes Mountains of South America, the Rocky Mountains of North America, the Alps of Europe and the Himalayas of Asia. These mountains are found along the active margins of the world's tectonic plates.

Faulting and folding

As the plates press against each other, the pressure increases. This compresses the layers of rock and forces them upwards. As the pressure is released, the layers of rock **fold** (buckle) and **fault** (fracture or break along lines of physical weakness) (see Figure 6.4.2).



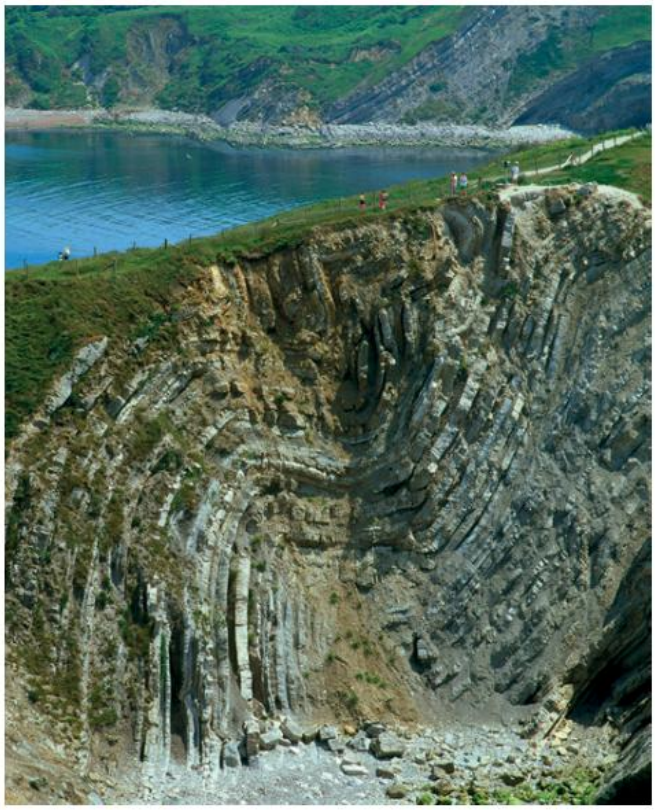
6.4.2 Þingvellir (Thingvellir), a tectonic rift fault line, near the peninsula of Reykjanes, Iceland



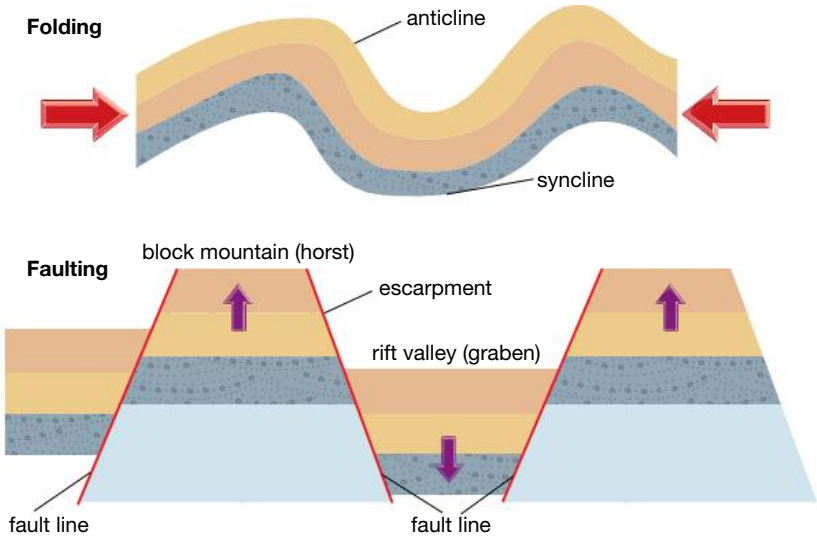
6.4.1 The Earth's tectonic plates, volcanoes and major mountain ranges

Because the movement of the plates tends to be very slow, the mountain chains they produce are dominated by folded layers of rock. However, these mountain chains can include landform features that are the result of faulting and volcanic activity. Folding results in wave-like patterns in the Earth's crust (see Figure 6.4.3). Faulting occurs when there are fractures in the rock structure. Figure 6.4.4 shows both these features. Rift valleys and block mountains are examples of large-scale landform features associated with faulting.

As oceanic plates move apart (a process known as sea-floor spreading), molten material fills the gap. This forms a mid-ocean ridge. These ridges extend for 65 000 kilometres through all the Earth's oceans. **Ocean trenches** (underwater depressions or dips) are formed when oceanic plates are forced down into the Earth's mantle, where they melt.



6.4.3 Folded layers of rock



A rift valley (graben) is a long valley area formed by the sunken land between two or more parallel faults. A series of sinkings at different rates may produce a series of step-like landform features.

A block mountain (horst) is an elevated area of land that has been uplifted between two or more parallel normal faults. The edges of many block mountains may be distinguished by the presence of an escarpment (a very steep slope).

6.4.4 Folding and faulting of rock layers

Activities

Remembering and understanding

1 Describe the difference between folding and faulting.

2 Outline the processes associated with the formation of rift valleys and block mountains.

3 Explain the conditions under which ocean trenches develop.

Applying and analysing

4 Study Figure 6.4.1. Write a paragraph discussing the global distribution of earthquakes and volcanoes.

5 Create a pie chart of each continent's share of the world's mountainous areas using the following data:

- Asia (43.65%)
- Antarctica (17%)
- North America (15%)
- South America (8.4%)
- Europe (6.7%)
- Africa (8.25%)
- Australia and Oceania (1%).

6.5 Weathering, erosion and deposition

Weathering

Weathering involves the physical or chemical breakdown of rocks into smaller pieces. These smaller pieces are not transported elsewhere but remain in their original position.

Physical weathering

There are three main types of physical (or mechanical) weathering: temperature change, freeze–thaw action and organic action.

Temperature change

As rocks are heated by the sun, they expand. At night, as temperatures fall, the rocks contract. Over time, this expansion and contraction causes cracks to appear and the rock begins to break down (see Figure 6.5.1). This process is called exfoliation. It is common in deserts, where there are large daily differences in temperature.



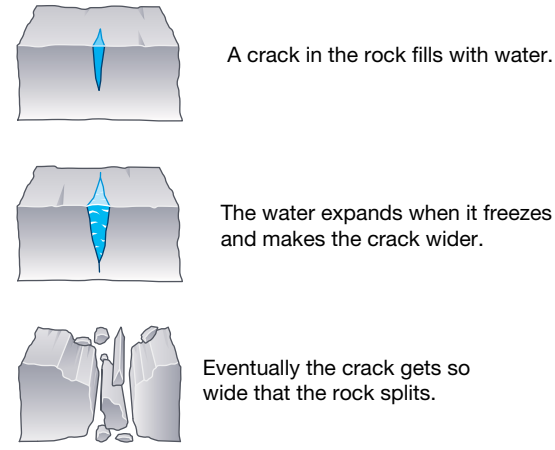
6.5.1 Changes in temperature have caused the outer layer of this rock to crack and break away.

Freeze–thaw action

Sometimes water collects in the cracks in rocks. When water freezes it expands. This places pressure on the rock and causes the cracks to widen and deepen. The pressure may eventually cause parts of rock to break off (see Figure 6.5.2). The small, broken-down rocks are called scree. This type of weathering is common in high, mountainous areas where the water freezes.

Organic action

The growing roots of plants can exert a force that causes cracks in rocks to widen (see Figure 6.5.3). Gradually, the rock breaks down into smaller pieces.



6.5.2 Freeze–thaw weathering causes parts of rock to break off.



6.5.3 Organic weathering is often caused by tree roots growing into rock.



6.5.4 Limestone caves are formed by weak acids attacking the minerals in rocks. The limestone slowly breaks down and the mineral deposits build up from the roof of the cave as stalactites. As they drip onto the floor of the cave they form stalagmites.

Chemical weathering

When rainwater mixes with carbon dioxide (which is present in the atmosphere), it forms a weak acid. This acid attacks many of the minerals contained in rock. It is especially effective in dissolving limestone. Limestone caves are a result of this type of weathering (see Figure 6.5.4).

Rocks that contain iron are affected by a process known as oxidation. When oxygen and water come into contact with the iron in rocks they change the chemical make-up of the rocks. When this happens the rocks take on a rusty appearance. The surface of the rock gradually decays and is eroded away.

Organic acids are produced when water mixes with decaying vegetation. These acids help to break down minerals in rocks.

Erosion

Erosion is when material has been weathered (worn away) and transported from one place to another by water, wind and ice. Erosion occurs when rivers carve out deep canyons, glaciers grind out massive valleys, and water drips through limestone to create caves and sinkholes.

Did you know?

In chemical weathering, the acidic water filters down into the Earth through cracks. It creates a network of passages that widen as more water seeps down. As more acidic water flows through them, some of the passages widen to become caves. It can take over 100 000 years for a limestone cave to form and be big enough to fit a human.

The processes of erosion are:

- *attrition*—rocks collide as they are transported and are worn into smoother, rounded stones
- *abrasion/corrasion*—material rubs against riverbanks or valley sides as it is transported, or is thrown against cliffs by the sea. This acts like sandpaper on the landscape, gradually eroding it
- *corrosion*—some rocks (especially limestone) are dissolved by the natural acids in water and are carried away by the water
- *hydraulic action*—riverbanks or cliffs can be worn away by the sheer force of water hitting them, or can be blasted apart as air is forced into cracks.

Agents of erosion

The agents (causes) of erosion are water, wind and ice.

Water

Running water is the most powerful agent of erosion, transportation and **deposition** (the accumulation or build-up of sediment). It is especially effective in very dry areas and where humans have damaged the protective cover of vegetation that binds the soil together. When rain falls on exposed earth it causes deep channels called gullies to form (see Figure 6.5.5).



6.5.5 This landscape in Death Valley, United States of America, has many deep channels that have been created by running water.

Rivers

Rivers shape the land by eroding, transporting and depositing material. In a mountainous area, rivers erode downwards, creating narrow, V-shaped valleys. Away from the mountains, valleys become wider and some of the river's load of sediment is deposited. Closer to the sea, rivers weave, or meander, across wide, flat plains, depositing fine particles of soil called alluvium. These alluvial soils are usually very fertile and are often used for agriculture (farming).

Waves

Coastlines are constantly changing. Some are eroded by storm waves. These landscapes are dominated by landform features formed by the processes of erosion, such as headlands, cliffs, rock platforms and arches. Other coastlines advance towards the sea as waves deposit large amounts of sand. Such coastlines are dominated by landform features formed by the process of deposition, such as sand dunes, sand bars and spits.

Ice

Glaciers are slow-moving rivers of compacted snow (glacial ice). They form when compacted snow that has gathered over many years gradually moves downhill under the influence of gravity. Glaciers erode land by transporting rock (see Figure 6.5.7).

Wind

Wind is a very effective agent of erosion in areas with little or no vegetation, as in deserts and areas where the land has been damaged.

Wind can pick up weathered rock material and effectively 'sandblast' larger rock features. This process is known as abrasion. It results in sculpted rock formations (see Figure 6.5.6). On a larger scale, rock-strewn desert surfaces form when strong winds sweep away the finer surface materials. This process is known as deflation.



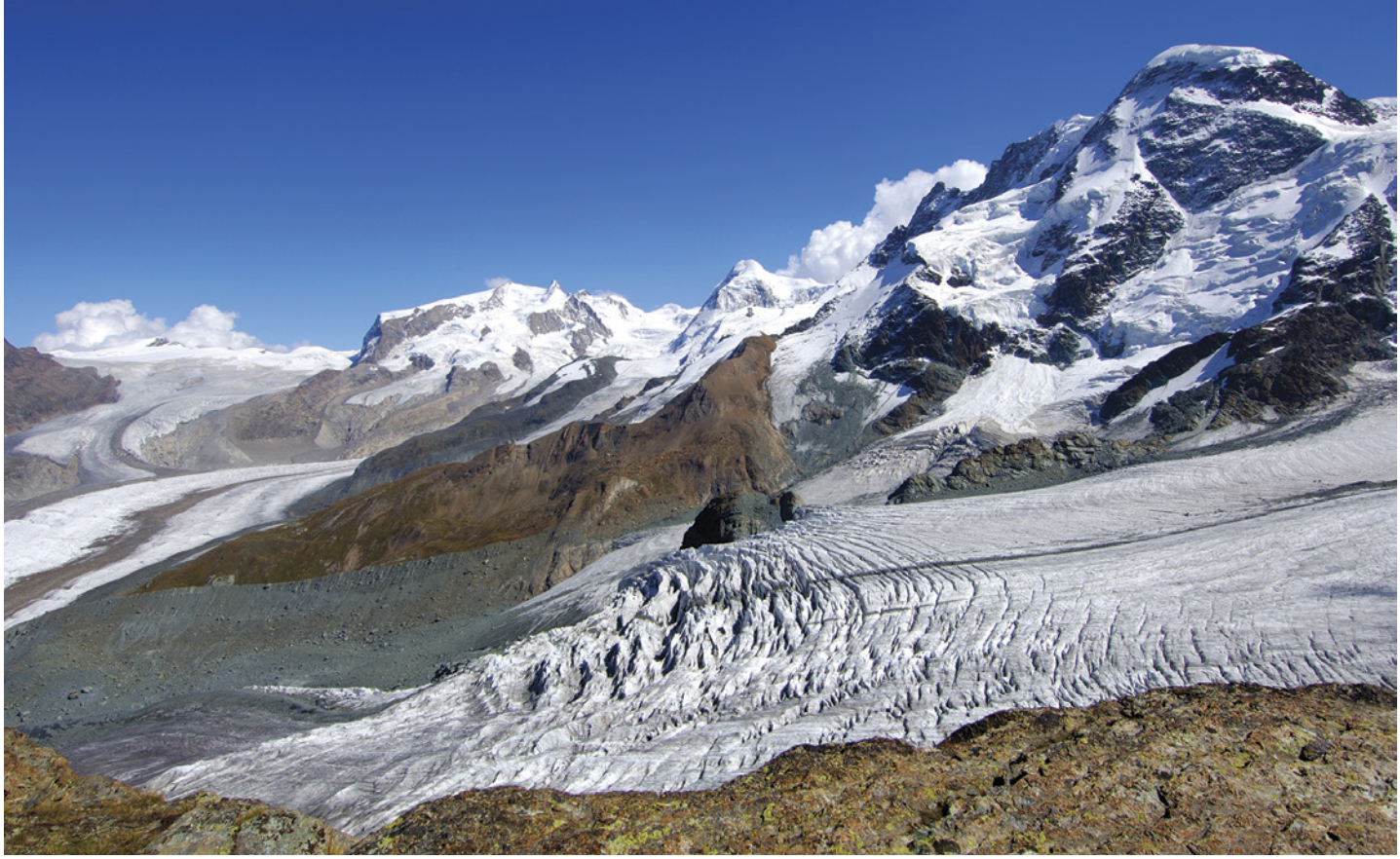
6.5.6 Sand grains carried by the wind have worn away the base of this desert rock. It has created a pedestal-shaped feature.

Did you know?

Throughout Australia there are over 40 'dust watch' stations, monitored by volunteers who record data and observations about dust in their local area. Dust storms created by wind erosion can be damaging to the environment and the economy.

Deposition

Deposition is the process of eroded material being added to a landscape. Water, wind and glacial ice transport weathered and eroded rock. As the speed of water slows, as the strength of a wind declines, or as a glacier melts and retreats, the load it carries is deposited. This builds up layers of sediment. Depositional landforms include beaches, sand bars and dunes, natural (river) levees, and desert sand dunes.



6.5.7 Glaciers like this one in Zermatt, Switzerland, transport weathered and eroded rock to new places.

Changing landscapes

Weathering is sometimes called the passive (or inactive) agent of erosion. This is because weathered material usually remains in place. Erosion and deposition (the removal and laying down of transported material) are known as active processes. This is because the material is moved from its original position or location. A summary of this process is outlined in Table 6.5.8.

6.5.8 Weathering and erosion in summary

Weathering	
Physical weathering	Chemical weathering
temperature change freeze–thaw action organic action	weak acids (when rainwater and carbon dioxide mix) organic acids
Erosion	
Erosional processes	Agents of erosion
attrition abrasion/corrasion corrosion hydraulic action deposition	running water, rivers and waves wind ice

Activities

Remembering and understanding

1 Explain the difference between physical and chemical weathering.
2 Outline the three processes of physical weathering.
3 Explain how chemical weathering helps to weaken and break up rock.
4 Explain why weathering is described as a passive (or inactive) agent of landform development.
5 Define the following terms:
- erosion
- attrition
- abrasion
- corrosion
- hydraulic action.

6 Explain what is meant by the term 'deposition'.

Applying and analysing

7 Discuss the conditions under which water is the most effective agent of erosion.
8 Construct a series of diagrams like those in Figure 6.5.2 to explain how organic weathering occurs.

6.6 Valuing landscapes

Different values

Landscapes are important to us for many reasons. They are a shared resource and they belong to everyone. They are a living record of our past, and an inspiration for our culture. They provide a wide range of social and health benefits. The value placed on landscapes changes over time. Landscapes are said to have aesthetic, emotional, spiritual and economic value.

Aesthetic value

The term 'aesthetic value' refers to the significance placed on a landscape, based on its attractiveness or beauty. The aesthetic value of all landscapes is not the same, as not all landscapes are equally appealing. For example, people can appreciate and interpret the same landscape quite differently. What might appeal to one person might not appeal to another. For US retirees seeking a warm, sunny climate, California's Palm Springs is an attractive desert landscape. Others view desert landscapes as hostile places. International tourists travel thousands of kilometres to see the landscapes of Australia's Red Centre, while many Australians head overseas to see the managed and constructed landscapes of Western Europe, North America and South-East Asia.

Whether we find a landscape personally appealing depends on a range of factors. These include our emotions or feelings, our attitudes and personal values, and our preferences, experiences and memories.



6.6.1 Singapore's landscape is a highly constructed and managed one. It is a popular tourist destination.

Did you know?

In 2017, over 1322 million people travelled internationally. This number is up by 7 per cent from the previous year. International tourism generates billions of dollars in economic activity. It is essential for creating wealth and jobs in many communities around the world.

Emotional value

People often develop an emotional attachment to a place or landscape. This attachment usually results from a long-term connection with that place or landscape. While this is especially strong for indigenous peoples, it also applies to people more generally. For example, we all remember, often with fondness, places we went for holidays. We sometimes also develop an emotional attachment to the places in which we live or have lived.

This attachment is different from a simple aesthetic response, such as recognising that a certain landscape or place is special because it is beautiful. For a deeper and lasting emotional attachment to develop, a long-term relationship with a place is normally required. This relationship may be physical or emotional. It might be the place in which we live or a place our mind wanders to from time to time. For example, a snowboarder might find their thoughts drifting to the mountains on which they snowboard. A bushwalker often develops an emotional attachment to their favourite national park, such as the Grampians National Park.

Many people find landscapes inspiring. For example, landscape artists and photographers seek to capture or portray the beauty of landscapes in their paintings and photographs. These provide an opportunity for people who can't observe the landscapes directly to share the experience.

Spiritual value

Landscapes hold special spiritual significance for some people. Many Aboriginal and Torres Strait Islander people, for example, recognise that features of the landscape (such as rivers, mountains and even individual trees) have a spiritual value. Indigenous Australians connect to the Dreaming and ancestral creator beings through these features, by means of song and ritual. Sacred sites are places of special spiritual importance to Indigenous Australians.



6.6.2 Many people place emotional value on national parks such as the Grampians National Park (Gariwerd) in Victoria.

LS 6B

Economic value

Landscapes also have an economic value. Some, such as agricultural, industrial and urban landscapes, are in fact the product of economic activity. Others generate economic activity even though they remain in a near-natural state.

Landscapes that are spectacular or unique are important tourist destinations. For example, historic Venice in Italy attracts nearly 22 million tourists a year; California's Yosemite National Park, more than 4 million; Machu Picchu in Peru, more than 700 000; and Australia's Great Barrier Reef, more than 1.6 million people. Catering for the needs of these visitors creates economic activity and employment. The economic wellbeing of many communities depends on tourism.

Landscapes provide a wide range of opportunities for people to enjoy the outdoors. They vary from the local park through to coastal national parks and remote mountain wilderness areas (largely undisturbed areas of the original habitat). All offer relaxation, challenge, inspiration and an opportunity to experience firsthand our natural and cultural heritage.

Activities

Remembering and understanding

1 Explain what is meant by a landscape having 'aesthetic value'.
2 Name a place or places that have aesthetic value for you.
3 Explain the economic value of landscapes.

Applying and analysing

4 Study Figure 6.6.1 or 6.6.2 and complete the following activities.
   a Construct a photo sketch of your chosen figure.
   b Annotate the sketch, naming as many natural elements of the landscape as you can. Are there any human elements evident?
   c List the possible aesthetic, emotional, spiritual and/or economic value of such a landscape.

6.7 Landscapes and national identity

Building a national identity

Landscapes can play a powerful role in the creation of national identities. People connect with an image of a landscape. This has an impact on how they see themselves as a national community. Landscapes also build a sense of belonging that helps define people's attitudes and perspectives.

A **national identity** is developed over time. The qualities that develop represent the society and its people. These qualities encourage a sense of common beliefs and ideas about identity that people feel they share with others in their society.

We are not born with a national identity. A country's history helps to develop the idea of a national identity. Our awareness and understanding of national identity are shaped by the images of our biophysical and built environment that we see in the media and the arts throughout our lives. National identity becomes the collective (shared) personality of the people of a country. It is the foundation of the values we take on as our own and it is often expressed in our behaviour.

The importance of landscapes

Landscapes are important to people. They are not just scenery or interesting views, but they have a lot of meaning for people. Apart from being the backdrop for day-to-day living, landscapes link people to nature, and the past to the present. People create and value the concept of landscapes. For example, the Great Barrier Reef is a valued landscape and there are now laws to protect and preserve areas of the reef. Some landscapes are very special because they symbolise a nation, such as the Champs de Mars park with the iconic Eiffel Tower in Paris, France.

Landscapes and national identities

Landscapes are shared by the people of a nation and often provide a living history of the past. Some national identities based on these landscapes become so popular that they last long after they are truly representative of the nation. For example, Egypt's pharaohs are long dead but the pyramids at Giza are still an important aspect of Egyptian national identity.



6.7.1 The Eiffel Tower in Paris, France

Australia: from the bush to the beach

When the European settlers arrived in Australia, they encountered an environment very different from Europe. The vast expanses of country—from the outback to the forests and farmlands—became collectively known as 'the bush'. This landscape was uniquely Australian and it inspired many tales of the struggle for survival. Stories of drovers, outback women, bushrangers and even children lost in the bush became legends. By 1900, the landscape of the bush had become the symbol of the new nation, even though the majority of people lived in towns and cities.

The bush may have defined the national identity a century ago, but more recently the beach has become a symbolic landscape. Most Australians live near the coast and beach culture has become a very important aspect of the Australian lifestyle. The character attributes of the bush heroes have been transferred to the lifesavers patrolling surf beaches. They are seen as fit, courageous people who save lives.

Many people consider Australia's national identity as a work in progress. With the majority of the population living in urban centres and the population itself becoming increasingly multicultural, new layers are constantly being added to the country's national identity.



6.7.2 Australian beach culture as seen by cartoonist Reg Mombassa

Activities

Remembering and understanding

1. Explain the relationship between landscape and national identity.
2. How is a national identity built?
3. Explain why there has been a shift in Australia's national identity.

Applying and analysing

4. Study Figure 6.7.2. Identify the points Reg Mombassa is making in his work *Beachside Barbecue*.

Evaluating and creating

5. Design an annotated visual display of a landscape that in your opinion characterises Australia's national identity (for example Uluru, Sydney Harbour, the Great Barrier Reef or the MCG). Your display should include a list of reasons why you chose this landscape to characterise Australia's national identity.

6.8 Indigenous perspectives on landscapes and landforms

The origins of landscapes and landforms

Australia's Aboriginal and Torres Strait Islander peoples have their own explanations of how the world and its landscapes and landforms were created. Aboriginal people believe that everything around them exists because of the Dreaming, a past that continues to exist in the present and in the future.

At the beginning of time, spirit ancestors wandered the Earth in the form of animals. While some of these ancestors went into the sky to create the sun, moon and stars, others stayed and created the natural world. They shaped the land, provided its resources and created the spirits that made plants, animals and human life. All living things, including Aboriginal people themselves, are descendants of all these original spirit beings, who did not die but live on in the different features of the landscape, flora and fauna.

The land and its features are therefore sacred to Aboriginal people, and a spiritual link exists between the land and the people who were placed on it. This means that separate language groups have a spiritual connection to particular areas and features of the landscape. This attachment is the basis for the recognition of different homelands. Aboriginal people believe that the spirit beings also gave to each group its own distinctive spiritual practices, beliefs, customs and languages.

The Dreaming Stories

The Dreaming Stories are a central element of the sacred Aboriginal beliefs that have been handed down from one generation to the next for over 50 000 years. Two examples of the spiritual relationship between Indigenous Australians and landforms are provided below: the South Australian Ngarrindjeri Dreaming Story, known as Ngurunderi, and the Gagudju People of Kakadu, in the Northern Territory.

The Dreaming Story of Ngurunderi

In the Dreaming, Ngurunderi and his two sons went in search of Ngurunderi's two wives, who had run away from him. The men followed a massive Murray cod down the Murray River from where it met the Darling River. As the huge fish swam, its tail swept the water aside, creating



6.8.1 A mural showing a Dreaming Story of Ngurunderi about the origins of the Murray River, Berri, South Australia

billabongs and swamps. Long Island, near Murray Bridge, is said to be a spear thrown by Ngurunderi. Ngurunderi eventually speared the giant cod and proceeded to cut it into small portions. As he threw the small pieces into the river they became the many different species of fish now found in the lakes and streams of the Murray–Darling.

When Ngurunderi discovered his two wives cooking a silver bream, a fish forbidden to women, he was very angry. The women sought to escape on a raft they had built. Ngurunderi pursued them down through the Coorong, creating the natural features of the landscape. When he caught up with the women, who were crossing to Kangaroo Island, he caused the sea to rise. The women drowned and became the rocky islands known as the Pages. Ngurunderi crossed to Kangaroo Island, removed his old skin of life and went to heaven.

The fate of Ngurunderi was re-enacted in the traditional funeral ceremonies of the Ngarrindjeri People. The skin of the dead was removed before the remains were cremated on a raised platform.

The Gagudju of Kakadu

Archaeological evidence suggests that the Kakadu region was one of the first parts of the Australian continent to be occupied by people. This means the descendants of the Gagudju may have occupied the area for over 65 000 years. For much of this time they recorded Kakadu's history on the walls of the sandstone escarpment that dominates the landscape. By examining this art and the other evidence of human occupation we can build up our knowledge of how the Gagudju People interacted with the landscape, its landforms and the environment more generally.

According to a Gagudju Dreaming Story, a female ancestral being called Warramurrungundje came out of the sea and created Kakadu's landscape. She gave birth to the first people there and taught them the different languages they were to speak. When her work was completed she turned into a rock, which remains her Dreaming place. There are many such features throughout Kakadu. They are the sacred sites of the Gagudju People. These sites include caves, hills, rocks and waterholes.

The close spiritual bond that exists between the Gagudju People and the land means that they do not seek to dominate nature. Instead they live in harmony with it. They believe that they belong to the land and that they are part of it. Without the land, they believe they are nothing. The land and the life forms it supports are seen as a sacred trust, to be cared for and passed on to future generations.



6.8.2 Warramurrungundje came from the sea and created Kakadu's spectacular landscape.

Activities

Remembering and understanding

1 Explain what the Dreaming is and explain its role in Aboriginal culture.

Applying and analysing

2 In small groups, discuss and list how Indigenous Australians' relationship with the land influences how they use it. Share the key points of your group's discussion with the class.

3 Re-read 'The Dreaming Story of Ngurunderi'.
- a What does the story seek to explain?
- b List the features of the physical environment that have their origins explained by the Dreaming Story of Ngurunderi.
- c Describe how the Dreaming Story of Ngurunderi influenced the cultural practices of the Ngarrindjeri People.

4 Outline the Gagudju People's explanation for the creation of Kakadu and describe their relationship with the physical environment.

Evaluating and creating

5 Select a prominent feature of the biophysical environment and investigate an Aboriginal Dreaming Story that explains its creation. Present an oral report to the class outlining the Dreaming Story and its connection to the physical environment.

6.9 Human impacts on landscapes

Major human impacts

Many of the world's landscapes show the effects of human activity. It can now be argued that there are no longer any truly 'natural' landscapes left. The images of landscapes in this unit show the extent to which the 'cultural overlay' of human activity can transform landscapes.

Agriculture

Since farming began about 10 000 years ago, whole landscapes have been transformed to create fields for crops and the raising of animals. Figure 6.9.1 shows irrigated rice terraces that were once rainforests. Swamps and coastal marshes have been drained. Forests have been clearfelled and grasslands ploughed. The removal of trees destroys the roots that help to bind the soil together. Once exposed, the soil can be blown away or washed into rivers. In some places, soil erosion has turned once-fertile farmland into barren wasteland.



6.9.1 Irrigated rice terraces, Bali, Indonesia. This landscape has been transformed to produce a high-yielding crop.

Transport

Transport infrastructure (such as railways, roadways and airports) occupies large areas of the Earth's land surface. For example, think about the amount of land devoted to roads and car parks in Australia's big cities. In China, the scale of such infrastructure is enormous. By 2025, China will have added 5 billion square metres of road paving and 170 mass-transit systems. In France, the 2.4-kilometre Viaduc de Millau is a cable bridge that dominates the landscape of the Tarn Valley.

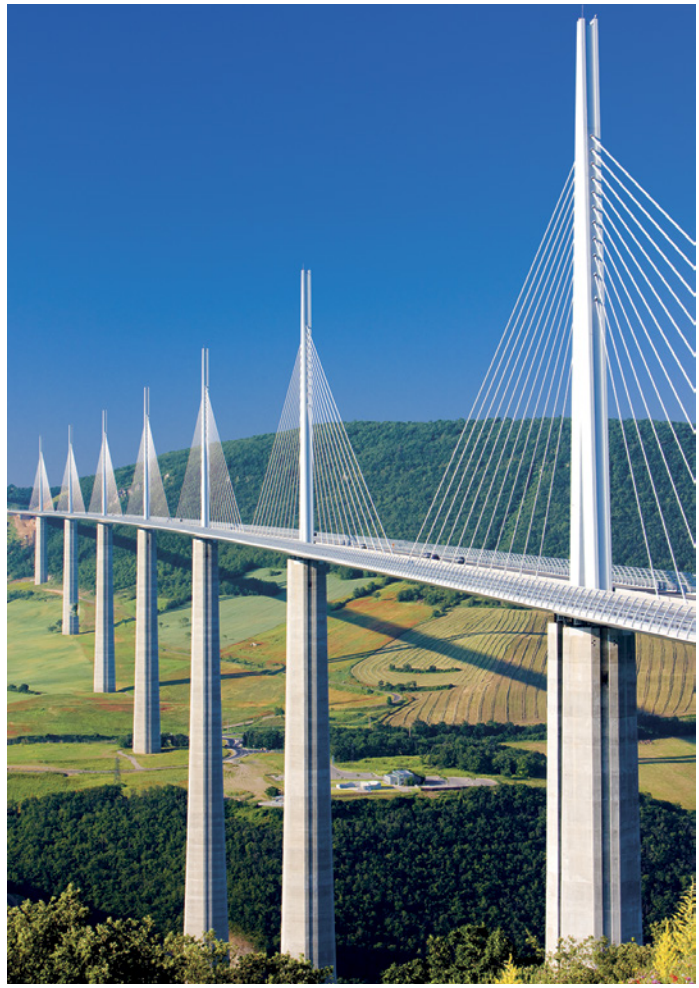
Mining

Mining involves the extraction of valuable minerals and ores from the earth. Open-cut mining is especially noticeable in terms of its impact on landscapes. Mountains can be mined or deep pits dug to reach an ore body. Figure 6.9.3 shows the giant Argyle diamond mine in Western Australia.

Forestry

Forestry can be conducted in two ways. Selective logging involves removal of particular trees from a forest. The trees are selected according to specific criteria (species, diameter or height). Selective logging leaves some trees standing, which allows for natural regrowth, has less impact on the wildlife, and leaves fewer ugly patches in the landscape.

Clearfelling is the practice of cutting down all the trees in an area. It is a practice that can destroy whole **habitats** (see Figure 6.9.4).



6.9.2 The giant Viaduc de Millau, France, is the tallest bridge in the world.



6.9.3 The giant Argyle diamond mine in Western Australia illustrates the impact that mining can have on landscapes.



6.9.4 The impact of clearfelling in Tasmania

Did you know?

Every year humans move about 0.8 Gt (1 Gt = 1 gigatonne = 1 billion tonnes) of earth in house construction, 3.2 Gt in mineral production and 3 Gt in road construction. If all this earth were dumped into the Grand Canyon, it would fill the canyon in about 400 years, or about 0.01 per cent of the time it has taken the Colorado River to carve it!

Industry

The Industrial Revolution transformed methods of manufacturing and made them more efficient. Since then, factories have been built all over the world. Figure 6.9.5 shows Japan's giant Aichi Prefecture Toyota Motor Plant at Toyota City. Factories like this consume huge amounts of natural resources and energy, and many give off chemical wastes. This results in air and water pollution (harmful substances released into the environment).



6.9.5 The Aichi Prefecture Toyota Motor Plant at Toyota City, Japan, is an example of an industrial landscape.

Spotlight

China flattens hundreds of mountains

In late 2012, one of China's largest construction firms announced plans to build a brand new city in a barren part of north-western China. To make room for this city, they have spent billions of dollars to flatten 700 mountains. Called the Lanzhou New Area, the futuristic city has high-rise apartments and office towers, parks and even beaches. However, it has been described as a ghost town, with only a few blocks inhabited. In 2017, the population numbered only 100 000, far below the expected 1 million residents.

Urban areas

The world's urban areas cover just 3 per cent of the Earth's land surface but account for 50 per cent of the world's population. It is estimated that there are 75 000 distinct urban settlements worldwide, although many are better regarded as 'clumps' of settlements. Tokyo is the world's largest city. The urban area spreads over 30 000 square kilometres and takes in more than 500 connected settlements.



6.9.6 Tokyo is the world's largest urban area.



6.9.7 Albany Wind Farm in Western Australia is a major feature of that landscape.

Energy

The infrastructure needed to produce and transport the energy we use is a major feature of many landscapes. This infrastructure includes wind farms and solar collectors, coal- and gas-burning power stations, nuclear power stations and electricity transmission lines that transport the energy to consumers.

LS 6C

Activities

Remembering and understanding

1 Define the term 'cultural overlay' in your own words.

2 Explain why 700 mountains were flattened in north-western China.

Applying and analysing

3 Select three of the landscapes illustrated in this unit. Describe the main element of the 'cultural overlay' evident in each image. Suggest what the nature of the biophysical environment was before the human transformation.

Evaluating and creating

4 Rank each image in this unit according to the extent to which humans have transformed the landscape. Compare your ranking with that of a partner and then with those of another pair of students. Reach agreement on a ranking for your group and share this ranking with the rest of the class.

5 Use the internet to gather images of landscapes dominated by the imprint of humans. Create a wall display using the following organisers: agriculture, transport, mining, forestry, industry, urban areas, energy.

6.10 Protecting landscapes

Preservation and conservation

The terms 'preservation' and 'conservation' have different meanings. **Preservation** involves protecting landscapes (and environments and habitats) from loss or damage. **Conservation** involves developing and applying management practices aimed at conserving (protecting) and, where possible, restoring landscapes.

Biophysical landscapes

Australia has some of the world's most distinctive and spectacular natural landscapes. Our most highly valued biophysical landscapes are protected by nature conservation reserves, national parks and wilderness areas. These are areas of land set aside for conservation purposes. They act to protect wildlife and habitats, and preserve areas with natural features of scientific or recreational value. In total, 7.9 per cent of the Australian landmass is set aside for conservation purposes. Marine parks and reserves cover a further 380 200 square kilometres.

National parks

National parks are large areas of scenic or other natural significance that are open to the general public. They are areas that are protected for the benefit of present and future generations. These diverse areas are largely untouched by human activity and occupation (see Figure 6.10.1). Many are home to unique plant and animal species, and habitats that have scientific, educational and recreational value. Many include unique landform features or landscapes of great beauty. These protected areas are managed according to the principles of sustainability.

The impact of visitors in national parks is carefully managed. Visitors are able to enter under special conditions (see Table 6.10.2).

Did you know?

Australia's first national park–(now Royal) National Park–was created in 1879, just south of Sydney. It was the second national park in the world to be created. Kakadu National Park in the Northern Territory is Australia's largest national park.





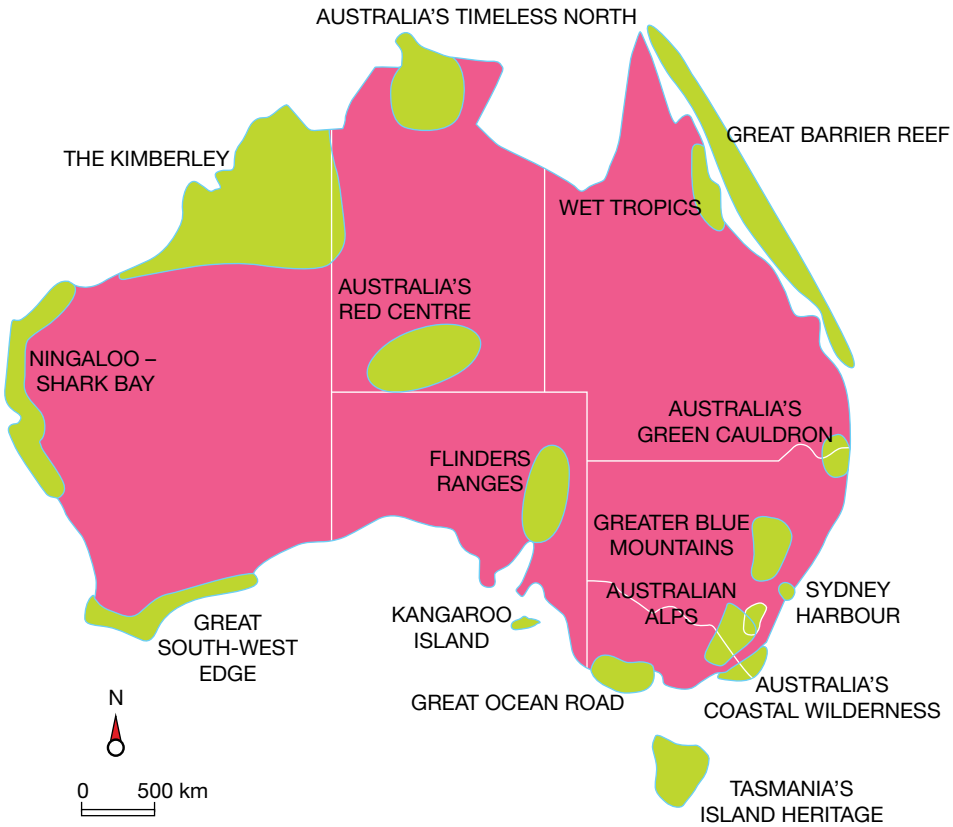
6.10.1 Australia's national parks protect a diverse range of natural landscapes, including (a) Daintree National Park in North Queensland and (b) Freycinet National Park in Tasmania

6.10.2 Rules to manage the impact of people visiting national parks

Rules	Reason
Vehicles and mountain bikes are restricted to main roads.	Vehicles and mountain bikes destroy plants and cause erosion.
Pets are prohibited.	Pets can scare or kill native animals.
Rubbish must be disposed of properly or taken home.	Rubbish can be unsightly and pollute the environment.
Tread lightly—keep on designated (marked) tracks.	Avoid damage to plant and animal habitats.
Do not pick wild flowers.	Flowers are food for birds and insects and produce the seeds from which new plants grow.
Use the toilet facilities provided, not the bush.	Protect water quality.
Take care not to touch historic artefacts (e.g. Aboriginal rock art).	Such sites are fragile and easily damaged.
Use the barbecues provided and don't light fires in the open.	Fire can destroy vegetation and kill animals.
Leave plants, animals, rocks, soil and shells as you find them.	Disturbing these elements of the natural environment threatens plant and animal habitats.
Avoid releasing introduced species of plants and animals either accidentally or deliberately (e.g. illegal dumping).	Introduced species overwhelm native plants and animals, changing habitats.

Australia's National Landscapes Program

Some of Australia's spectacular landscapes are protected through the National Landscapes Program. This program gives landscapes more protection, closely linked to their economic value as a tourist destination. The purpose is to promote tourism and improve visitor experiences, increase the role of protected areas in local economies, and build broader community support for protecting our natural and cultural assets. There are currently sixteen national landscapes.



6.10.3 Australia's national landscapes

Wilderness areas

Wilderness areas are defined as the most intact, undisturbed natural areas. They are the last truly wild places, where the impact of people has been minimal. Wilderness is considered important for the survival of certain species and habitats. It is valued for cultural, spiritual, moral and aesthetic reasons. It is also a valued recreational resource.

Wilderness areas are given the highest level of protection. Their wilderness values and pristine condition are protected by the limiting of activities likely to damage flora, fauna and cultural heritage.

Australia's biosphere reserves

The world's system of biosphere reserves is an initiative (an important action) of the United Nations Educational, Scientific and Cultural Organization (UNESCO). United Nations member countries nominate areas of outstanding environmental importance that meet a set of guidelines established by UNESCO. The area is then recognised under UNESCO's Man and the Biosphere Programme. This program aims to promote sustainable development. The reserves include protected areas, and are managed with a view to both conservation (management practices that conserve, protect and restore landscapes) and sustainable use of natural resources. Australia currently has fourteen biosphere reserves, including Croajingolong and Wilsons Promontory national parks.

Marine protected areas

Marine protected areas are areas of seas, oceans and large lakes that only allow restricted human activity in order to protect natural or cultural resources. Australia has the world's third largest area of protected marine territory (see Figure 6.10.4). This area is larger than the Australian landmass. Australia's oceans have an extraordinarily high level of biodiversity. They provide food and recreation, and produce much of Australia's oil and natural gas. We need to ensure that our oceans, and the life in them, remain healthy and productive so that future generations can continue to enjoy them.

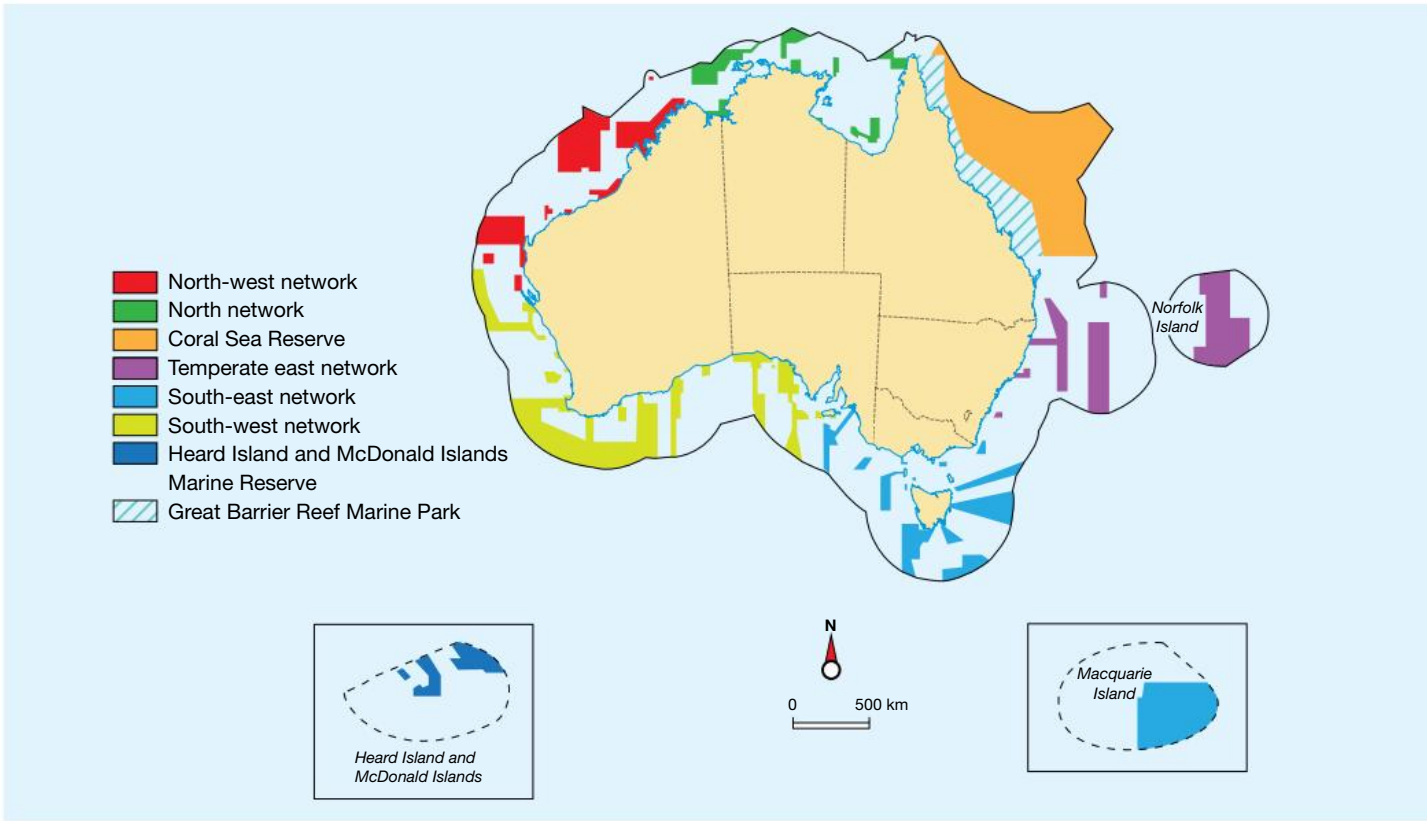
Marine park plans

In 2018, the federal government introduced new legislation to change the types of activities in marine national parks. The legislation divides marine parks into three types of zones:

- *National Park Zone (green)*—has full conservation protection
- *Habitat Protection Zone (yellow)*—allows fishing as long as the sea floor is not harmed
- *Special Purpose Zone (blue)*—allows specific commercial activities.

With the new changes, there would be an increase in the amount of marine park waters that would be opened to commercial fishing, from 63 per cent to 80 per cent.

6.10.4 Australia's protected marine areas



Source: Commonwealth of Australia

Constructed landscapes

Constructed landscapes of cultural importance are also protected. They can include whole streetscapes, individual buildings, the work of leading garden designers and architects, notable parks, gardens and avenues of trees, and in some cases, whole towns and cities. In Australia, important landscapes are protected by heritage legislation (laws). Heritage Council Victoria has responsibility for identifying and listing items of heritage significance in Victoria. The office also oversees the protection and management of listed places and objects. The listing provides the legal framework for managing the approval of any proposed changes to the protected constructed landscape. This is done to preserve the heritage significance of the listing.

Activities

Remembering and understanding

1 Outline the role of national parks and state the qualities of landscapes nominated as national parks that make them worth protecting.
2 Explain what wilderness is.
3 State how important elements of the constructed environment are protected in Victoria.

Applying and analysing

4 Distinguish between the terms 'preservation' and 'conservation'.
5 Complete the following table with arguments for and against the following statement: 'To fully protect our most fragile landscapes we should close protected areas to recreational land uses.'

For	Against

6 Study Figure 6.10.4 and do the following tasks.
- **a** Name three marine protected areas.
- **b** Compare the size of the Coral Sea Reserve to the other protected areas.
- **c** Name the protected area that extends the furthest from the Australian landmass (including Tasmania).
- **d** There are large areas not included in the proposed protection zones. List reasons why this might be the case.

Evaluating and creating

7 Select one of the biosphere reserves identified in the text or another Australian national park. Construct a multimedia presentation outlining the qualities that make this landscape worth protecting. Include in your presentation:
- **a** a map of the reserve or park
- **b** a description of the qualities of the reserve or park that warrant this level of protection. Include information on flora and fauna, topography of the area and Aboriginal and Torres Strait Islander links
- **c** an overview of the history of the park or reserve
- **d** a list of the activities permitted and not permitted in the park
- **e** information about the management of the reserve or park. Include particular environmental issues (feral animals, invasive weeds, etc.), development demands (building hotels) and number of tourists who visit each year.

8 Investigate a constructed environment protected by heritage legislation in your local area and create an annotated visual display.
- **a** Go to the National Trust website to start your research and select an environment or building to investigate.
- **b** Include the following in your display:
  - a map showing the location of the environment or building
  - images or illustrations (including historical and new examples)
  - arguments for and against the preservation and significance of the environment or building.

LS 6D

6.11 Indigenous land management

The importance of 'Country'

Land (or 'Country', as it is often called) is central to the wellbeing of Aboriginal and Torres Strait Islander peoples. The land is not just the soil and rocks—it is the whole environment. It is at the centre of Indigenous spirituality and is central to the issues important to Indigenous Australians.

Australia's Aboriginal and Torres Strait Islander peoples have managed their land for tens of thousands of years. The land and its natural resources provide for their needs, shape their history and are fundamental to their culture and spiritual beliefs.

Indigenous ways of life

Traditionally, Australia's Aboriginal and Torres Strait Islander language groups had their own territory that supported their way of life. They understood and cared for their different environments and adapted to them (see the quote in Source 6.11.2). Indigenous Australians were skilled in managing the resources on which they depended. Geographic features such as rivers, lakes and mountains defined the boundaries of their territory or Country. In areas where there was plenty of water and food, Aboriginal people were semi-permanent, and planted crops such as the yam daisy. In more arid areas, people were semi-nomadic, moving according to the changing seasons and availability of food.

Spotlight

Indigenous use of fire

Aboriginal people made frequent use of fire. They used it to keep the country more open and easy to travel through, and to promote the growth of fresh green grass, which would attract animals. They also used it to signal and hunt, and for the more obvious purposes of warmth and cooking.

There is considerable evidence to suggest that the purposeful use of fire extended from the earliest days of Aboriginal settlement. While fires had always occurred in Australia (due to lightning strikes), it is argued by some scientists that after the arrival of people the fires became more frequent and intense. The use of fire transformed the Australian landscape because it advantaged those plants best adapted to fire. Today, we use fire to reduce fuel loads, just as Aboriginal people did for thousands of years.



6.11.1 *Working the Land*, Joseph Lycett (1817). This painting shows Aboriginal people using fire to hunt kangaroos.

'We cultivated our land, but in a way different from the white man. We endeavour to live with the land; they seemed to live off it. I was taught to preserve, never destroy.'

6.11.2 Tom Dystra, Aboriginal elder

Environmental impacts

The idea that Aboriginal and Torres Strait Islander peoples lived in harmony with nature for tens of thousands of years without significantly changing the Australian environment has been challenged by scientists in recent years. Some scientists believe that Indigenous Australians had a far-reaching impact on the environment.

Loss of megafauna

Megafauna were large land mammals and birds living in Australia that evolved after the dinosaurs. There were over 60 species of megafauna, including 450-kilogram kangaroos, 7-metre-long goanna-like creatures, 180-kilogram flightless birds, 130-kilogram marsupial lions and small-car-sized tortoises. Megafauna became extinct 16 000 to 50 000 years ago.

It is now thought that Indigenous Australians may have played a role in the extinction of the continent's megafauna, through hunting and the use of fire. Megafauna were slow-moving and found it difficult to hide from hunters armed with spears. The larger animals reproduced slowly. The use of fire changed vegetation and meant the megafauna's food supply was changed or destroyed.

Other explanations for megafauna extinction include climate change. The loss of the megafauna transformed the landscape. The extinction of the large, plant-eating megafauna resulted in an increase in the amount of vegetation. In turn, this provided fuel for fire, which led to an increase in the frequency and intensity of fires.



6.11.3 An artist's impression of Australia's ancient megafauna

Did you know?

Indigenous Protected Areas (IPAs) are areas of Indigenous-owned land or sea country that are voluntarily dedicated by Indigenous groups. Australia has over 70 IPAs. Together they make up over 44 per cent of Australia's national reserves. IPAs benefit Indigenous communities because of the employment, training and education opportunities they generate. They also provide environmental, wellbeing, social, health and economic benefits. They are recognised by the Australian Government as an important way of protecting the country's biodiversity for the future.

Aboriginal people practised regular burning. Over time, these events changed the vegetation of the continent. Plant species that found it difficult to survive this use of fire were replaced by fire-tolerant species (such as eucalypts).

After bringing about these changes, Aboriginal and Torres Strait Islander peoples settled into a way of life that established a balance with the environment they had created. This continued for tens of thousands of years until Europeans arrived in 1788.

Activities

Remembering and understanding

1. Describe the traditional Aboriginal and Torres Strait Islander way of life.
2. Outline how recent thinking has changed regarding the level of impact the actions of the first Indigenous people had on the environment.
3. State the possible causes for the extinction of Australia's megafauna.
4. Explain how the extinction of the megafauna affected the Australian landscape.
5. Outline the reasons why Aboriginal people used fire.
6. Describe the impact that regular burning has on the landscape.

Applying and analysing

7. Study the quote by Tom Dystra in Source 6.11.2. Discuss the nature of the relationship between Aboriginal and Torres Strait Islander peoples and 'Country'.

6.12 World Heritage listing

Our common heritage

The United Nations Educational, Scientific and Cultural Organization's (UNESCO) World Heritage Convention is one of the most important international treaties (official agreements) for protecting and managing globally significant natural and cultural sites.

Africa's Serengeti National Park is important for its wildlife. Egypt's pyramids are archaeological treasures. Germany's Völklingen Ironworks tells the story of industrialisation. The Auschwitz concentration camp and the Hiroshima Peace Memorial remind us of the horrors of war.

These special places are just a few of the natural and cultural sites that have been identified as having international significance. They are special because they represent the common heritage of all the world's people. They are treasures to be protected for the benefit of present and future generations. These special places have been identified as **World Heritage sites**.

Making the grade

To be included on the World Heritage List, a site must have global natural or cultural significance and satisfy the strict criteria (standards) outlined by UNESCO. For example, a natural site may represent a significant stage in the Earth's history, represent ongoing ecological and biological processes, contain the natural habitat of endangered species, or be a place of great scenic beauty. A cultural site could be a masterpiece of creative genius, have great architectural merit, be associated with ideas or beliefs of universal significance, or be an outstanding example of a traditional way of life representative of a particular culture.

The UNESCO World Heritage List began in 1979. By mid 2012 there were 936 sites on the list. This included 183 natural, 725 cultural and 28 mixed sites, spread across 153 countries. When a country nominates a site it must agree to conserve it for future generations.

By mid 2012, Australia had nineteen World Heritage sites. Twelve of these are natural sites, three are cultural and four are mixed.

Spotlight

Palmyra, Syria

Palmyra was a thriving metropolis in the desert east of Damascus in Syria. It was part of the Roman Empire and was an important oasis and a stop for caravans travelling the Silk Road from China to Europe. The city-state reached its peak in the late third century, when it was ruled by Queen Zenobia and briefly rebelled against Rome. Zenobia's rebellion failed, and Palmyra was reconquered and destroyed by Roman armies in 273 AD.

The city's colonnaded avenues and impressive temples were preserved by the desert climate. In the twentieth century, the city was one of Syria's biggest tourist destinations.

In August–September 2015, Islamic State of Iraq and Syria (ISIS), or Islamic State (IS), destroyed Palmyra's most famous and treasured landmarks. ISIS justifies the destruction of such sites and artefacts by claiming that their actions are consistent with their extreme interpretation of Islamic tradition. By leaving no trace of previous cultures or civilisations, ISIS argue that they are able to establish their own identity and leave their mark on history. They have used the sale of plundered artefacts to fund their activities.



6.12.1 The Temple of (Bel) Baal Shamin in Palmyra, Syria, blown up by ISIS in August 2015



6.12.2 The Monumental Arch, another of Palmyra's treasures destroyed by ISIS

Heritage listing

The main benefit of a World Heritage listing is that people become aware of the special nature of the site. Pressure is also exerted on governments to protect the site. This means that when a site is threatened there is enough public interest to make it an issue for community debate and action.

Some sites may be endangered by war, pollution, poaching, lack of maintenance, the damming of rivers, illegal logging or similar activities. Such sites are often placed on the List of World Heritage in Danger (see Table 6.12.3).

Listing does not always guarantee protection. The civil war in Syria has resulted in all World Heritage areas there being placed on the endangered list.

Protecting sites

Governments that sign up to the World Heritage Convention agree to protect listed cultural and natural sites located within their borders. Such protection includes:

- developing community-based planning programs that protect sites
- establishing a body whose responsibility it is to protect a site
- developing scientific and technical studies and research that help to protect sites against potential dangers
- putting in place the appropriate legal, scientific, administration and financial measures to protect sites
- recognising that the protection of sites is the responsibility of the international community
- undertaking not to damage, directly or indirectly, any World Heritage site.

6.12.3 UNESCO's List of World Heritage in Danger, 2017

Country	World Heritage site
Afghanistan	Minaret and archaeological remains of Jam Archaeological remains of the Bamiyan Valley
Austria	Historic centre of Vienna
Belize	Belize Barrier Reef Reserve System
Bolivia	City of Potosi
Central African Republic	Manovo-Gounda St Floris National Park
Chile	Humberstone and Santa Laura Saltpeter Works
Côte d'Ivoire	Mount Nimba Strict Nature Reserve
Democratic Republic of the Congo	Virunga National Park Garamba National Park Kahuzi-Biega National Park Okapi Wildlife Reserve Salonga National Park
Egypt	Abu Mena
Guinea	Mount Nimba Strict Nature Reserve
Honduras	Rio Plátano Biosphere Reserve
Indonesia	Tropical rainforest heritage of Sumatra
Iraq	Ashur (Qal'at Sherqat) Hatra Samarra archaeological city
Jerusalem	Old City of Jerusalem and its Walls
Libya	Archaeological Site of Cyrene Archaeological Site of Leptis Magna Archaeological Site of Sabratha Old Town of Ghadamès Rock-Art Sites of Tadrart Acacus
Madagascar	Rainforests of the Atsinanana
Mali	Timbuktu Tomb of Askia Old Towns of Djenné
Micronesia (Federated States of)	Nan Madol: Ceremonial Centre of Eastern Micronesia
Niger	Air and Ténéré Natural Reserves
Palestine	Birthplace of Jesus: Church of the Nativity and the Pilgrimage Route, Bethlehem Hebron/Al-Khalil Old Town Palestine: Land of Olives and Vines—Cultural Landscape of Southern Jerusalem, Battir
Panama	Fortifications on the Caribbean side of Panama: Portobelo-San Lorenzo
Peru	Chan Chan Archaeological Zone
Senegal	Niokolo-Koba National Park
Serbia	Medieval Monuments in Kosovo
Solomon Islands	East Rennell
Syrian Arab Republic	Ancient City of Aleppo Ancient City of Bosra Ancient City of Damascus Ancient Villages of Northern Syria Crac des Chevaliers and Qal'at Salah El-Din Site of Palmyra
Uganda	Tombs of Buganda Kings at Kasubi
United Kingdom	Liverpool—Maritime Mercantile City
United Republic of Tanzania	Selous Game Reserve
United States of America	Everglades National Park
Uzbekistan	Historic Centre of Shakhrisyabz
Venezuela (Bolivarian Republic of)	Coro and its Port
Yemen	Historic town of Zabid Old City of Sana'a Old Walled City of Shibam



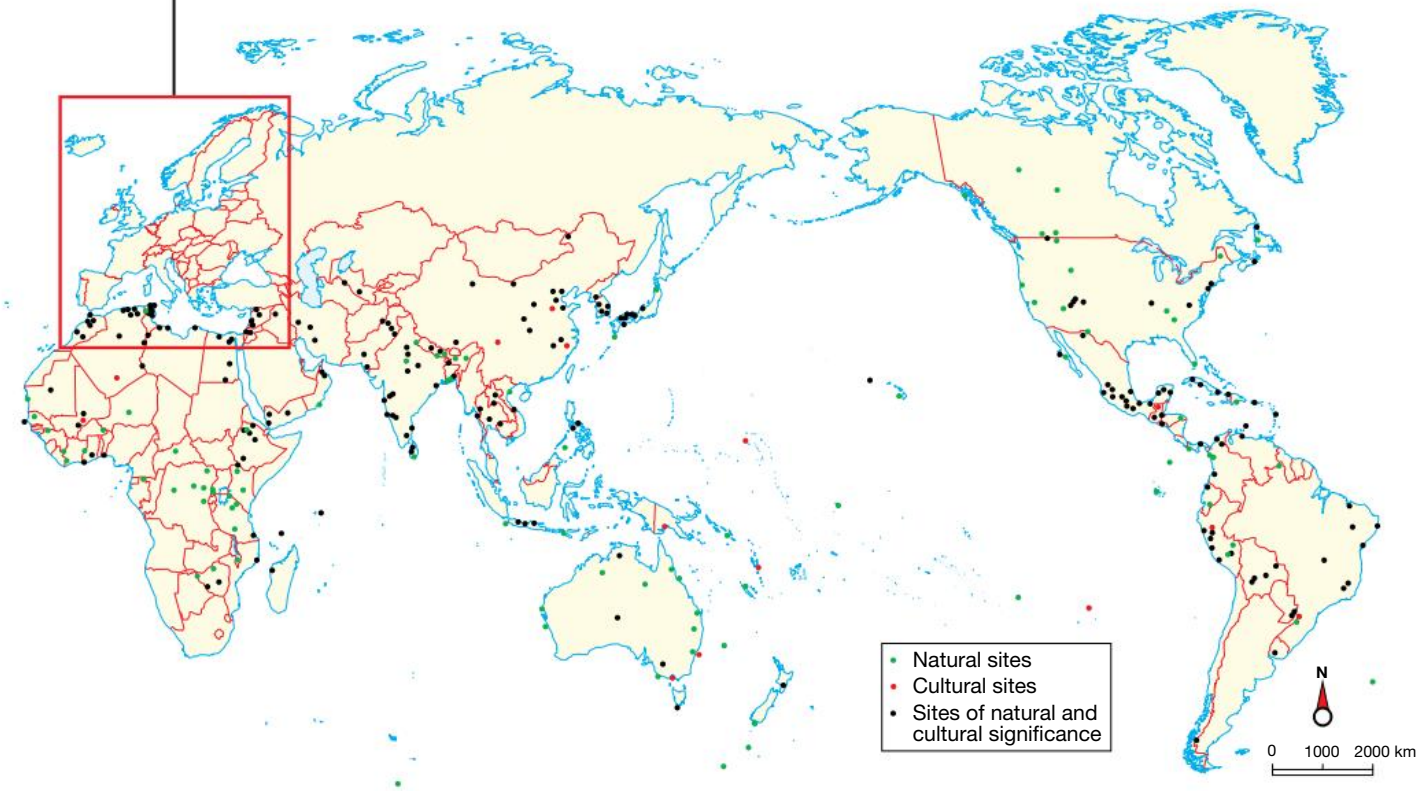


Wood Buffalo National Park, Canada

Listed: 1983

Criteria: Natural

Description: Located on the plains in the north-central region of Canada, the park (which covers 44 807 square kilometres) is home to North America's largest population of wild bison. Another of the park's attractions is the world's largest inland delta, located at the mouth of the Peace and Athabasca rivers.



6.12.4 Distribution of World Heritage sites



Grand Canyon National Park, Arizona, USA

Listed: 1979

Criteria: Natural

Description: Carved by the Colorado River, the Grand Canyon is nearly 1500 metres deep. It is the most spectacular gorge in the world. Its horizontal strata retrace the geological history of the past 2 billion years. There are also prehistoric traces of human occupation.



Iguazú National Park, Argentina

Listed: 1984

Criteria: Natural

Description: At the heart of this park is one of the world's most spectacular waterfalls. The semicircular falls are 80 metres high and 2700 metres in diameter. They feature numerous cascades that produce vast sprays of water.



Machu Picchu, Peru

Listed: 1983

Criteria: Cultural

Description: Machu Picchu is located 2430 metres above sea level, in the middle of a tropical mountain forest. It was probably the most amazing urban creation of the Inca Empire. Its giant walls, terraces and ramps seem as if they have been cut naturally in the continuous rock escarpments.



The Great Wall, China

Listed: 1987

Criteria: Cultural

Description: In c. 220 BC, sections of earlier fortifications were joined to form a united defence system against invasions from the north. Construction continued up to the Ming dynasty (1368–1644), when the Great Wall became the world's largest military structure.

Activities

Remembering and understanding

1 Explain the factors that determine whether a site qualifies for World Heritage listing.
2 Explain why World Heritage sites are special.
3 Describe the process to protect endangered World Heritage sites.

Applying and analysing

4 Do you think the responsibilities of national governments under the World Heritage Convention are sufficient to protect the sites?
5 Study Table 6.12.3 and do the following tasks.
   a Create a table with seven columns. Label each column with one of the seven continents: Africa, North America, South America, Europe, Asia, Australia and Antarctica.
   b Place each of the World Heritage locations under threat in the correct column.
   c Rank the continents according to the number of World Heritage areas under threat.
   d List the continent/s that have no World Heritage areas under threat.
   e Describe the pattern to the location of World Heritage sites under threat.
6 Study Figure 6.12.4 and do the following tasks.
   a Identify the continent/s with the most World Heritage sites.
   b Identify the continent/s with the most World Heritage natural sites.
   c Identify the continent/s with the most World Heritage cultural sites.
   d Is there a pattern for the location and type of heritage sites? Describe the pattern.

Evaluating and creating

7 Select one place from Table 6.12.3 to investigate further. Create an annotated visual display to present your research. Include the following:
   a a map of the site
   b an explanation of why the site is considered important
   c an overview of the threats to the site
   d a description of programs in place to protect the site from the threats, and an analysis of these programs.



Coastal landforms 7

Coastlines are dynamic environments, undergoing constant change. The main agents of change are waves, tides and currents.

Coastal landforms can be divided into two major categories—erosional and depositional. Erosional coasts are dominated by cliffs and wave-cut platforms. Depositional coasts are dominated by landforms made up of eroded materials, such as beaches and sand dunes. Coastlines are especially vulnerable to the impacts of human-induced climate change. Global warming is predicted to accelerate the rate of coastal erosion.

OVERVIEW QUESTIONS

7A What are the processes shaping the world's coastlines?

7B What are the main erosional and depositional coastal landforms, and how do they develop?

7C How can coastal landscapes be protected and managed sustainably?

LS Before you begin

7.0.1 Victoria's Twelve Apostles are an example of an erosional coastline.

GLOSSARY

attrition the gradual wearing down of fallen rock into smaller particles and eventually sand by wave action

backwash the return flow of water down a beach after a wave has broken

berm a small wall of earth or sand at the back of a swash zone (where the waves crash onto the beach)

blowouts gaps (or breaks) in dune systems, formed by the inland movement of sand; often caused by the destruction of dune vegetation

clinometer an instrument for measuring the angles of slopes

corrasion the process of surging water bombarding a cliff with rock fragments and dragging other fragments backwards and forwards over rock surfaces, wearing them away; also called abrasion

depositional coasts coastlines dominated by landforms made up of layers of eroded materials

erosional coasts coastlines dominated by landforms created by erosion (wearing away)

foredune the sand dune closest to the beach

groynes walls of rocks or timber built to trap sand on a beach

land degradation the decrease in the productive capacity of land due to the activities of people

longshore drift the process of sand moving along a beach shoreline as a result of waves approaching the shore at an angle; also called littoral drift

ocean currents flows of water in the ocean with a different temperature or salinity from the water it is passing through

riprap barrier a barrier built from large rocks or boulders to protect the shoreline

sand dunes hills of sand shaped by the wind

sand bars areas of sand deposited in shallow water

swash the rush of water up a beach after a wave breaks

tides the rise and fall of sea levels caused by the gravitational forces exerted by the moon and the sun, and the rotation of the Earth

7.1 Processes shaping coastlines

Coasts

Coasts are very complex environments that are constantly being changed by the forces of nature. Waves pound the coastline, sometimes bringing sediments such as sand onto the beach and at other times striking the coast with so much force that they erode its landforms.

Coastline types

Coastal landforms are categorised into two main types—erosional and depositional coastlines. **Erosional coasts** are formed by the powerful action of waves and other forces that weather and erode rock. The Victorian and South Australian coastlines are mostly erosional coastlines. Figure 7.1.1 shows an erosional coast. **Depositional coasts** are made up of eroded materials transported and deposited along the coast. The Queensland and northern Western Australian coastlines are mostly depositional coasts (see Figure 7.1.2).



7.1.2 Fraser Island, Queensland, is an example of a depositional coastline.



7.1.1 Nash Point in Wales, United Kingdom, is an example of an erosional coastline.

Waves

Of all the processes shaping coastlines, waves are the most important. They play a role in both erosion and deposition. The sea's surface is constantly moving. When wind blows across the surface of the sea, energy is transferred from the wind to the water surface. A wave is energy travelling through the water.

In the open sea, far away from land, waves move as ocean swell in a circular motion. As the wave approaches the shallow shoreline it begins to interact with the seabed. The seabed disturbs the circular motion of the wave, causing it to rise up, and then gravity eventually causes it to break (see Figure 7.1.3).

Swash and backwash

When a wave breaks, it creates turbulence (chaotic movement) in the water, which rushes onto a beach. This action is called **swash**. As the swash water surges up the beach, it carries sediment it has picked up with it. As the energy in the wave is gradually lost, most of the water soaks into the sand. The remaining water, called **backwash**, flows back down the beach and into the sea.

Constructive and destructive waves

Waves are very powerful. The energy within them is strong enough to wear down solid rock and cause widespread destruction to coastal zones, especially during storms. However, waves are also builders of the coastal system. They are able to carry and deposit large amounts of sediments. They play an important role in constructing the coastal system.

When a low-energy wave crashes on a beach, its energy lessens quickly and it therefore has less backwash. Most of the sediment it was carrying is dropped on the beach during the swash, so it becomes a constructive wave. However, if the wave has considerable energy, it will have more backwash. In this instance, the wave can continue to pick up sand in the backwash and return it to the sea. This removes sediment from the shore and the wave becomes destructive.

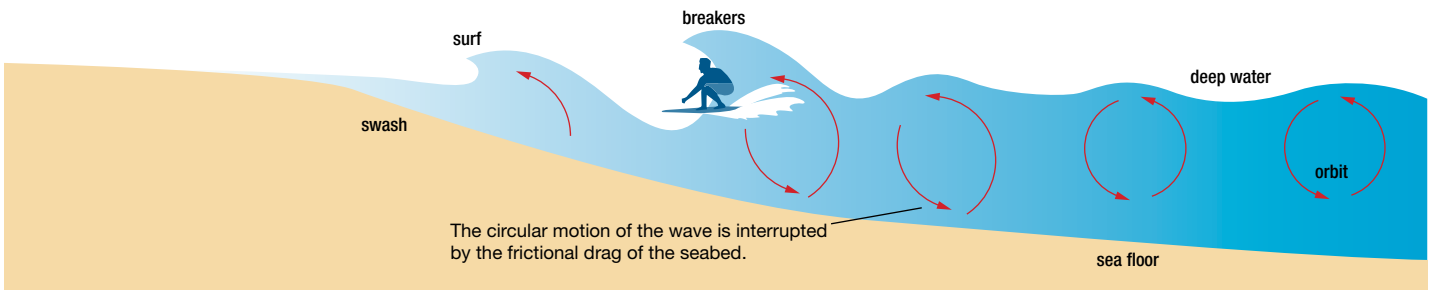
In Australia, waves are generally constructive during summer in southern Australia and during the dry season in northern Australia. During this time the beach expands as sand is deposited onto it. This sand builds up depositional landforms such as **sand dunes** (hills of sand). Wave size is determined by the speed and duration of wind, and the fetch (the length of water over which wind has blown).

In the winter months, there is an increase in the number of large storms and strong winds in southern Australia. This type of weather results in the creation of destructive waves. These are waves with huge amounts of energy that wear away coastal areas. Destructive waves erode beaches and headlands, and cause considerable damage.

Weathering

Although waves are the most important cause of erosion, there are other agents that impact on the weathering (wearing down) of a coast.

- Salt-spray weathering gradually breaks up the surface of rock because the salt particles expand and contract as they dry out in the sun.
- Plant weathering breaks up rock, as plants send tiny roots into joints (gaps within the rock) that expand and weaken the rock as the roots grow.
- Animal weathering occurs when sea creatures attach themselves to rock. The animals produce chemicals that attack minerals in the rock, breaking it down.



7.1.3 Waves increase in height when the wind blows strongly, for a long time and over a long distance. When they enter shallower water the circular movement of energy is disturbed. The forward movement of the wave causes it to break as surf.

Erosion

Erosion is the transporting of material that has been weathered from one place to another. There are two types of erosion: wind and water. In the coastal environment, water erosion occurs mostly through waves and the coastal rivers that carry swash sediments from inland areas out onto the coast. Wind erosion is very important in the formation of sand-based landforms such as coastal dunes. The factors affecting the rate of erosion are shown in Figure 7.1.4.

There are six main types of coastal erosion:

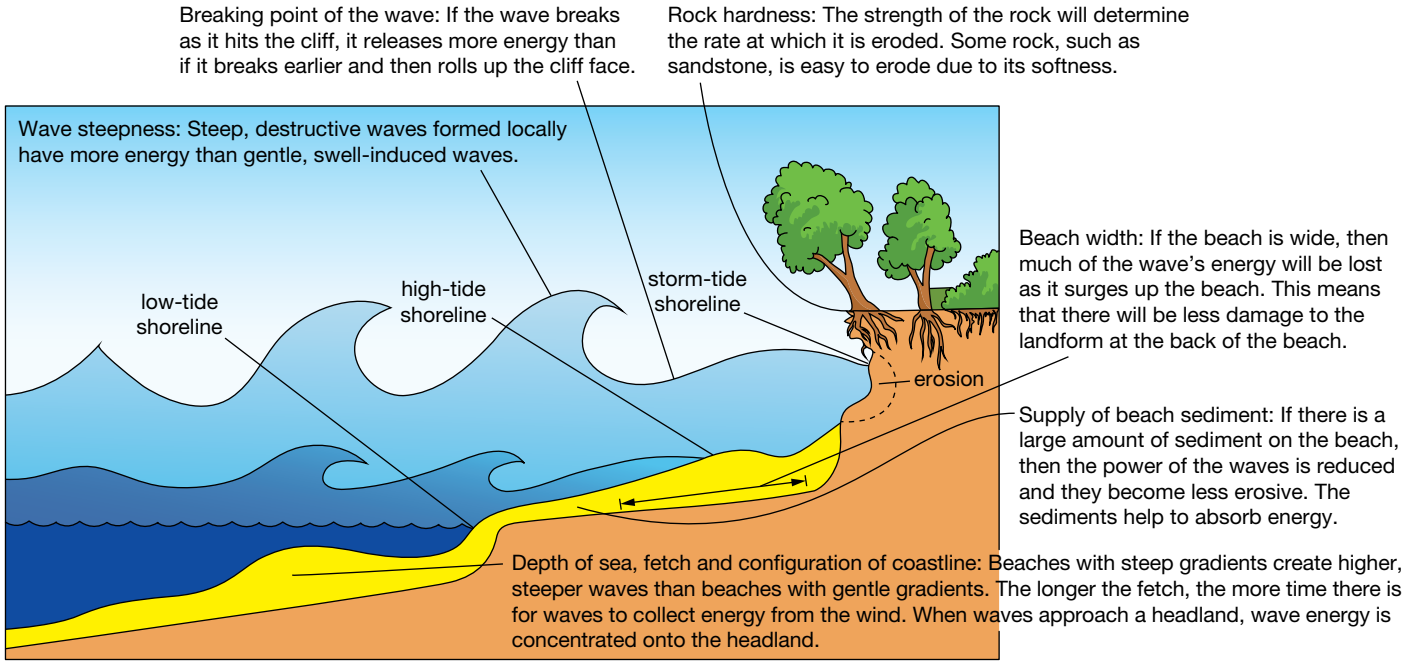
- *wave pounding*—large waves transport huge amounts of energy. When waves break against rocks, they weaken the rock's structure, causing small pieces of rock to break away
- *hydraulic pressure*—when a wave strikes against a rock surface, a small amount of air is trapped in cracks within the rock face. As the air is compressed by the weight of the water, pressure is exerted on the rock. Over time this weakens the rock face and the rocks break away
- *corrosion (or solution)*—this process is similar to the formation of rust on metal. A chemical reaction between air, the salt in the seawater and the rock surface causes small particles of rock to disintegrate (break down)
- ***corrasion** (or abrasion)*—as a wave breaks, it throws sand, small rocks and sometimes even large boulders against rocky coastlines. This action gradually wears away the rock, much like sandpaper does to a piece of wood
- ***attrition***—when a large piece of rock falls away, the waves gradually wear it down into smaller rock particles and eventually sand
- *land-based erosion*—water running from the land can also erode the coastal environment.

Deposition

Many of the features you see at the coast (such as beaches, **sand bars** and sand spits) are built up by deposition. Waves and currents move sand along the coast and deposit it in large piles (sand bars) or strips (sand spits). Beaches are the best known of these features and are formed only where there is a good supply of sand and some form of protection to prevent the sand from being eroded away.

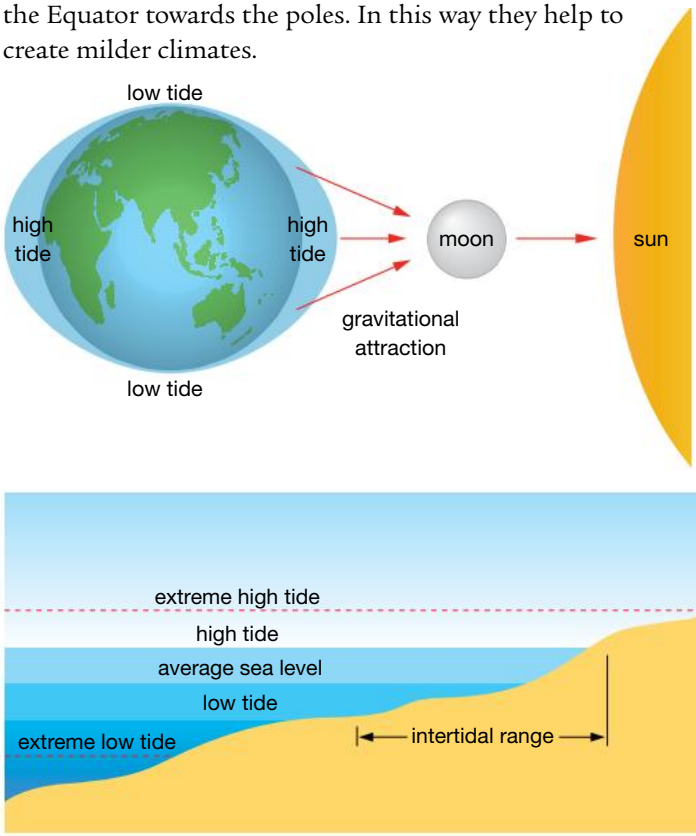
Tides and currents

Tides are the rise and fall of sea levels, caused by the gravitational pull of the moon and the sun, and the rotation of the Earth (see Figure 7.1.5). Tides vary greatly in height from one place to another. While most places have an average of a few metres between high and low tides, there are places where the height of the tide rises by 20 or 30 metres.



7.1.4 Factors affecting the rate of erosion along a coastline

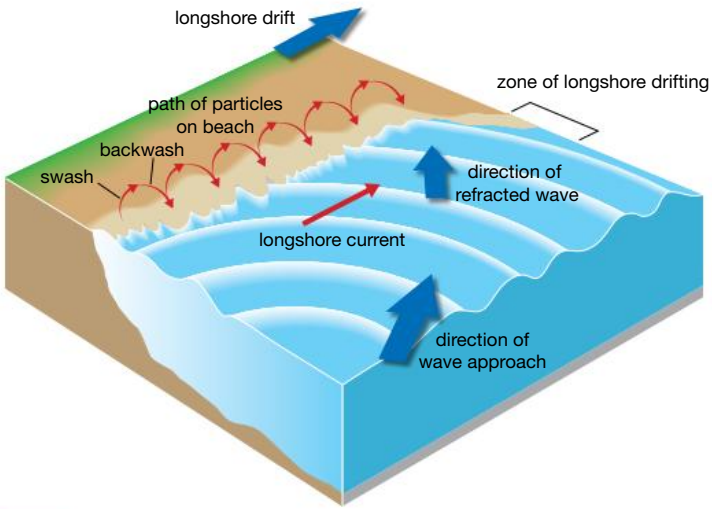
Ocean currents are flows of water in the ocean that have a different temperature or amount of salt from the water it is passing through. They play a very important role in distributing sediments and in regulating temperatures. Ocean currents carry cool water away from the North and South poles towards the Equator, and warm water from the Equator towards the poles. In this way they help to create milder climates.



7.1.5 The effects of gravitational pull by the moon and the sun cause the daily and monthly pattern of tides.

Longshore drift

Along many coastlines a special type of current known as **longshore drift** occurs. This current plays a major role in the movement and deposition of sediment. It is very common along the eastern coast of Australia. Longshore drifts run parallel to the coastline, carrying the sediments that destructive waves have eroded from beaches (see Figure 7.1.6). These sediments can be carried very long distances. The prevailing wind (usual direction of wind) also affects longshore drift.



7.1.6 Longshore drift

Activities

Remembering and understanding

1. Explain how waves form.
2. Explain what weathering is.
3. Outline the various forms of weathering that shape the coastal environment.
4. Name three landform features associated with the process of deposition.

Applying and analysing

5. Distinguish between erosional and depositional coasts.
6. Examine Figure 7.1.6. In your own words, discuss the process of longshore drift.
7. Study Figures 7.1.1 and 7.1.2.
   - **a** Construct a Venn diagram and list the similarities and differences between the coastal landscapes shown in the photographs. Include definitions explaining the differences between erosion and deposition.
   - **b** Construct a mind map of all the different ways that the coast is changed by natural processes.

LS 7A

7.2 Erosional landforms

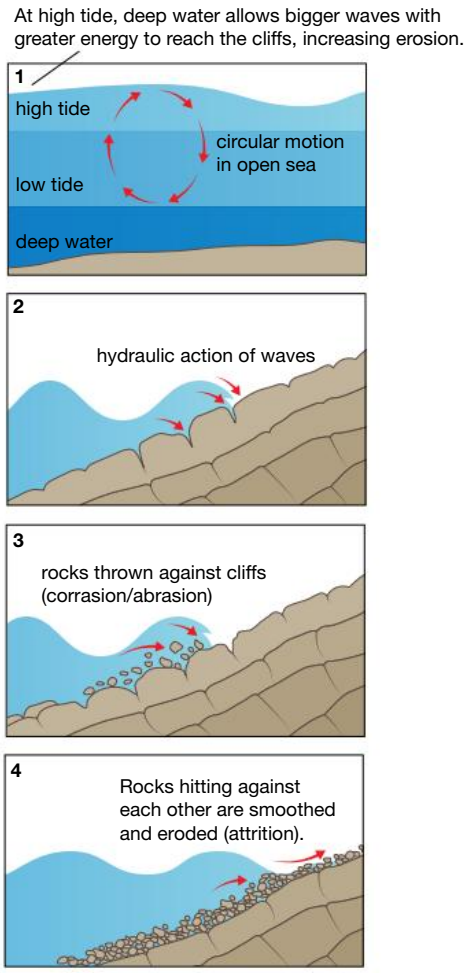
Power of waves

Many coastlines are made up almost entirely of rock. Wave erosion dominates these coasts. Waves are most active during storms, when high winds create large, high-energy waves. Storm waves undermine cliffs and gradually wear away headlands (points of land that are usually on high cliffs). Sometimes the largest waves that break on coasts are caused by storms hundreds of kilometres away. The wind may be so strong that it builds up huge waves that travel uninterrupted across the sea.

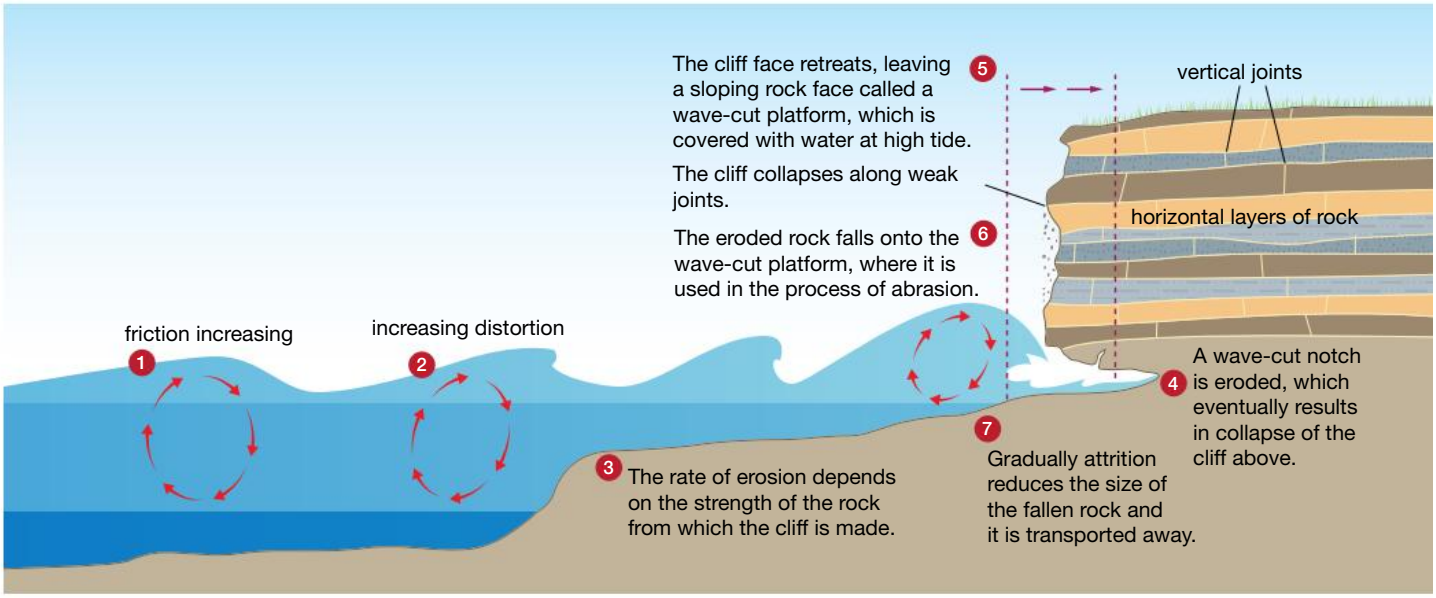
As waves move from the deep ocean towards the shallower waters of the coast, their circular motion is affected by the frictional drag of the ocean floor. This causes the bottom of the wave to move more slowly than the crest, and the circular motion is increasingly distorted. This causes the wave to increase in height until it finally plunges forwards as a breaker. The energy of the wave is released and the work of erosion, transportation and deposition takes place. This process is outlined in Figure 7.2.1. It is the dominant process on exposed coasts, in the area between low and high tides.

Coastal erosion

On coasts with cliffs, wave action is concentrated at the base of the cliff (see Figures 7.2.2 and 7.2.3). Coastal erosion occurs very quickly when the cliffs are formed from softer rock, such as sandstone.



7.2.1 Processes of wave erosion



7.2.2 Coastal processes and landform features on a rocky coast

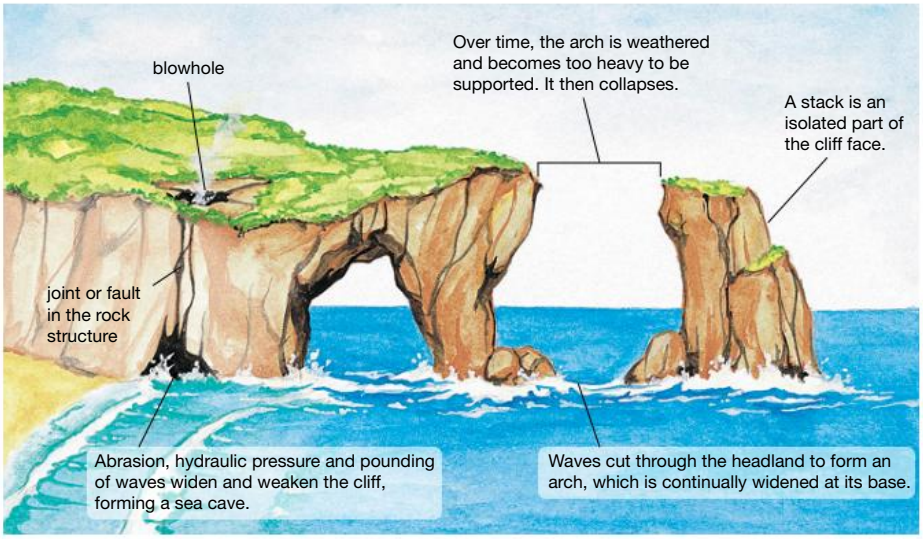


7.2.3 A cliff face, a notch (a small undercut at the base of a cliff) and a wave-cut platform (a flat rock surface found at the base of a cliff or headland), Newfoundland, Canada

Stacks and arches

Some sections of rock within a cliff face may resist erosion more than others. The softer rock around more resistant rock is eroded more quickly. This leaves the harder rock as an outcrop along the coast. Over time the sea may eventually erode the less resistant rock on all sides of this outcrop. The resistant rock is left as a small island or stack (see Figure 7.2.4).

Occasionally, the stack may be left linked to the headland by an arch. This arch will eventually fall as more weathering and erosion occur.



7.2.4 Formation of sea caves, arches and stacks

Did you know?

The famous limestone and sandstone stacks and arches of Victoria's Great Ocean Road are constantly changing. In 1990, the London Bridge arch collapsed into the ocean. A 45-metre stack that was one of the Twelve Apostles collapsed in 2005, and 5 years later another stack, one of the Three Sisters, crumbled away.

Activities

Remembering and understanding

1 Explain the power of waves and the effect of shallow water.

2 Explain why cliffs erode at different rates.

Applying and analysing

3 Study Figures 7.2.3 and 7.2.4. With knowledge gained from the text and your own research, write a report explaining the events and processes responsible for the formation of stacks and arches.

Geographical skills

4 Construct a photo sketch of Figure 7.2.3. Annotate your sketch with the names of coastal landform features mentioned in this unit.

5 Refer to Figure 7.2.4 and draw a cartoon strip showing the erosion processes. Your cartoon should include:

- a headland/cliff eroded by waves
- the creation of caves in the sides of the headland
- caves joining together to create an arch
- the roof of the arch collapsing and creating a stack.

Annotate your cartoon with the different types of erosion and processes creating these landforms.

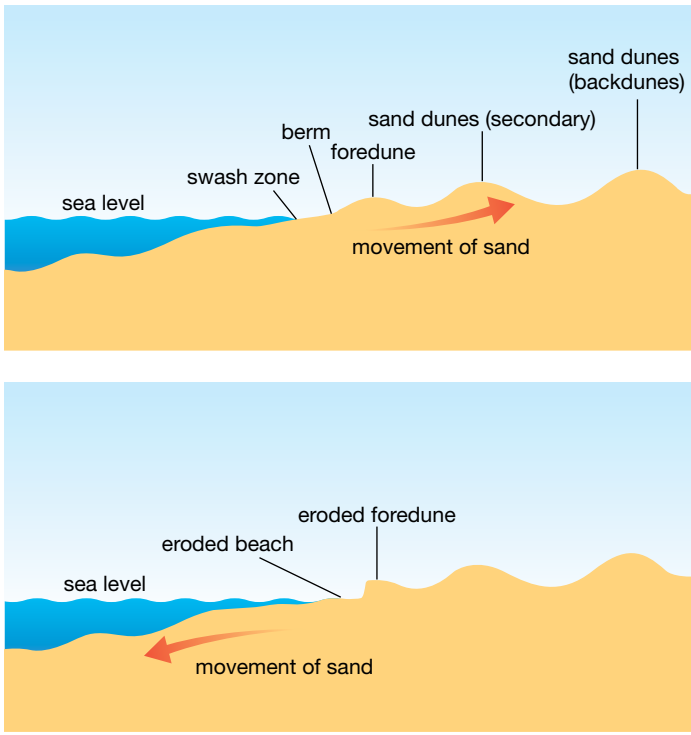
7.3 Depositional landforms

Beaches

Beaches are familiar landforms, seen on many coastlines. They can be made up of any deposited material, including shingle (small, rounded pebbles), but most beaches are made from sand. The sand is distributed along the beach by wave movements. It may be brought to the coast by rivers, or it may be deposited by waves from eroded rock material along the coast.

Because beaches are made up of loose material, their location depends on the actions of waves and rivers. Sand is continuously being deposited on beaches or taken away from them by waves. Beaches will form only in a place where there is a good supply of sand, and where there is enough protection to give the sand a chance to build up. On most beaches there is a continuous cycle of erosion and deposition. In seasons of strong winds and storms, the sand is taken from the beach and is often stored offshore as sand bars in shallow waters. In seasons of calmer seas and light winds, the sand is gradually deposited on the beach.

Figure 7.3.1 shows this cycle of erosion and deposition. The cycle affects not only the size and shape of the beach, but also the dunes behind the beach. When storm waves are very large, they erode the beach and may also eat into the dunes.



7.3.1 Sand deposition and erosion

Beach components

All beaches have three main components:

- *the swash zone*—this is the most active part of the beach. It is where the waves crash onto the beach, and run up and back down. In this part of the beach the sand is always wet
- *the berm and foredune*—a ridge of sand called the **berm** develops at the top of the swash zone, where waves lose their energy and begin the backwash. The waves deposit sand up to this point. The **foredune** (the sand dune closest to the beach) begins after the berm
- *coastal sand dunes*—dunes are landforms created by the wind. Dried sand is picked up by winds blowing from the sea and deposited in hills over the land.

Dune formation

Behind a beach there are often sand dunes. These are built by the wind blowing loose, dry sand from the beach inland. There it accumulates to form a number of dunes, called the foredune (or primary dune), secondary dune and backdune. The sand in the dunes is anchored (or stabilised) by plants, such as those shown in Figure 7.3.2.

Dunes are a very important part of the sand cycle. They prevent storm waves from extending into low-lying areas behind the beach. For a sand dune system to exist there has to be a large supply of sand, long periods of dry weather and frequent onshore winds.

As sand begins to accumulate (build up) in a dune, plants start to settle and grow. The first colonisers bind the sand together with their roots. This creates a more stable environment in which more and different plants can grow. Each following group of plants is taller and more complex. This is because the growing conditions are gradually improved by earlier plants.

Dunes are found along many beaches in Australia. They have been used for recreation, mined for sand and rare minerals, used as rubbish dumps, built over for housing, and in many areas completely removed. People are now much more concerned about conserving dunes in their natural state. There is more public awareness and understanding of how easily dunes can be damaged. Planning rules now protect dune systems in many coastal areas.



7.3.2 The sand in these Tasmanian dunes is anchored, or stabilised, by plants.

Sand spits, bars and tombolos

Sand spits form in shallow water where waves dump sand, creating a narrow strip of land (see Figure 7.3.3). The water behind the spit is usually very calm, and it is common for mangroves or salt marshes to develop there. In some places, a sand spit forms across the mouth of a bay, joining two headlands. This is known as a bar. A tombolo is a rare form of spit that forms between the mainland and an island.



7.3.3 A sand spit at Fingal Bay Tombolo, Port Stephens, New South Wales

Activities

Remembering and understanding

1. Outline the conditions necessary for a dune to build up.
2. Outline how plants anchor the surface of a sand dune.
3. Explain what causes the changes in erosion and deposition on a beach.
4. Explain the difference between spits, bars and tombolos.

Applying and analysing

5. Describe the destructive effects on sand dunes of some human activities carried out on or near dunes (such as mining, building houses, walking, boating and planting trees).

LS 7B

7.4 Coastal landscape degradation

Coastal pressures

People have long preferred to live near the coast and have not hesitated to exploit this landscape with little regard for the degradation caused. The mangrove forests that line coastal mudflats and estuaries (where rivers widen and flow into the sea), as well as sand dunes that develop behind beaches, are vital to the coastal landscape. However, they are often damaged or lost because of coastal development. As populations grow and settlements expand, more pressure will be placed on the valuable coastal landscape.

Landscape degradation

Landscape degradation, or **land degradation**, is the temporary or permanent alteration of a landscape or land resulting from the activities of people. The worst form of degradation results in permanently reducing the productive capacity of the land. Degradation can cause:

- soil fertility decline (deterioration of the physical, chemical and biological properties of soil)
- erosion
- salinity (the build-up of salt in soil and soil surface)
- waterlogging (when groundwater rises close to the soil surface)
- desertification (the spread of deserts)
- pollution
- habitat destruction.

Importance of mangroves and sand dunes

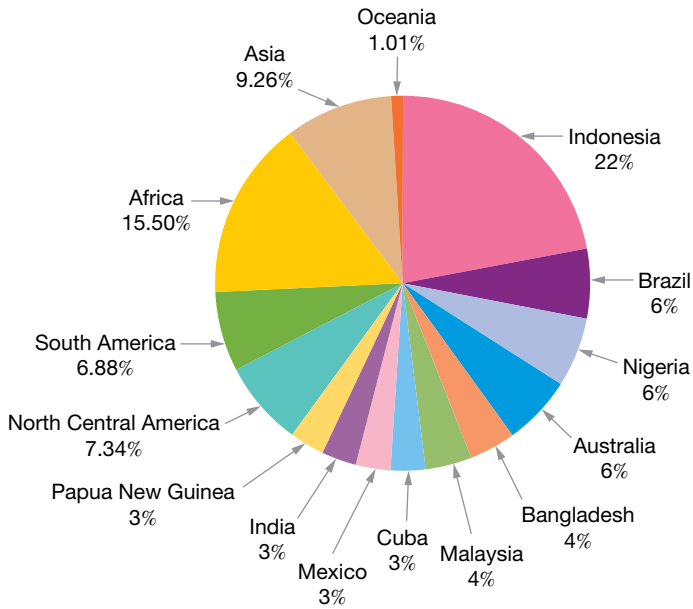
Mangrove forests and sand dunes protect many coastal landscapes. Sand dunes protect against wave damage from storms, and they prevent salt water from reaching the land behind the dunes. As sand accumulates in these dunes it becomes a source of sand that can replenish a beach after it has been eroded by big seas. Sand dunes also protect land areas from salt-laden winds.

Mangrove forests also act as a buffer against storm and wave damage. The tangle of roots of a dense stand of mangroves acts as a shock absorber and reduces the impact of large waves. Mangroves also filter sediments that are loaded with excess nutrients and toxic pollutants.

Mangroves are important because they are able to store carbon. They often store as much as 2000 tonnes of carbon per hectare. When mangroves are destroyed, the stored carbon oxidises (combines with oxygen) and carbon dioxide (CO_2) is released into the atmosphere. Mangroves are also an important habitat for marine species. It is estimated that 80 per cent of commercially caught species depend on mangroves.

Mangrove degradation

The world is losing its mangroves at a rate that is three to five times faster than the rate of global deforestation (the clearing of trees). This worsens the destruction of and damage to the coastal landscape. According to the United Nations Food and Agriculture Organization, between 20 and 35 per cent of the world's mangroves have been lost since 1980. The rates of loss are highest in the developing countries of South-East Asia, Africa and South America. In Thailand it is estimated that 86 per cent of mangrove forests have been destroyed. It is predicted that by 2050, in South-East Asia there will be 35 per cent less mangrove forest than there was in 2000. In as few as 100 years, the world's mangrove forests may become so degraded and reduced in area that they would be considered to have functionally disappeared.



Source: United Nations Food and Agriculture Organization

7.4.1 Country and continent share of global mangrove extent (per cent)

Did you know?

In Moreton Bay near Brisbane, an estimated 20 per cent of the pre-European mangrove area has been lost to reclamation landfill.



7.4.2 Dieback of mangroves (the lighter trees) in the Mackay region, Queensland, is attributed to (believed to be the result of) the run-off of chemicals used in sugarcane farming. Thirty square kilometres of mangroves have been affected by severe dieback.

Causes of mangrove degradation

Exploitation

The increasing population of developing countries has led to an ever-growing need for fuelwood for heating and cooking. This has resulted in the reckless cutting down of mangroves. Mangrove forests have also been cut down for timber and woodchip production.

Coastal development and land reclamation

Historically, coasts have been favoured for settlement and economic activity. This is especially true for Australia. As large port cities such as Sydney flourished, the mangrove forests within their estuaries were destroyed. At Homebush Bay in Sydney, a land reclamation project was undertaken with the construction of bund walls (retaining walls) to prevent tidal flooding. This killed the mangroves that relied on the twice-daily tidal flow. Behind the bund wall, landfill was brought in to raise the height of the land. It was raised beyond the tidal reach, thereby creating new land for industry.

The pressures of ever-increasing demand for coastal land for residential subdivisions, canal estates, marinas and tourism are felt everywhere. With most of the accessible land near large urban centres already taken up, the remaining mangroves are under greater threat.

Pollution

Mangroves were long considered to be dirty, smelly, mosquito-ridden wastelands, and people did not hesitate to dump waste in them. The discharge (release) of nutrient-rich agricultural and urban run-off, and toxic contaminants (pollutants) from industry meant that mangroves were damaged (see Figure 7.4.2).

Excessive nutrients from this sort of pollution cause eutrophication (water pollution caused by nutrients leaching from soils as a result of pollution from sewage and use of fertilisers), which leads to algal blooms. These rapidy growing algae reduce the amount of sunlight that passes through the water and its oxygen content. The algae may also cover and block the pneumatophores (the specialised roots that the mangrove tree needs to obtain oxygen). Pollutants such as ammonia can cause ulcers on the skin of fish and soften crab shells. When toxic substances settle into sediment they can become a long-term threat to the mangrove ecosystem. The concentration of dangerous chemicals increases as it moves up the levels of the food chain.

Shrimp aquaculture

The biggest threat to the world's mangrove forests is the rapidly expanding shrimp aquaculture industry in South-East Asia. According to the United Nations Environment Programme, nearly 40 per cent of mangrove destruction worldwide is caused by shrimp aquaculture. Hundreds of thousands of hectares of mangrove forests have been cleared for artificial ponds, which are then filled with large numbers of shrimp (see Figure 7.4.3). Channels are dug to divert water to the ponds, which prevent the mangrove seeds being dispersed (spread) by the tides. When the channels stop tidal flushing, mangrove trees die. The mangroves are becoming contaminated by the chemicals and antibiotics that are used to keep the shrimp healthy. The mangrove forests are also being destroyed by the heavy discharge of shrimp farm effluent (waste containing organic matter and bacteria) from this intensive land use. The waste also pollutes the shrimp farms, resulting in farms being abandoned. An estimated 250 000 farmed hectares now lie abandoned throughout Asia and Latin America.

Causes of sand dune degradation

Sand dune degradation is caused by sand mining, recreational usage, and construction and development.

Sand mining

Sand dunes have often been seen as 'useless' areas. In the past they were readily removed to extract minerals such as rutile, ilmenite and zircon (which were usually deposited with ordinary sand), as well as the sand itself. Large quantities of sand are used to make cement. Millions of tonnes of sand have been removed from dunes to supply the expanding building market in Australia. Many of the dunes in the Caribbean have disappeared altogether as a result of mining activities.

Recreational pressure

The use of beaches as places of recreation is ingrained in Australia's cultural identity. However, the popularity of the beach is leading to considerable damage of the fragile dunes. Even a single vehicle driving over a dune, or a few people trampling over the same spot, will kill a strip of grass. The practice of 'dune running' (when people train by running up dunes) is also ripping out vegetation. Once the vegetation is gone, the dune is exposed to wind erosion, resulting in **blowouts** (breaches or breaks) in the dunes. This can expose inland areas to the reach of water in coastal storms.

7.4.3 A shrimp farm along the Kinabatangan River in Sabah, Malaysia



Construction and development

Rapid and intensive urban development has taken place along many of the world's coastlines, increasing the human impact on sand dunes. Dune systems are flattened and built over, replaced by buildings, roads, car parks and other urban infrastructure. The desire to build right on top of dunes is even more intense in tourist developments, where guests in resorts, hotels and apartments like to walk straight onto the beach. With the large storage of sand in the dunes gone, the beaches become eroded.



7.4.4 Hotels are built next to the beach at Cancún in Mexico, where sand dunes once existed.

Coastal degradation and climate change

With the increased likelihood of more frequent and fiercer storms and cyclones associated with climate change, coastlines are likely to be pounded by more destructive waves. The role of mangrove forests and sand dunes in protecting the coastal landscapes is going to be more important than ever. It is vital that they are valued and managed carefully.

Spotlight

The degradation of Spain's coastal dunes

In Spain, large-scale urban development was carried out on sand dunes during a tourist boom of the 1960s and 1970s. This resulted in the degradation of the coastal landscape. Extensive dune areas were totally altered and destroyed in the course of massive tourism and road construction projects. Dune erosion was accelerated by the building of harbours and marinas, and sand mining for construction. Human trampling, rubbish dumping, excessive recreational pressure and the use of all-terrain vehicles were among the main causes of the degradation of Spanish sand dune systems. Most of the Spanish coastline has been degraded in the chase for the wealth generated by tourism.



7.4.5 An abandoned hotel construction site on the coast in Andalusia, southern Spain

Activities

Remembering and understanding

1 Explain how mangrove forests and sand dunes protect coastal landscapes.
2 Describe what is happening to mangrove forests globally.
3 Outline the causes of mangrove degradation.
4 Explain why sand dunes are mined.
5 Describe how sand dunes are damaged by recreational use.

Applying and analysing

6 Create an annotated sketch of a coastal landscape to show how either mangrove forests or sand dunes provide protection.

Evaluating and creating

7 Investigate how dune destruction has affected the coastal landscape of an urban area or a tourist resort. Create a digital presentation of your research.

7.5 Managing coastal landscapes

Natural events

Coastal landforms need to be carefully managed. There are many natural events that can cause damage to coastlines. For example, large storms create powerful waves that can erode depositional landforms such as beaches and sand spits. Coasts have evolved to deal with these natural events and, over time, they repair themselves.

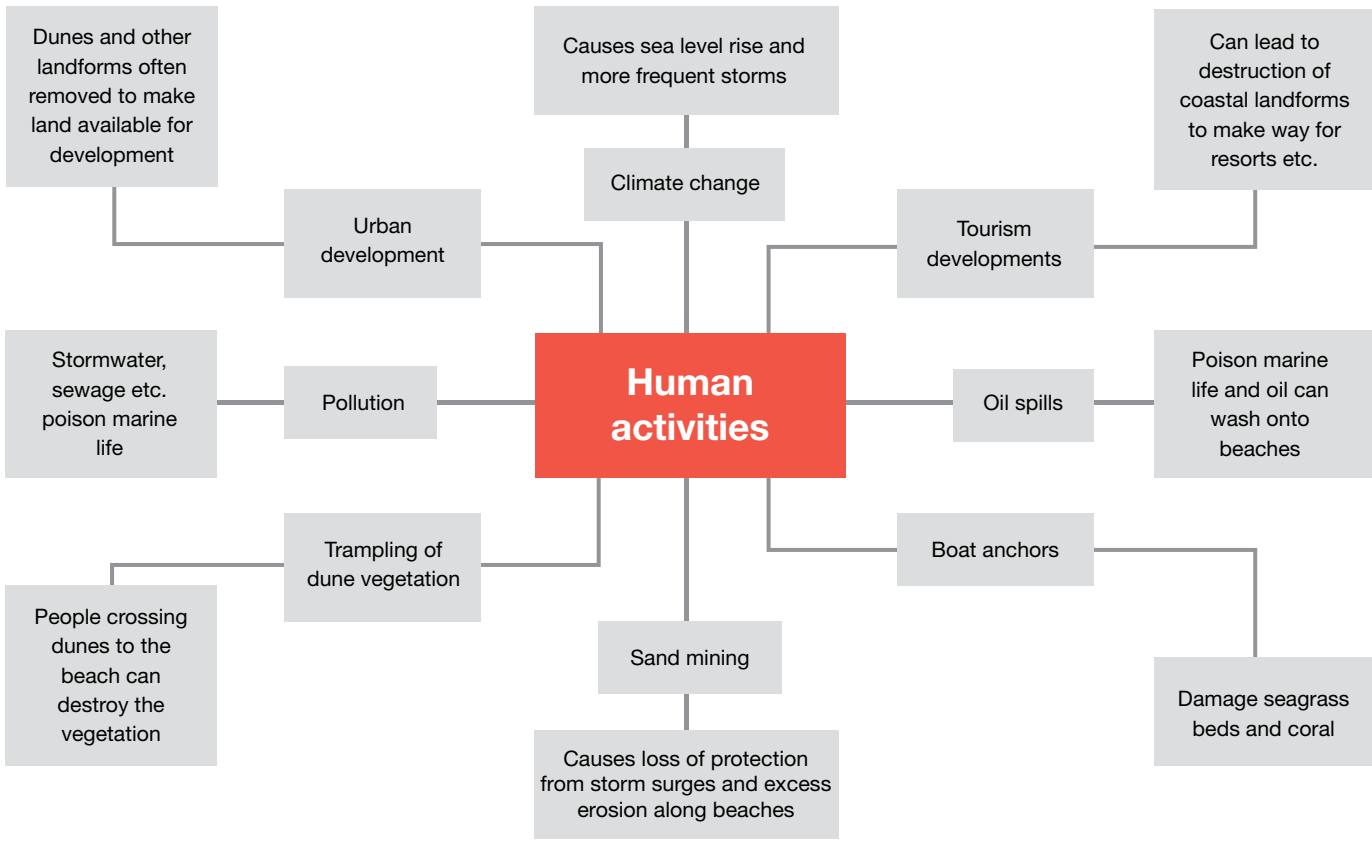
Human activities

Human activities have a great impact on coasts. Thirty-eight per cent of the world's population live within 100 kilometres of the coast and 44 per cent live within 150 kilometres. In addition, many of the world's largest cities are found on the coast. As a result, there is significant competition for the resources of coasts. As the world's population continues to grow, and more and more pressure is placed on coastal environments, the need for careful management becomes ever greater. Some of the main human activities that threaten coastal environments are shown in Figure 7.5.1.

Managing beaches

After a day of heavy human activity at the beach, the tide gradually washes away most of the signs of usage and redistributes the sand. However, humans can permanently damage beaches in more indirect ways.

Longshore drift is a natural process that shifts sand along the beach. If interruptions to this movement are built along the beach, the sand piles up against them, while other parts are deprived of sand. If the supply of sand is reduced, the beaches may not be replenished sufficiently by longshore drift. For example, building on the dunes or damming rivers stops the supply of sand from these sources. This means that sand is stripped away at a faster rate than it can be replaced.



7.5.1 Human activities that threaten coastal environments

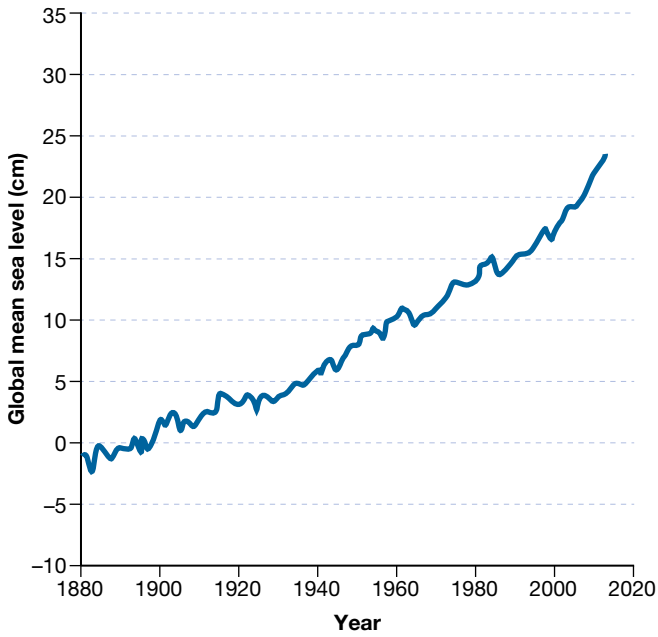
Spotlight

Climate change and coastal landforms

Climate change is one of the most significant threats to the coastal environment. Global temperatures have been steadily rising for many decades. The overwhelming majority of scientists now believe that this is due to humans burning fossil fuels (such as oil and coal), which results in the release of carbon dioxide (CO_2) gas into the atmosphere.

Climate change will have two main impacts on coastal environments:

- *sea-level rise*—as sea temperatures rise due to global warming, the seawater expands. This is called thermal expansion. Warmer temperatures causes melting of ice caps in Antarctica and Greenland, and they release huge quantities of water into the sea (see Figure 7.5.2). High sea levels pose a real risk to low-lying coastal areas, making them susceptible to flooding
- *increased storm activity*—warmer temperatures create ideal conditions for large storms, especially cyclones. Climate change is leading to more frequent and more intense storms. This is creating more erosion and damage along coastlines, as shown in Figure 7.5.3.



Source: CSIRO

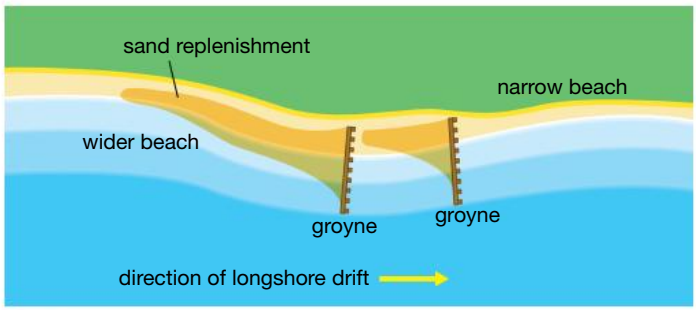
7.5.2 Global sea-level rise, 1880–2010. Rising sea levels are a major threat to coastal landforms. Note: Historical sea levels were recorded using tide gauge records, while more recent records use satellite technology.



7.5.3 Coastal erosion, New South Wales

Building groynes

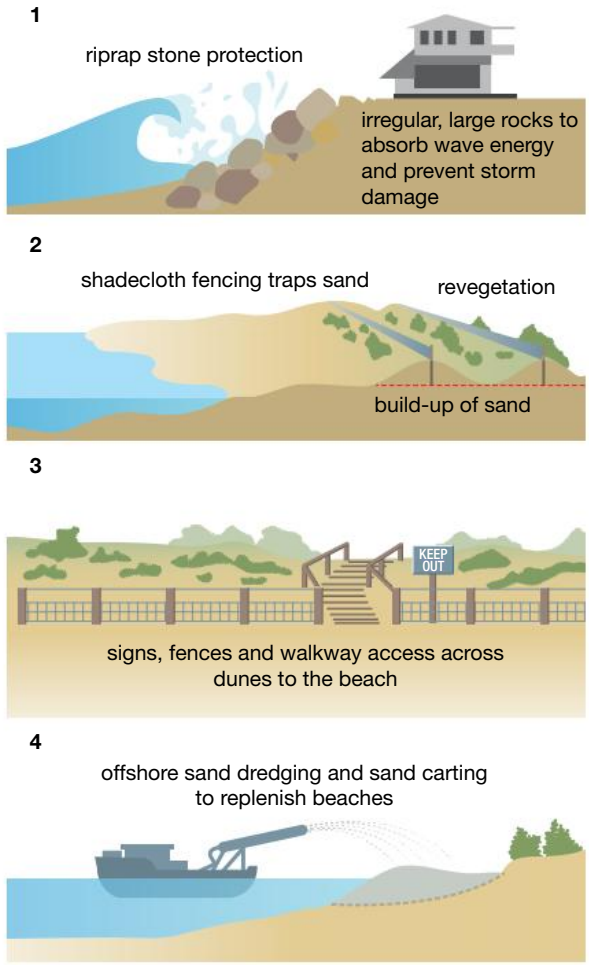
To overcome these problems, walls of rocks or timber called **groynes** may be erected to slow down longshore drift (see Figure 7.5.4). Groynes trap sand so that it piles up on one side of the structure. However, this means that on the other side of the groyne the sand level is lower.



7.5.4 The natural movement of sand along a coast by longshore drift can be altered by constructing groynes or replenishing beaches with sand.

Artificial sand replenishment

If the sand supply is limited, a scheme of artificial sand replenishment may be undertaken. This involves sand being taken from a beach with plenty of sand, or dredged from offshore, and transported to a depleted beach by truck or pipeline. Shifting and dumping sand by truck is reasonably effective and inexpensive in the short term. Building pipelines to bring sand from other beaches or from offshore is a more expensive approach, but is often much more effective. A range of coastal management strategies are shown in Figure 7.5.5.



7.5.5 Some of the strategies used to manage coastal environments

Spotlight

Working together to manage coastal environments

Many organisations work together to care for and manage the coast. These include government agencies, local councils, catchment management authorities, committees of management, businesses, regional coastal boards and volunteer groups. In Victoria, some of these organisations include Landcare, Coastcare and the Victorian Coastal Council.



7.5.6 A hooded plover conservation initiative by local schoolchildren at Adventure Bay, Bruny Island, Tasmania

Managing coastal land uses

Careful planning and consistent management are required to ensure that the best use is made of coasts. In the past, most coastal areas were developed without any overall plan. Plans were only developed after problems arose and it was recognised that the coastal land was under pressure. Therefore, any plans had to accept and take into account many of the existing land uses. Planners could only slowly change land uses because of the rights that owners had over their land.

To make sure that anything that is built or altered fits into the overall planning aims, management now involves large-scale plans for land use, together with day-to-day administration of development permits. Local councils usually manage these processes. Their aim is to make sure that new developments do not interfere with existing land uses and the rights of residents, and that whatever is built is for the future benefit of the area.



7.5.7 Sea walls are an example of 'hard engineering' used to protect coastal development. While such walls absorb the power of the waves, they are expensive to build and maintain. They can cause more erosion because as waves bounce off the wall they carry away sand from the beach.

Management options

There are four main options for managing coastal environments:

- *Use hard engineering*—building sea walls (see Figure 7.5.7), groynes, **riprap barriers** (broken rock used to protect the shoreline) and other hard structures is very expensive and these structures are often unsightly.
- *Use soft engineering*—building up beaches with sand-replenishment schemes can be expensive and must be maintained over the long term. It does not have as much negative visual impact as hard engineering.
- *Discourage building and development*—this is a long-term measure. It needs the cooperation of local, state and national governments. It is often unpopular with local residents and developers.
- *Do nothing*—this may be possible in sparsely populated areas but is increasingly impossible in highly populated areas.

Activities

Remembering and understanding

1 Outline the damage that natural events can cause to coastal areas.
2 Describe the impact of climate change on coastal environments.
3 Explain why artificial sand replenishment is used on some beaches.
4 Explain why development plans and permits are necessary for coastal areas.

Applying and analysing

5 Study Figure 7.5.1.
  a Describe one human impact on coastal environments and develop some strategies for dealing with the issue.
  b List the controls that you think should be put on coastal development. Do you agree that governments and councils should be able to control all building and development along all coastal areas? Use a SWOT analysis to help you with your discussion.

Evaluating and creating

6 Take on the role of an advertising agent. You have been commissioned by the state government to design a poster campaign to help reduce the damage done to sand dunes by people.
7 Write a report outlining the importance of dune systems and describing the strategies that can be used to manage them.

LS 7C

7.6 Investigating coasts

Aim

The aim of this fieldwork is to investigate a coast. Coastlines are wonderful places to undertake fieldwork. There are many different activities you can do to investigate the geographical processes taking place along coastlines.

Preparation

The following equipment will be required to investigate a coast:

- ruler and measuring tape
- ranging pole (a pole on which measurements are marked)
- stopwatch
- camera
- compass
- three tennis balls
- anemometer (a hand-held weather device) or a copy of a Beaufort scale
- **clinometer** (an instrument that measures the angles of slopes)
- hand lens.

Select a beach that is easy to access at a variety of locations, as you will need a shoreline long enough to carry out activities.

Wind direction and speed

To measure wind direction and speed, complete the following steps. This enables you to identify the relationship between wind direction and speed.

Step 1

With the aid of a compass, record the direction from which both the waves are coming and the wind is blowing. Are they the same? What is the relationship between wave direction and wind direction?

Step 2

Using an anemometer or a copy of a Beaufort scale, estimate the wind speed.

Step 3

Using a stopwatch or an appropriate app on your smartphone, count the number of waves breaking on the shore in 1 minute. Compare your count with the information in Table 7.6.1. Describe the potential impact of the waves observed.

Investigating longshore drift

To investigate longshore drift and the direction of water and sediment movement along a beach, complete the following steps.

Step 1

Throw three tennis balls into the water in this order—one in the middle of the surf zone, one on the water's edge and one as far out as you can throw it. Before you do so, guess which ball will travel the furthest along the beach.

Step 2

Mark the point on the beach where you cast the balls into the water. It is important that the balls are thrown in a straight line, perpendicular (at a 90° angle) to the beach.

Step 3

Follow the progress of the balls. Use a tape measure to measure the distance travelled along the beach by the balls. Take the measurement every 5 minutes. Record your data.

Step 4

Record the direction the balls travelled over the course of the activity. The results of this activity will show you the direction in which water (and therefore sediment) is moving along the beach.

Step 5

Using a camera, photograph any landform features along the section of coastline that are a result of the process of longshore drift.

Identify any biophysical or constructed features of the landscape that would disrupt the movement of sediment associated with longshore drift.

7.6.1 Potential impact of waves on beaches

Number of waves per minute	Potential impact
6–9	beach is being built up
0–5	beach is stable
11–15	beach is being eroded

Investigating waves

Waves can be either destructive or constructive. Destructive waves are powerful and cause erosion of the coastline. They are usually associated with storms. They commonly occur in winter in southern Australia but are more frequent during the summer cyclone season in northern Australia.

Constructive waves are much less powerful than destructive waves. Instead of eroding the coastline, they deposit sediment on the beaches. In this way they 'construct' the coast. They are usually associated with calmer weather, common during summer in southern Australia and winter in the north.

Constructive waves tend to be surging or spilling waves. Usually the water is cloudier, as it contains sediment. You can often see the sand in the wave as it breaks.

Destructive waves are usually plunging and collapsing waves. The water is usually clear, although as these waves are very powerful there is often a lot of 'white water' associated with them.

Step 1

Choose a location high up, such as a headland, and look carefully at the waves.

Step 2

Take photos of the waves you observe. Use Figure 7.6.2 to help you identify them.



A collapsing wave occurs when the whole wave becomes unstable and collapses on top of itself.



A plunging wave forms when the crest of the wave curls over the front face and falls into the base of the wave. This produces large amounts of foam and a high splash. It is often called a dumper.



A surging wave occurs when the crest of the wave remains unbroken while the base of the wave moves up the beach.



A spilling wave occurs when the wave crest becomes unstable and topples down the face of the wave. This wave is often referred to as a roller.

7.6.2 Types of waves

Constructing a transect

A transect is a straight line that joins two points. Geographers use transects to show how things change. For example, you can construct a transect to see how the shape of the land (topography) changes. This is called a cross-section. You can also construct transects that show vegetation, soils and human activities.

By constructing a transect through a coastal dune you can see how they change as you move further inland, away from the beach. You can investigate topography, vegetation and soil, as well as the impact of humans.

Remember, as you collect your data, stay on the paths through the dunes so you don't damage the fragile vegetation.

Step 1

Working in small groups, begin to record the data for your transect. To construct your cross-section you will need a tape measure and a clinometer. Figures 7.6.3 and 7.6.4 show you how to make and use a simple clinometer.

Step 2

Use the tape measure to calculate the horizontal distance between the dune features, for example from the beach berm to the foredune. Then use the clinometer to measure the steepness of the incline (or decline). Record the distance and the angle for each feature.

Step 3

At each feature also investigate the soil and vegetation. Using a hand lens and a ruler, measure the size of the grains of sand and note their colour. Usually, the grains become smaller the further away they are from the beach. The soil that is further from the beach normally becomes darker, as it contains more organic material. Record this data on your table. For each feature write a description of the vegetation and take a photo. Lastly, record any evidence of human impacts.

Step 4

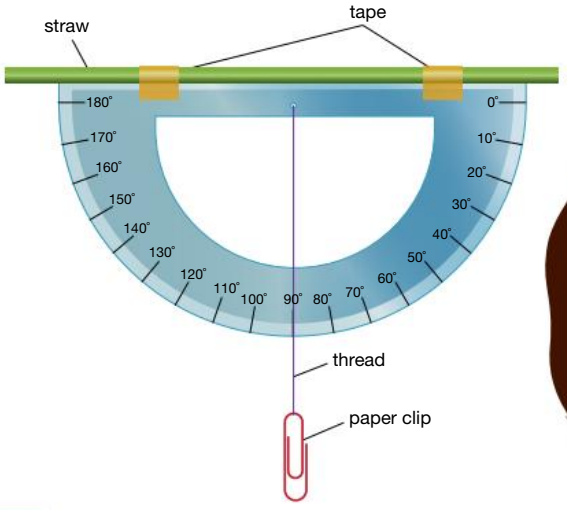
Figure 7.6.4 shows how to use the clinometer. For your transect, measure the angles of the slope each time there is a change. For example, start at the berm and work backwards to measure the change in angle to the foredune, and so on. You will need to use a common marker, for example a metre ruler or even the top of your partner's head.

Skills builder

Making a simple clinometer

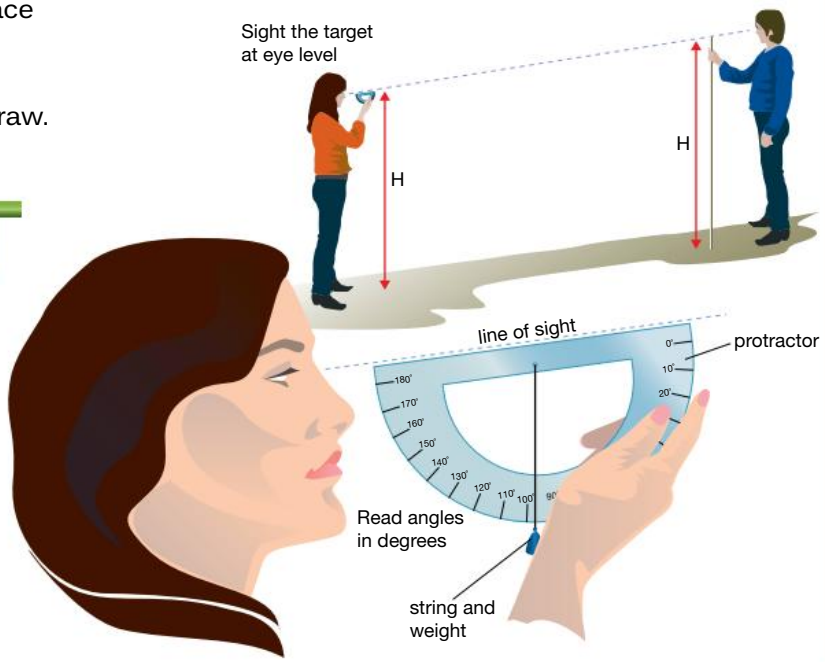
To make a clinometer (see Figure 7.6.3), you will need a protractor, string or thread, a weight, a straw and tape.

1. Thread the string through the hole in the protractor (in the middle) and hold in place with tape. Then attach the weight to the bottom of the string.
2. Attach the protractor and string to the straw.



7.6.3 Making a simple clinometer

7.6.4 Using a simple clinometer. Clinometers are special instruments that show the steepness of a slope by measuring its angle.

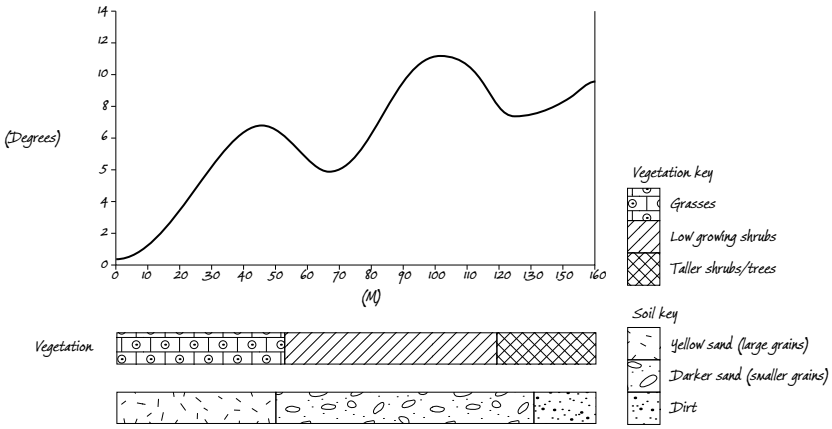


Step 5

Back at school you will need to draw up a frame in which to construct your transects. Along the base of the frame make a scale and then include scales for the horizontal distance, as well as the changes in angle measured in degrees.

Step 6

Transfer the data from your field trip and join the dots with a line. Add boxes to record soil and vegetation. You will need to develop a key for this. Figure 7.6.5 shows an example of a series of simple transects.



7.6.5 Examples of transects

Activities

Aim

To investigate a coastline

Method

1. Select a suitable beach to investigate and obtain a map of the area to be investigated.
2. Investigate waves.
   - a. Observe and collect images.
   - b. Paste and annotate your images.
3. Record the wind speed on the beach.
4. Measure wave direction and speed.
5. Investigate longshore drift and record your data in a table like the one below.

Longshore drift record sheet					
Time (minutes):	10	20	30	40	60
Ball 1: Furthest out					
Ball 2: Surf zone					
Ball 3: Beach zone					

6. Construct a transect of the beach area being investigated. Use the table below as a guide.
7. Create a field sketch of the beach area being studied.

Evaluation

8. Comment on your findings, including the following information in your response.
   - a. Identify the relationship between wind speed and direction.
   - b. Describe the impact of the wave speed and direction on the beach. For example, is the beach being built up, is it stable or is it being eroded? Explain.
   - c. Describe the impact of the direction of water movement on the distribution of sediment (i.e. longshore drift) in this section of the coastline.
   - d. Identify any landform features along the section of coastline that are a result of the process of longshore drift.
   - e. List any natural or constructed features of the landscape that would disrupt the movement of sediment associated with longshore drift.

Conclusion

9. Describe what you have learnt about coasts.

Data record sheet						
Dune feature	Distance from the berm (m)	Change in angle	Soils		Vegetation description	Evidence of human impact?
			Grain size (mm)	Soil colour		



Geomorphic hazards 8

The Earth is a restless planet, continually shifting under our feet. Powerful processes deep inside the Earth's crust create volcanoes and earthquakes, push up mountains and pull continents apart. The Earth's rocks provide clues to how these forces have shaped and changed our planet over billions of years.

This chapter focuses on a range of landscape hazards, including earthquakes, volcanoes, coastal erosion, mass movement, mudslides, avalanches and bushfires.

OVERVIEW QUESTIONS

8A What are the causes and consequences of selected environmental hazards?

8B How do geomorphic hazards transform landscapes?

8C What are the challenges of living in areas of risk?

8D How do bushfires affect the Australian landscape?

LS Before you begin

GLOSSARY

caldera crater a volcanic landform feature formed when a violent eruption blasts away the top of an existing volcanic cone or shield

combustion the process of burning; involves the production of heat and light

dormant volcano a volcano that is said to be 'sleeping', as it has not erupted for a period of time but may still erupt

epicentre a point on the Earth's surface that is directly above the centre (focus) of an earthquake

extinct volcanoes volcanoes that have not erupted for a long period and will not erupt again

focus a point under the Earth's surface at which a sudden movement in the Earth's crust occurs; the origin of an earthquake

hot spot a location where hot, molten magma from deep within the Earth rises up through the crust to reach the surface

lahars mudflows formed when volcanic material mixes with water

lava molten rock at the Earth's surface

maar a broad, roughly circular, flat-floored volcanic crater with steep inner walls and a low surrounding rim made up of rock fragments that were blown out of the crater during eruptions

magma molten rock below the Earth's surface

magnitude the energy released by an earthquake

Moment Magnitude scale a scale used by seismologists (people who study earthquakes) to measure the energy released by an earthquake

pumice a very light and porous (absorbent) volcanic rock

reclaimed land land that has been gained from the sea or wetlands, such as waterlogged land that has been drained of water; or land that has been restored for human use, such as a former quarry that has been filled in

seamounts mountains or volcanoes rising from the sea floor

volcanic cone a cone-shaped volcanic landform made up of layers of lava and volcanic ash

volcanism the processes associated with volcanoes and volcanic activity

volcanologists people who study volcanoes

8.0.1 Earthquake damage and destruction in Bhaktapur, Nepal, April 2015

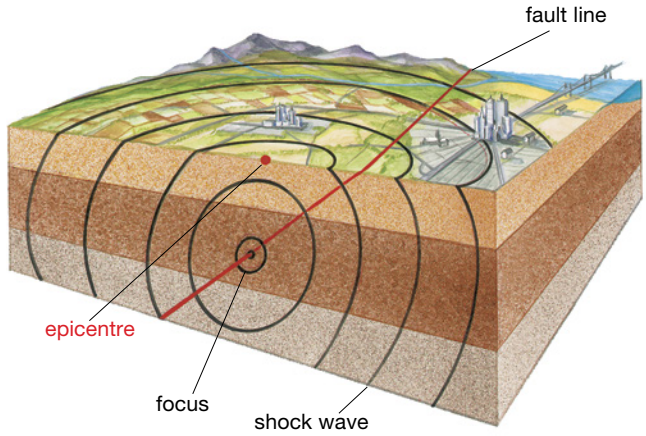
8.1 Earthquakes

Location

Earthquakes occur when energy that has built up in the Earth's crust is released. They are most commonly linked with the movement of the Earth's plates. However, smaller, often less destructive earthquakes can occur well away from plate margins. These earthquakes are usually associated with fault lines (lines of weakness) in rock.

Shock waves

When the built-up energy within the Earth's crust is released, shock waves go out in all directions. The underground point at which the sudden movement occurs is called the **focus**. The place at which the shock waves first reach the Earth's surface is called the **epicentre**.



8.1.1 The focus, epicentre and shock waves of an earthquake

Measuring earthquakes

A seismograph is a tool that measures the duration, **magnitude** (strength) and direction of an earthquake. The magnitude is given as a measurement on the **Moment Magnitude scale** (see Table 8.1.2). The Moment Magnitude scale replaced the Richter scale in 2002. Each point on the scale is ten times greater than the point below. This means, for example, that the Mexico City earthquake of 1985 (magnitude 8.0) was ten times stronger than the earthquake that struck San Francisco in 1989 (magnitude 7.0).

8.1.2 The Moment Magnitude scale

Magnitude	Effects	Average number per year worldwide
2.5 or less	usually not felt, but can be recorded by seismograph	900 000
2.5 to 5.4	often felt, but only causes minor damage	30 000
5.5 to 6.0	slight damage to buildings and other structures	500
6.1 to 6.9	may cause a lot of damage in very populated areas	100
7.0 to 7.9	major earthquake; causes serious damage	20
8.0 or greater	great earthquake; can totally destroy communities near the epicentre	one every 5 to 10 years

Effects of earthquakes

Primary effects

Primary effects are outcomes that are directly related to the earthquake, such as collapsed buildings and open fissures (cracks).

Secondary effects

Secondary effects are the short-term outcomes of the earthquake, such as fires caused by broken gas pipes and electrocution caused by downed power lines.

Tertiary effects

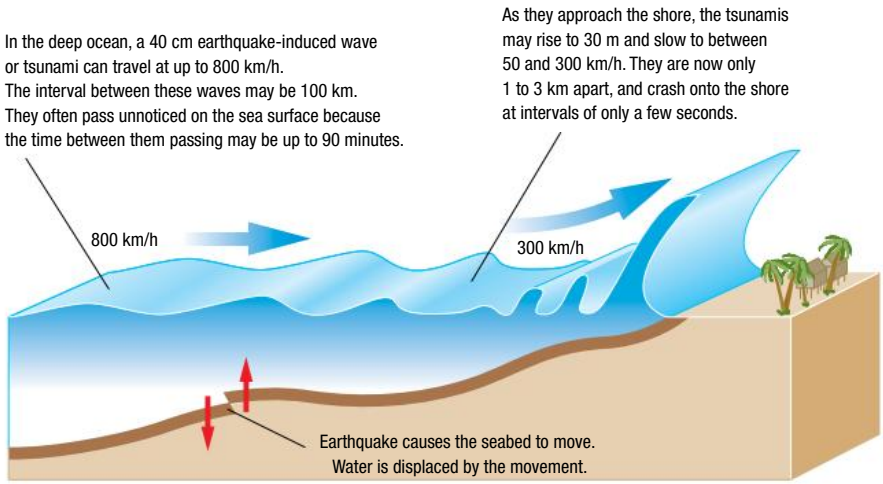
Tertiary effects are the long-term outcomes of an earthquake, such as homelessness, business failure, disease outbreaks and famine.

Place and effect

While the strength of an earthquake is important, other factors can also influence the extent of damage and loss of life. These include:

- *distance from the epicentre*—earthquakes release energy that comes in waves, and these energy waves lose their intensity as they spread out
- *level of preparation*—if building structures are designed to be earthquake proof, the number of deaths caused by collapsing buildings can be greatly reduced

- *population density*—a higher number of people (higher density) living in urban centres often means damage and destruction are more severe than in rural areas
- *time of day*—whether people are at home or out and about makes a difference to the number of deaths and injuries
- *season*—the secondary effects of earthquakes are much worse in winter because people have lost their homes and have nowhere to shelter from the cold
- *type of land that cities are built on*—silt and **reclaimed land** (land that has been gained from the sea or wetlands, or has been restored for human use) tend to magnify the effects of earthquakes because the soil can dissolve and liquefy (become liquid).



8.1.4 Formation of a tsunami

Tsunamis

A tsunami is a series of ocean waves caused by underwater land movement. Movement can be caused by a landslide, a meteor strike or an earthquake (see Figure 8.1.4). Tsunami waves are surges (large and rapidly moving volumes) of water that are tens of metres high. The length of time between waves can range from minutes to hours. Although the impact of tsunamis is limited to coastal areas, their destructive power can be enormous. They destroy all buildings in their path and surge inland for many kilometres.



8.1.3 The primary devastation caused by the 2015 earthquake in Illapel, Chile. The earthquake, which was offshore, caused a tsunami.

Did you know?

The tallest tsunami ever recorded occurred in 1958, when an earthquake followed by a landslide in Lituya Bay, Alaska, generated a wave 30 metres high. The wave travelled up a slope over 500 metres inland, snapping trees. Five deaths were recorded, but property damage was minimal because there were few cities or towns nearby.

Activities

Remembering and understanding

1. State what an earthquake is. Explain why and where earthquakes occur.
2. Define the terms 'focus' and 'epicentre'.
3. Name the instrument used to measure the magnitude of earthquakes.
4. State the difference between the primary, secondary and tertiary effects of earthquakes.
5. Outline the reasons why some places are more seriously affected by earthquakes than others.

Applying and analysing

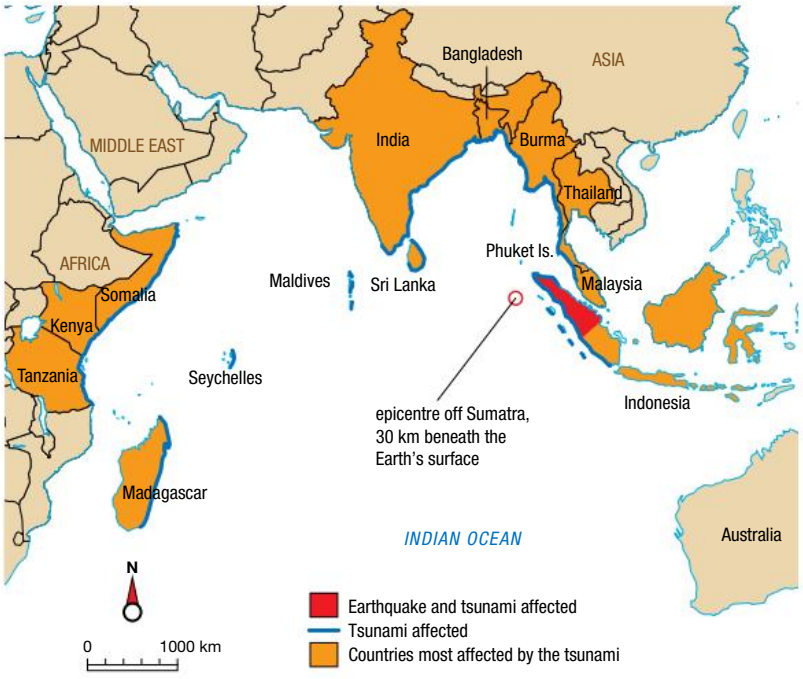
6. Decide whether an earthquake measuring 7.0 on the Moment Magnitude scale in a remote rural area will cause less or more damage than a 6.0 earthquake in a big city during winter. Explain your answer.

8.2 Asia's tsunamis

Indian Ocean

On 26 December 2004, an undersea earthquake occurred, with an epicentre off the west coast of Sumatra. The earthquake triggered a series of devastating tsunamis that killed more than 225 000 people in eleven countries surrounding the Indian Ocean. It also flooded coastal communities with waves that were up to 30 metres in height. Officially known as the Great Sumatra–Andaman earthquake, the event is more commonly referred to as the Asian tsunami or the Boxing Day tsunami. Indonesia, Sri Lanka, India and Thailand were hardest hit.

The quake lasted approximately 10 minutes. It had a magnitude between 9.1 and 9.3—the second-largest earthquake ever recorded. So great was the movement, it caused the entire planet to vibrate by as much as 1 centimetre. The extent of the damage and the serious situation of those affected shocked the world. It led to a worldwide humanitarian response. More than US$14 billion of humanitarian aid (such as food, clothes, medicine and shelter) was given to the countries affected.



8.2.1 The source and extent of the Asian tsunami, 26 December 2004

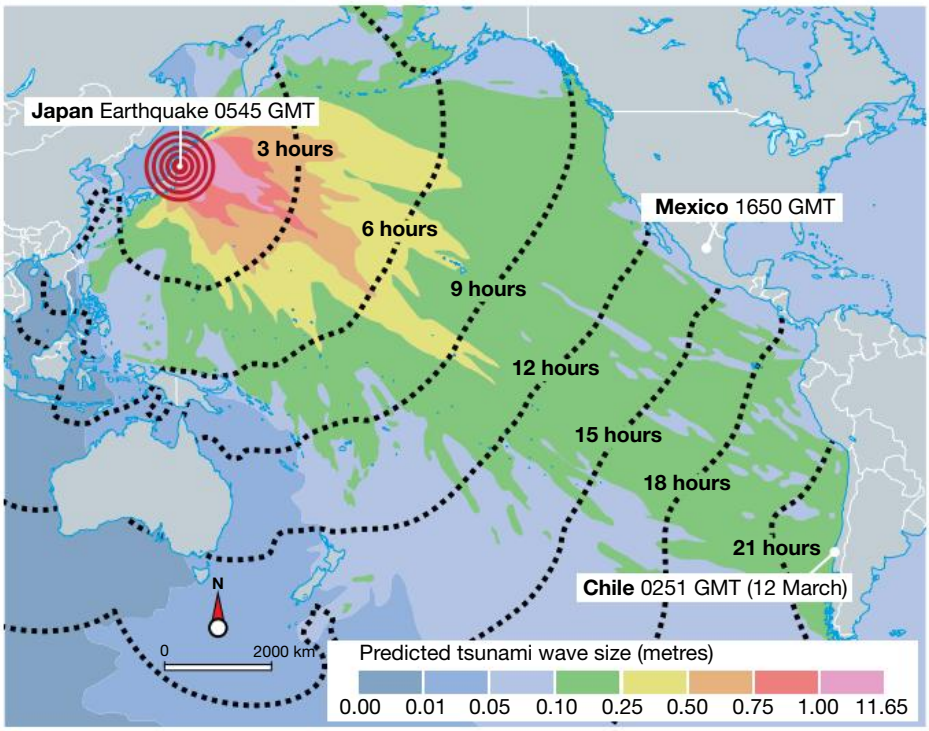


8.2.2 The cost of rebuilding in Japan after the earthquake and tsunami damage was US$360 billion.

East Japan

On the afternoon of 11 March 2011, a 9.0 magnitude undersea earthquake occurred at a depth of 32 kilometres, 70 kilometres off the east coast of Japan. It was one of the most powerful earthquakes ever recorded, moving the island of Honshu, Japan's largest, 2.4 metres to the east.

The earthquake caused a 180-kilometre-wide section of the seabed to lift by 5 to 8 metres. The resulting displacement of water triggered a massive tsunami that reached heights in excess of 40 metres. The surging waters travelled up to 10 kilometres inland, sweeping aside all that lay in their path (see Figure 8.2.2). More than 15 800 people died, 27 000 were injured and over 3000 remain missing, presumed dead. Over a million buildings were destroyed or partially damaged. More than 4.4 million households were left without electricity and 1.5 million without water. The tsunami also triggered a meltdown at the Fukushima Daiichi Nuclear Power Plant. Residents within a 20-kilometre radius of the plant were evacuated and still cannot return to their homes. The travel times of the waves of the tsunami are shown in Figure 8.2.3.



8.2.3 Estimated travel times of the waves generated by the 2011 Great East Japan earthquake

Did you know?

Tsunami waves do not look like normal waves. They do not curl at the shore. They arrive like floods of water.

Activities

Remembering and understanding

1 Copy and complete the following table.

	Earthquake and tsunami	
	Indian Ocean	Great East Japan
Earthquake details		
Damage		

Applying and analysing

2 Study Figure 8.2.2. Comment on the scale of the disaster shown in the photograph. As a class, discuss the descriptive terms used in your individual responses.

Geographical skills

3 Study Figure 8.2.1. Describe the extent of the 2004 tsunami's impact. How far did the wave of destruction travel?

4 Study Figure 8.2.3. Determine how long the tsunami took to travel to:

- a Mexico
- b Papua New Guinea
- c the North Island of New Zealand
- d South America.

8.3 Volcanoes

Location

Volcanic eruptions occur when molten material (**magma**) forces its way to the Earth's surface through cracks or faults in the Earth's crust. The molten material that flows from a volcano is called **lava**. The most active volcanoes lie in lines that coincide with (overlap) the collision zones of the Earth's plates.

Volcanic eruptions

Some volcanic eruptions are explosive, while others are not. This depends on the viscosity or thickness of the magma.

A volcanic eruption with low viscosity, or thin and runny magma, is shown in Figure 8.3.1. In this eruption, the magma flowed easily out of the volcano. Such a lava flow is rarely a threat to human life because it moves slowly enough for people to escape, but it can destroy towns and villages in its path.



8.3.1 A lava flow



8.3.2 Volcanic bombs

If the magma is highly viscous (thick), gases cannot escape easily. Pressure builds up until the gases escape violently and explode. Figure 8.3.2 shows this type of eruption, as magma blasts into the air and breaks into pieces called volcanic bombs. Explosive volcanic eruptions can be deadly. Molten material can shower down on the surrounding countryside. When hot volcanic material mixes with water from streams, **lahars** (mudflows) form. These can bury whole villages.

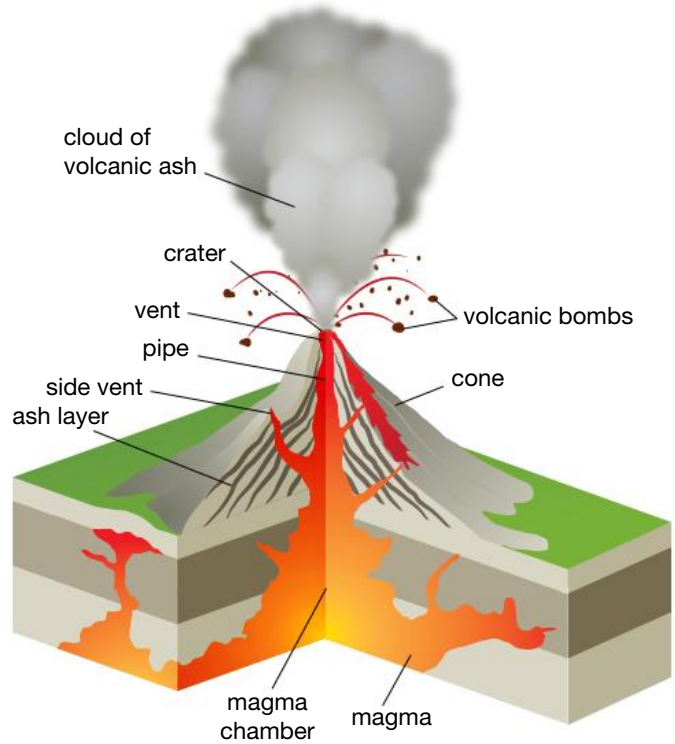
Over time, layers of lava and volcanic ash build up a **volcanic cone**, or shield. A **caldera crater** forms when a violent eruption blasts away the top of an existing volcanic cone or shield.

Classifying volcanoes

Volcanoes can be classified according to their shape.

Strato volcanoes

Strato, or composite, volcanoes are the most common type of volcano. They are formed from layers of lava and ash (see Figure 8.3.3). Their lava tends to be viscous and flows very slowly. This causes them to form steep-sided volcanic cones. Examples are Mount Fuji in Japan and Mount Taranaki in New Zealand.



8.3.3 A cross-section of a strato volcano formed of layers of lava and ash

Shield volcanoes

Shield volcanoes are among the world's largest volcanoes. They develop a broad base because the very fluid lava from which they are made runs downhill rather than piling up. Examples are the Kilauea and Mauna Loa volcanoes of Hawaii.

Calderas

Calderas are the least common form of volcano. However, they are often huge and potentially very explosive. When they erupt, they tend to collapse in on themselves and so they don't build up a cone. Famous calderas are Yellowstone in the United States of America and Greece's Santorini caldera in the Aegean Sea.



8.3.4 The Greek island of Santorini clings to the rim of a collapsed volcanic caldera.

Recent volcanic activity

Some of the world's great mountains and many of the islands that dot the world's oceans are the result of past volcanic activity. There are 550 known active (still capable of erupting) volcanoes on earth. Large eruptions can result in short-term climatic change. This is because millions of tonnes of volcanic ash and smoke are released into the atmosphere, reducing the amount of sunlight that can reach the Earth's surface. Some volcanic eruptions that have caused great loss of life are listed in Table 8.3.5.

Did you know?

In 1982, Mount Galunggung in Indonesia erupted. A passenger plane flew through the ash cloud, resulting in the failure of all four of its engines. The pilots managed to glide out of the ash cloud and restart the engines. The pilots successfully landed the plane despite the windscreen being sandblasted by the ash cloud.

8.3.5 Volcanic eruptions that have caused great loss of life

Year	Place	Impact
1815	Tambora, Indonesia	92 000 people died, mostly in Indonesia, because of starvation caused by the loss of crops and livestock.
1883	Krakatau, the Sunda Strait	The resulting tsunami between Java and Sumatra killed 36 000.
1902	Pelée, Martinique	Poisonous volcanic gases and pyroclastic flows killed 36 000.
1985	Nevado del Ruiz, Colombia	A wave of mud smothered 23 000 people.
1991	Mt Pinatubo, the Philippines	900 people were killed, mostly from collapsing roofs.

Activities

Remembering and understanding

1 Explain why some volcanic eruptions are violent while others are not.
2 Explain what volcanic bombs and lahars are.
3 Describe how volcanic eruptions can bring about short-term climatic change.

Applying and analysing

4 Study Table 8.3.5.
  a List the main causes of loss of life.
  b Which cause killed the most people? Explain why.

Evaluating and creating

5 Working in pairs, refer to Table 8.3.5 and conduct your own research (refer to the Google Volcano news website). Create two multimedia presentations to be included in a class presentation of volcanic eruptions. Pairs could research:
- an overview of volcanoes around the world
- predicting volcanic eruptions
- the location of volcanoes around the world
- recent volcanic eruptions
- volcanoes seen from space
- case studies of past volcanic eruptions.

LS 8A

8.4 Volcanoes transforming landscapes

Active volcanism

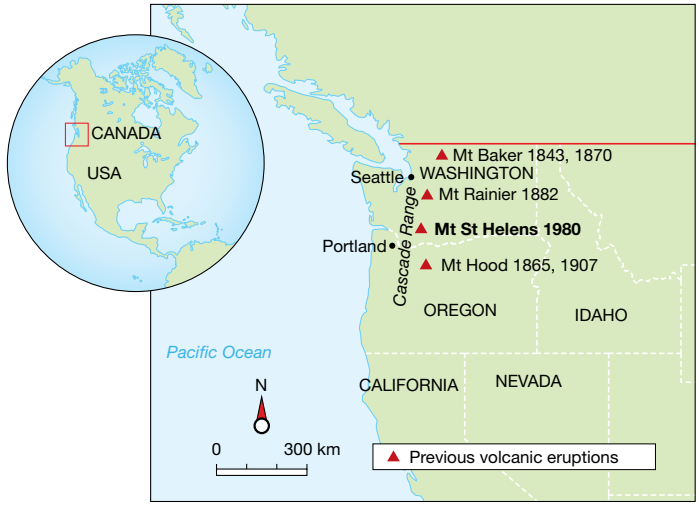
Volcanic activity is always occurring somewhere in the world. However, sometimes there is an eruption on a vast scale, an eruption so massive that it transforms landscapes.

Current areas of active **volcanism** (volcanic activity) include Mount Agung, Dukono and Semeru in Indonesia; the Bagana and Manam volcanoes in Papua New Guinea; Karymsky and Shiveluch in Russia; Kilauea in Hawaii; Mount St Helens in the United States (see Figure 8.4.2); Colima in Mexico; Fuego and Santa Maria in Guatemala; Masaya in Nicaragua; Arenal in Costa Rica; Sakura and Suwanose in Japan; Sangay and Tungurahua in Ecuador; Soufrière Hills in Montserrat, West Indies; and Stromboli and Etna in Italy. There are many more **dormant volcanoes** (inactive volcanoes) and thousands of **extinct volcanoes** (volcanoes that will not erupt again).

Even low-level volcanic activity can cause great inconvenience and economic loss. In April 2010, a relatively small eruption in Iceland disrupted air travel for 6 days across twenty countries in western and northern Europe. Flights were grounded and hundreds of thousands of travellers had their travel plans disrupted because it is dangerous for planes to fly in volcanic ash.

Mount St Helens

One of the most spectacular volcanic eruptions of recent times was the Mount St Helens eruption of 18 May 1980. The volcano, located in the Cascade Mountains of the United States, had been dormant for over a century.



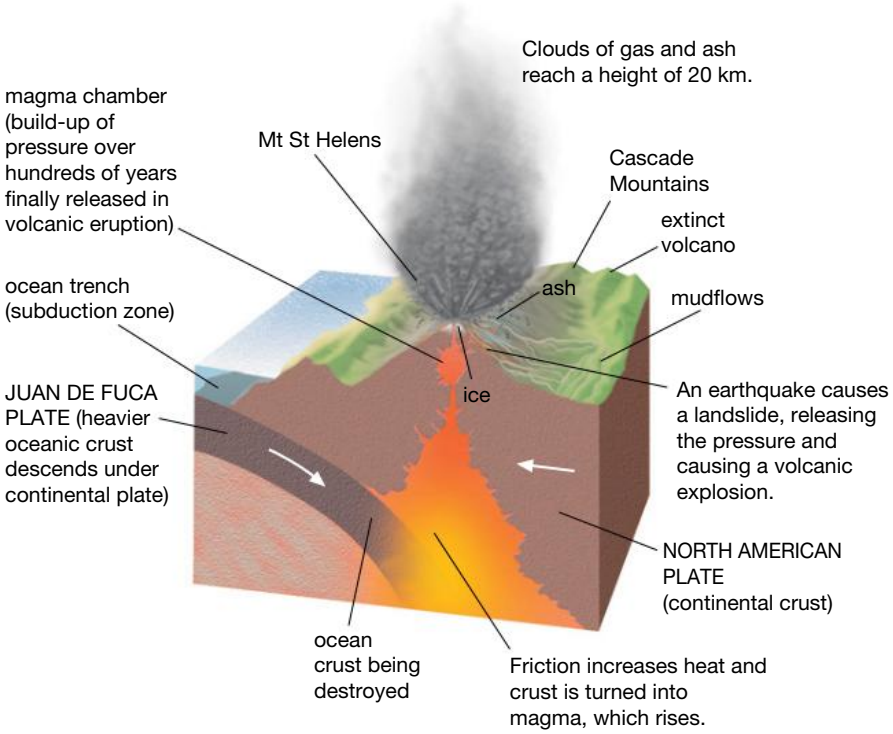
8.4.2 Location of Mount St Helens



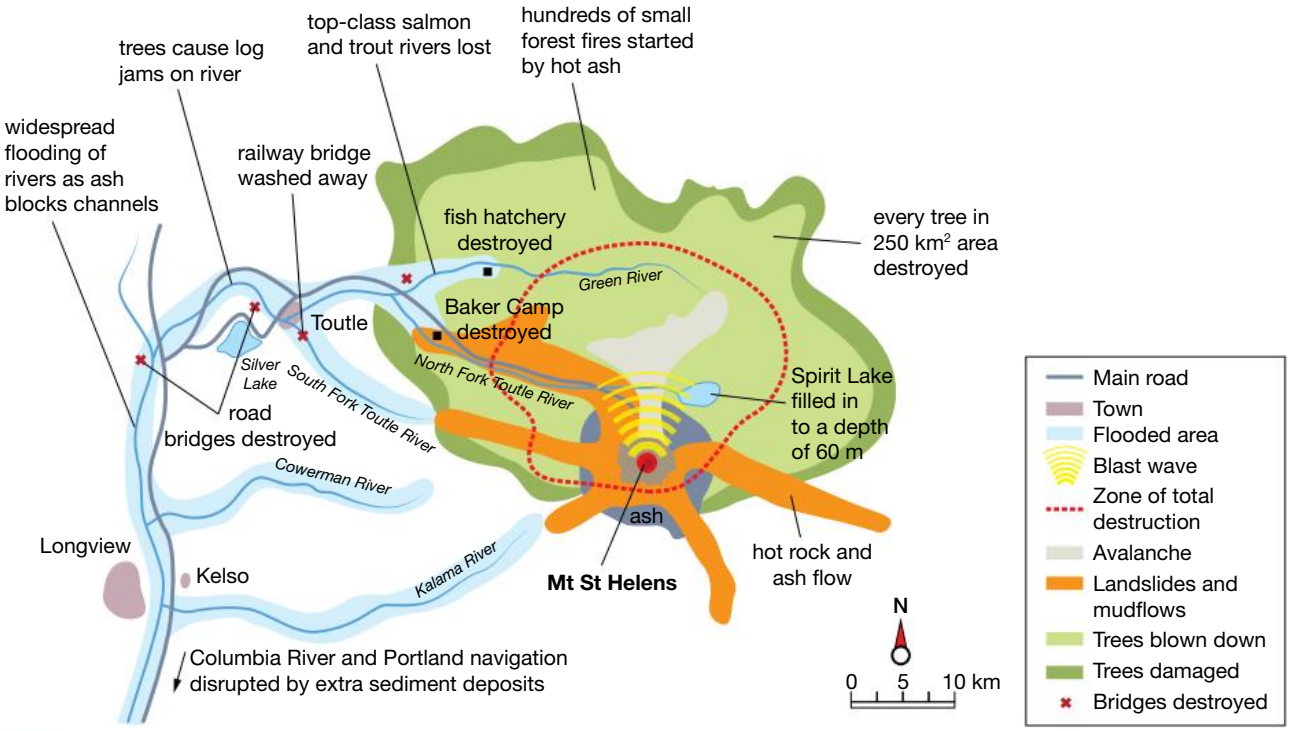
8.4.1 In 2017, the eruption of Mount Agung in Bali, Indonesia, endangered people on the island and disrupted flights.

The causes of the eruption are shown in Figure 8.4.3. At 8.32 a.m. an earthquake of magnitude 8.1 rocked the earth directly beneath the mountain. The earthquake was caused by the Juan de Fuca Plate colliding with and sinking underneath the lighter North American Plate. The earthquake started an avalanche, which was followed by a massive blast of gas, rock, ash and ice. The devastating effects (outlined in Figure 8.4.4) included the following:

- The mountain's summit was reduced by 120 metres, and in its place was a crater 2 kilometres wide, 4 kilometres long and 1.5 kilometres deep.
- Approximately 380 square kilometres of land to the north of the mountain was stripped of its vegetation.
- Volcanic ash, carried by the wind, spread 1500 kilometres to the west.
- Sixty-two people died.



8.4.3 Causes of the Mount St Helens eruption



8.4.4 Damage caused by the Mount St Helens eruption, 1980

Rabaul

In September 1994, the town of Rabaul on the island of New Britain in Papua New Guinea was devastated by the eruption of two nearby volcanoes: Tavurvur and Vulcan (see Figure 8.4.5). Volcanic ash that was 75 centimetres deep covered the town and damage to property was severe. Most of the town's buildings collapsed under the weight of the ash (see Figure 8.4.6). Rabaul's Simpson Harbour became clogged with floating **pumice** (very light volcanic rock). The detection of early warning signs by **volcanologists** (people who study volcanoes) allowed authorities to evacuate the town's 53 000 inhabitants.

Rabaul's harbour is a large caldera, about 10 kilometres in diameter. Its collapsed floor is the result of a large, explosive eruption that took place some 1400 years ago. That eruption partly emptied the underlying magma chamber (the reservoir of molten rock feeding the volcano). Many smaller eruptions have occurred since, mostly from minor cones that have developed near the rim of the caldera. After the 1994 eruption, Rabaul was rebuilt on a new site.



8.4.5 The Rabaul caldera and the Tavurvur and Vulcan volcanoes

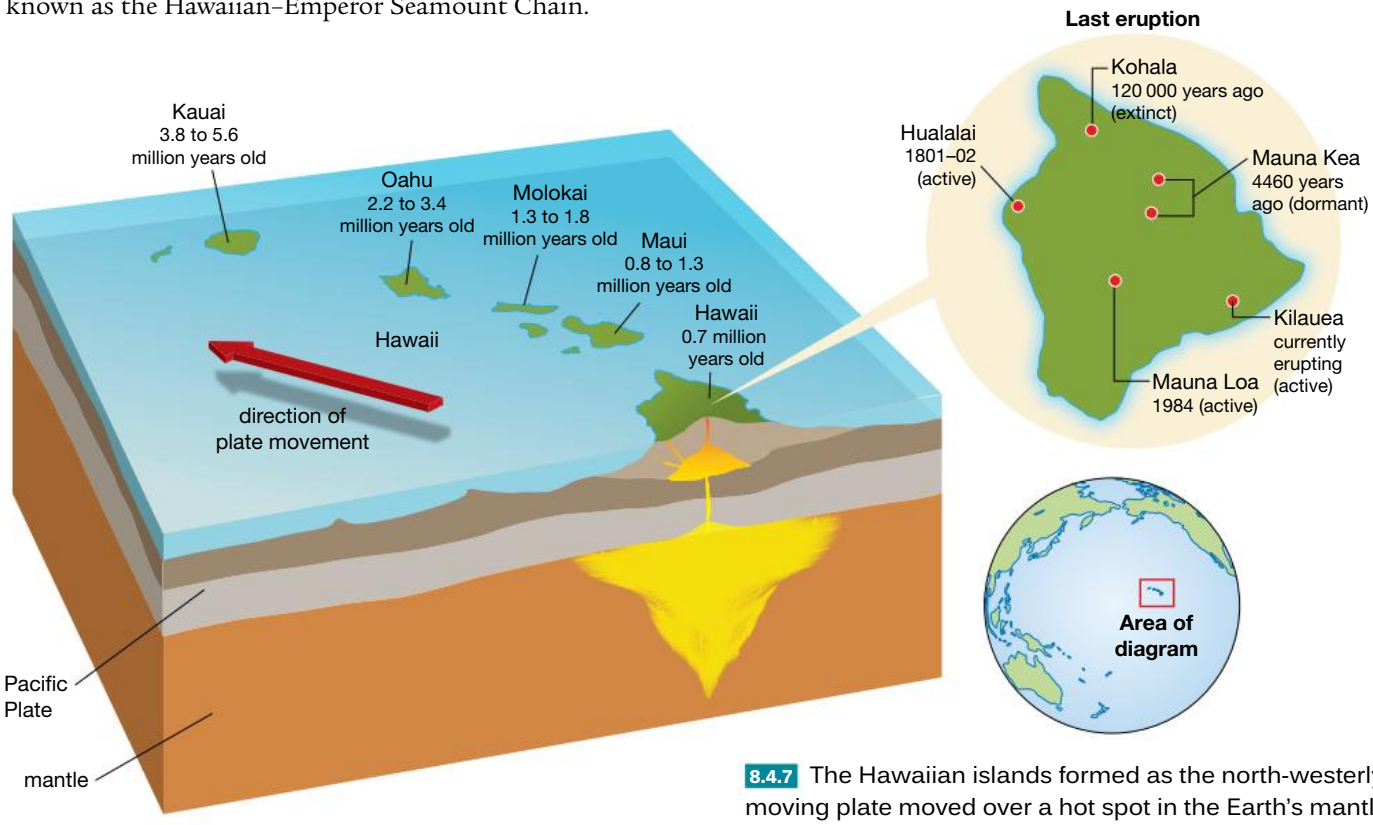


8.4.6 Rabaul was buried in volcanic ash to a depth of 75 centimetres.

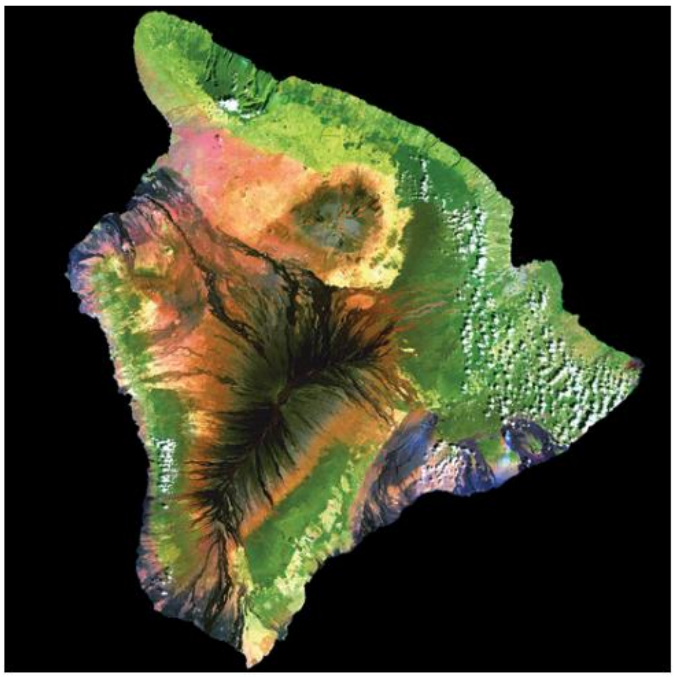
Hawaii

Hawaii is a chain of volcanic islands, or archipelago, in the north Pacific Ocean. Its hundreds of islands spread over 2400 kilometres. The five largest of these islands are Hawaii ('Big Island'), Maui, Oahu, Kauai and Molokai. They are located at the south-east end of the archipelago. The islands are the exposed peaks of a great undersea mountain range known as the Hawaiian–Emperor Seamount Chain.

The volcanic islands formed over millions of years as the north-westerly moving plate moved over a **hot spot** in the Earth's mantle (see Figure 8.4.7). Hot spots are places where hot, molten magma from deep within the Earth rises up through the crust to reach the surface. As the Pacific Plate moved, a new volcano, or island, was formed over the hot spot. Currently, the hot spot is under Hawaii's 'Big Island' (see Figure 8.4.8).



8.4.7 The Hawaiian islands formed as the north-westerly moving plate moved over a hot spot in the Earth's mantle.



8.4.8 Satellite image of Hawaii's 'Big Island'

LS 8B

Activities

Remembering and understanding

1. Study Figure 8.4.3. Explain the cause of the Mount St Helens eruption.
2. Study Figures 8.4.3 to 8.4.6. List the damage caused by the Mount St Helens and Rabaul eruptions.
3. Study Figure 8.4.7. Explain how hot spots have created the Hawaiian archipelago.

Geographical skills

4. Study Figure 8.4.5. Create a sketch map of the Rabaul caldera. Locate the now abandoned Rabaul township and the volcanic vents Tavurvur and Vulcan.

8.5 Volcanic landscapes in Australia

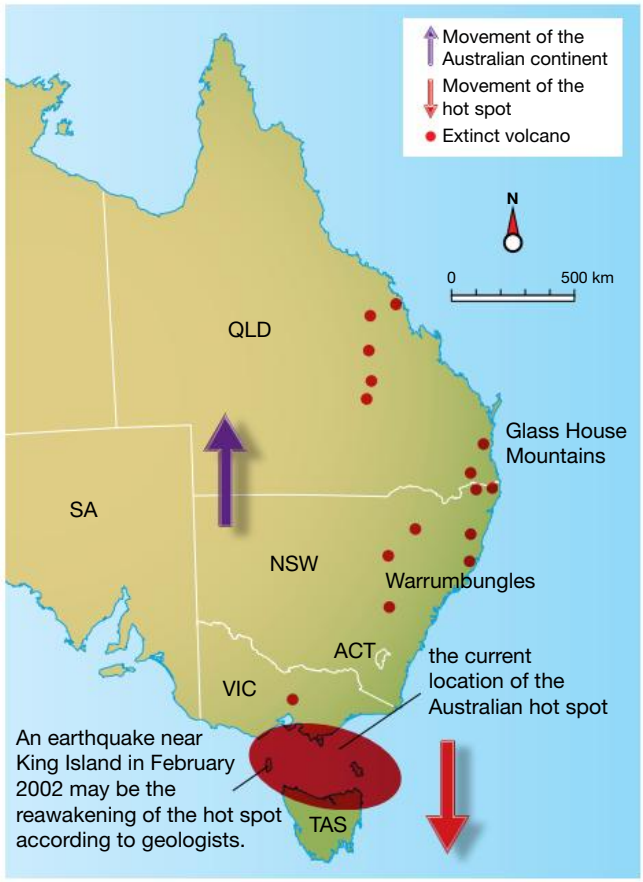
Volcanic history

There are no active volcanoes on the Australian mainland or in Tasmania. However, there are a number of extinct volcanoes and many landform features created by volcanic activity.

Scientists believe that the volcanic landform features on Australia's east coast developed millions of years ago. The plate containing the Australian continent moved across a hot spot in the underlying mantle. The hot spot forced molten rock through the plate to the surface to form volcanoes (see Figure 8.5.1). However, these volcanoes became extinct thousands of years ago. Today, the only active volcanoes on Australian territory are located 4000 kilometres to the south-west of Perth, on Heard Island and the nearby McDonald Islands.

Glass House Mountains

Queensland's Glass House Mountains are the result of volcanic plugs. Volcanic plugs are formed when magma hardens in the vent of an active volcano, and then the softer rock around a plug erodes over time, exposing the harder volcanic material. These extinct volcanoes dominated the area some 26 to 27 million years ago. Mount Beerwah is the highest peak, at 555 metres. Mount Coonowrin (377 metres) and Mount Tibrogargan (364 metres) are the area's second-most prominent volcanic landform features.



8.5.1 Volcanoes and the predicted position of the hot spot on Australia's east coast

Warrumbungles

The landscape of the Warrumbungle National Park in New South Wales originated 180 million years ago. Back then, the region was covered by large, shallow lakes. At the bottom of these lakes, many layers of sediment were slowly compressed to form sandstone. About 18 to 15 million years ago, hot magma exploded through these layers of sandstone. Over millions of years of volcanic eruptions, a huge shield-shaped volcano developed. Weathering and erosion have since removed large amounts of the softer sandstone and exposed the inside of the original volcano.

The exposed volcanic landform features include vents from which magma once erupted, now called Crater Bluff and Belougery Spire. The Belougery, Split Rock and Bluff Mountain lava domes are locations where molten rock bubbled to the surface and clogged up the source vent. Perhaps the most striking feature is the 90-metre-tall rock wall called the Breadknife. Known in geological terms as a dyke, the Breadknife formed when magma was forced through a fault, or crack, in the Earth's surface. Because the rock surrounding the Breadknife was softer than the solidified magma, erosion has left a long sliver of stone exposed today.

Spotlight

Australia's active volcanoes

The active volcanoes on Australian territory are:

- Mawson Peak on Heard Island (last erupted in 2016)
- the McDonald Islands (last erupted in 2004).

During the most recent eruptions there was no loss of life because both these territories are uninhabited and some of the most remote places on Earth. They are located in the Southern Ocean, approximately 4099 kilometres south-west of Perth, 4200 kilometres south-east of South Africa, 3830 kilometres south-east of Madagascar and 1630 kilometres north of Antarctica.



8.5.2 The distinctive volcanic landform features of Mount Beerwah and Mount Coonowrin of Queensland's Glass House Mountains

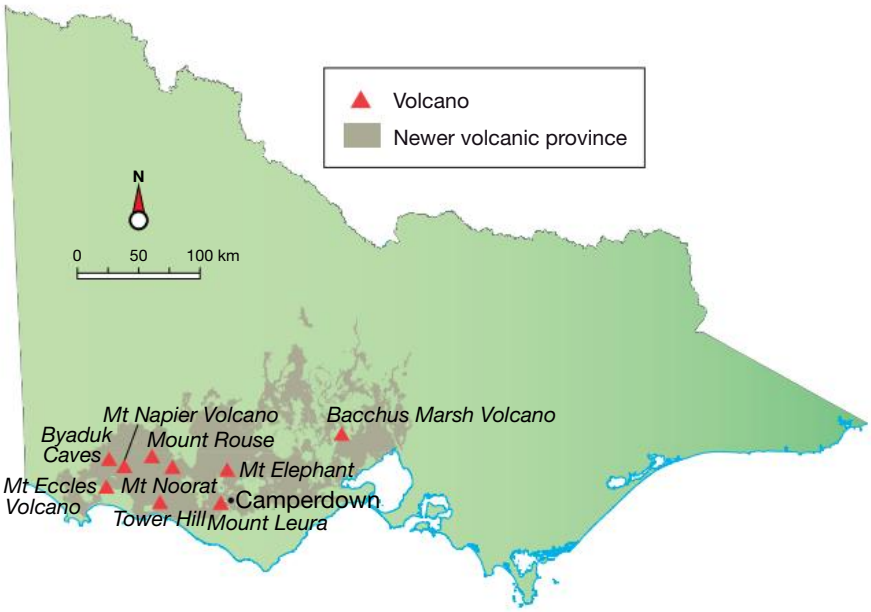


8.5.3 The Breadknife is a distinct volcanic landform feature of the Warrumbungle National Park.
It is the remnant of a large, heavily eroded shield volcano that was active from 18 to 15 million years ago.

Newer Volcanic Province

Compared with Australia's other volcanic landscapes, the Newer Volcanic Province (see Figure 8.5.4) is relatively young. This area in south-eastern Australia contains the country's youngest volcanoes, with some formed in the last 20 000 years. Mount Elephant is a scoria or steep-sloped volcano, and it is part of the Newer Volcanic Province in Victoria (see Figure 8.5.5). It last erupted between 100 000 and 20 000 years ago. Mount Elephant is one of the most obvious volcanoes in Australia because of its conical form, steep sides and crater.

8.5.4 East coast volcanic activity and Victoria's volcanic plain



Other volcanic landform features of the province include **maars**, which are not very common. A maar is a broad, roughly circular, flat-floored volcanic crater with steep inner walls and a low surrounding rim. This rim is built up of rock fragments that were blown out of the crater during eruptions. The Leura Maar is a shallow, oval-shaped depression about 2.5 kilometres long, 1.7 kilometres wide and up to 50 metres deep. It was formed by a series of major volcanic explosions. Some of the material forced from the vent was thrown high into the air, but most of it surged rapidly across the ground surface as a dense cloud of steam, gas and rock fragments. Mount Leura and Mount Sugarloaf began as lava vents on the rim of what is now Leura Maar.



8.5.5 Mount Elephant is a dormant volcano.



8.5.6 Mount Gambier's Blue Lake

Blue Lake

South Australia's famous Blue Lake, in Mount Gambier, is located in one of four lake-filled maars found in the area. The others are Valley Lake, Leg of Mutton Lake and Brownes Lake. The latter two lakes are now dry as a result of a lowered water table.

The crystal-clear water of Blue Lake has filtered through the limestone rock that lies beneath the city. Each year in November the lake starts its colour change, from a winter steel-blue to brilliant turquoise-blue, changing back to steel-blue the following March. The exact reasons for the change remain unclear; however, it is generally thought to be caused by the heating of the surface of the lake during the warmer months.

Other places in Australia

Elsewhere in Australia there are only a limited number of volcanic landform features. Tasmania has a number of offshore **seamounts** (mountains or volcanoes rising from the sea floor). Western Australia has no active or dormant volcanoes, although there are a number of extinct ones. For example, there are a significant number of small extinct volcanoes in the valley of the Fitzroy River in the Kimberley region.

Activities

Remembering and understanding

1 Explain why the Australian mainland has no active volcanoes.
2 Outline the origins of Australia's volcanic landforms.
3 State where Australia's only active volcanoes are located.

Applying and analysing

4 Study Figure 8.5.1. Identify the principal areas of past volcanic activity in Australia.

Geographical skills

5 Select one of the photographs in this unit and construct a photo sketch. Label the volcanic features shown in the image.

8.6 Mass movements

Movement and water

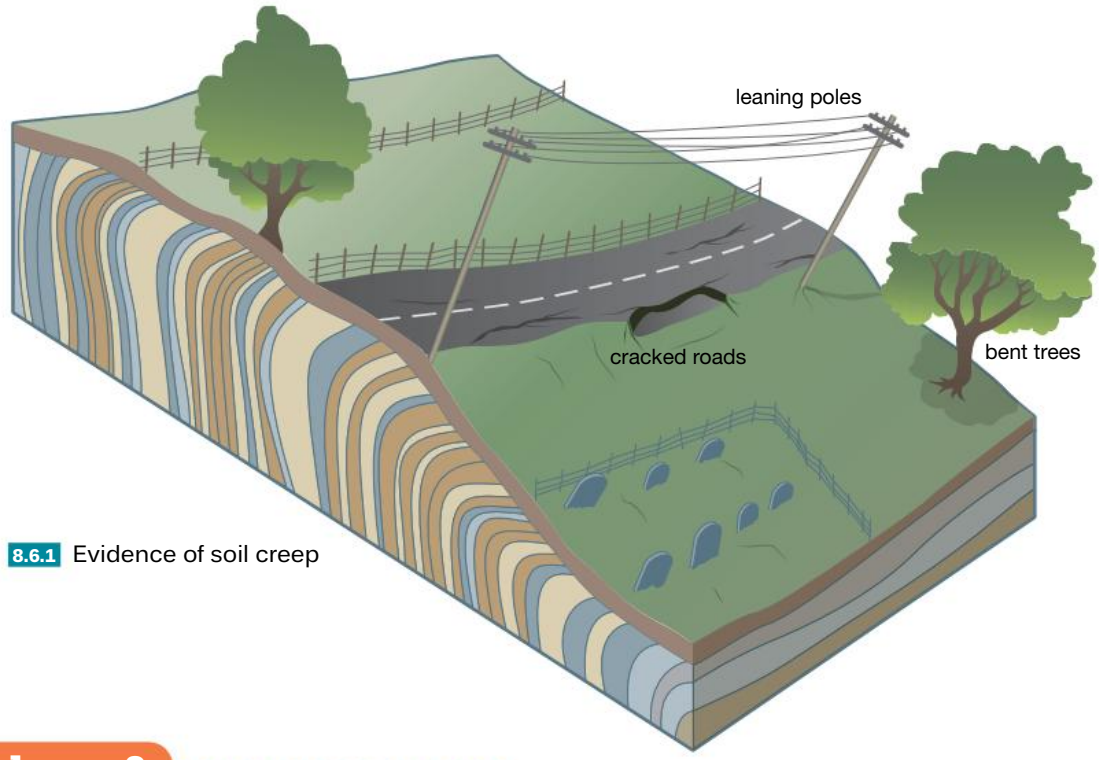
Mass movements occur when rock material moves downhill under the influence of gravity. These movements may be rapid (as in the case of rock falls, landslides, earthflows, mudflows and slumps) or slow (as in the case of soil creep).

Water plays an important role in most types of mass movement. It acts as a lubricant, weakening the binding properties of the soil and rock material. The amount of water that is present is important. Think about building sand castles at the beach. Water is needed to bind the sand together, but too much water results in the castle collapsing.

Slow movements

Soil creep

Soil creep is a long-term process. Over time, soil moves downhill under the influence of gravity. As a general rule, the steeper the slope, the faster the creep. Leaning fences and power poles, and the curved trunks of trees, are all evidence of creep (see Figure 8.6.1).

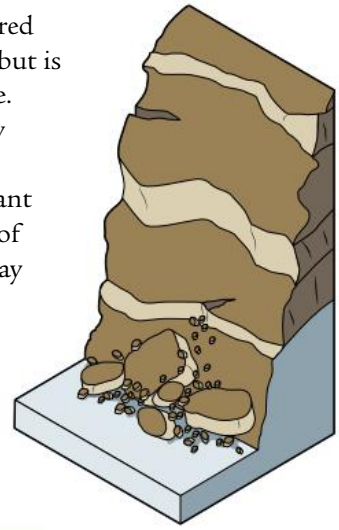


8.6.1 Evidence of soil creep

Rapid movements

Rock falls

A rock fall occurs when weathered rock material moves downhill, but is not enough to cause a landslide. Rock falls usually occur on very steep slopes such as cliff faces. Earthquakes, expanding ice, plant roots, the undercutting action of waves and water penetration may all dislodge rock material. The build-up of rock at the base of the cliff is called 'talus'. A rock fall and talus can be seen in Figure 8.6.2.



8.6.2 A rock fall and associated talus slope

Did you know?

In Queensland, just over half of all reported mass movement incidents are the result of activities such as building roads, railways and pipelines, or clearing of vegetation and farming.

Slumps

A slump occurs when a well-defined mass of soil or rock layers moves downhill. Slumps can be initiated by earthquakes, water saturation (when soil is full of water), and the freezing and thawing of a mass of soil or rock layers. Figure 8.6.3 shows an earthflow with slump features in the upper section.

Mudflows

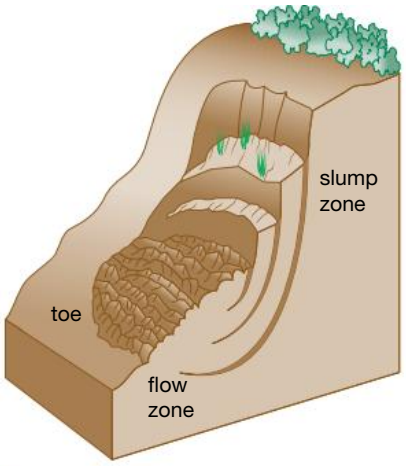
A mudflow (or mudslide) is the downhill movement of saturated (soaked) earth and debris, made fluid by rain or melted snow. Mudflows are often able to build up great speeds, of up to 80 kilometres per hour. Mudflows are most likely to occur in areas that have been stripped of their vegetation, on slopes that have been altered for the construction of buildings, and on roads and other areas to which surface run-off has been redirected.

Earthflows

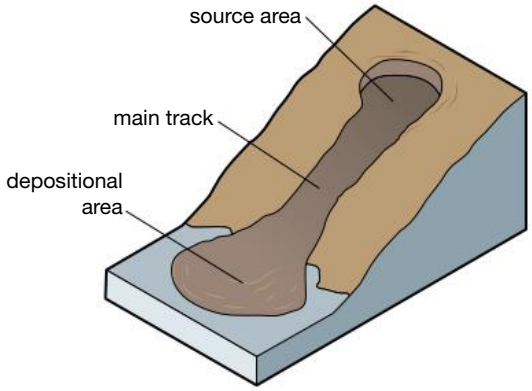
Earthflow is the downhill flow of saturated fine-grained materials (see Figure 8.6.4). The materials most commonly involved are small rocks, clay, fine sand and silt. When the earth cannot hold any more water, the flow begins. The rate at which the earth flows depends on the amount of water present. The higher the water content in the earth, the greater the speed, or velocity. Figure 8.6.5 shows the damage caused by an earthflow after heavy rainfall.



8.6.5 A large landslide triggered by heavy rains buried nearly thirty homes in China's Zhejiang Province on the evening of 13 November 2015.



8.6.3 An earthflow with well-developed slump features in the upper section



8.6.4 When soil and rock cannot hold any more water, they start flowing.

Activities

Remembering and understanding

1. Define the term 'mass movements'.
2. Outline the role of water in mass movements.
3. Explain the difference between earthflows and mudflows.

Applying and analysing

4. Study Figure 8.6.1. Identify the different types of damage that can be caused by soil creep.
5. Study Figure 8.6.5. Describe the damage you observe in the image.

8.7 Mudslides

Mudslides around the world

Mudslides and landslides often occur with little or no notice, and the results can be deadly. The following hazard 'snapshots' illustrate the deadly consequences of such disasters.

La Paz, Bolivia

In February 2011, at least 400 homes were destroyed after torrential rains caused a massive slump and mudslide in La Paz, the capital of Bolivia. The slump and slide caused widespread damage in the poor neighbourhood of Callapa. Roads cracked and houses were buried under mud and debris. Fortunately, no one was killed. Residents had started evacuating the neighbourhood a day or so earlier when the hillside, saturated after prolonged rainfall, began to slide and cracks appeared in streets and homes.

Rio de Janeiro, Brazil

In early 2011, a series of floods, mudslides and landslides in the Brazilian state of Rio de Janeiro killed at least 903 people. It was one of the worst natural disasters in Brazilian history. In a 24-hour period between 11 and 12 January, the local weather service registered more rainfall than would be normally expected for the entire month. Flooding of many areas in the region immediately followed. The soil on the region's steep hillside quickly became saturated and in many places collapsed, with devastating effects. Rescuers can be seen among the damage in Figure 8.7.2.



8.7.1 Four hundred homes were destroyed after torrential rains sparked a massive slump and mudslide in La Paz, the capital of Bolivia.



8.7.2 Officials and volunteers search for the dead after the floods and mudslides that killed more than 900 people in the Brazilian state of Rio de Janeiro on 16 January 2011.

Zhouqu County, China

More than 1600 people were killed on 8 August 2010 when a massive torrent of mud engulfed houses and demolished multistorey blocks of flats in Zhouqu, in north-central China. The mudslide disaster followed a period of heavy rain. Because of the rain, water built up behind a dam of debris that was blocking a small river near the city. When the debris dam collapsed, 1.8 million cubic metres of mud and rocks swept through the city. The surge levelled (flattened) an area 5 kilometres long and 300 metres wide, and the mud measured up to 5 metres deep. More than 300 low-rise homes and more than a dozen multistorey buildings were destroyed. One village was entirely buried. Figure 8.7.3 shows rescuers at work at the site of the disaster.



8.7.3 Rescuers work at the scene of a mudslide in Zhouqu County, Gansu Province, China, in August 2010.

Activities

Remembering and understanding

1 Copy and complete the following table.

Location	Type and cause/s of landslide	Damage
La Paz		
Rio de Janeiro		
Zhouqu		

2 Discuss the similarities and differences between these landslides.

8.8 Avalanches

Avalanche causes

An avalanche is a sudden, downhill movement of a mass of snow. Avalanches are triggered when the snowpack (the different layers of snow) becomes overloaded. This can happen because of natural factors (such as earthquakes or heavy snowfalls) or human agents (such as skiers, snowboarders and snowmobile riders).

Avalanche damage

Avalanches can reach speeds of 130 kilometres per hour within just 5 seconds. The size and impact of an avalanche is influenced by a number of factors. These include snow type, the rate at which it accumulates (collects), the temperature, the nature of the sliding surface, the cause or trigger, and the angle and aspect of the slope. Figure 8.8.1 shows an avalanche in action. Note the steep slope of the mountain.

Powerful avalanches can cause large rocks, trees and other debris to move downhill, adding to their destructive power. Avalanches cause loss of life, destroy settlements and disrupt transport when they block roads and railway lines. Avalanches are a major hazard to life and property in mountainous regions because they can move enormous amounts of snow rapidly over large distances.

Avalanches kill more than 150 people each year. Ninety per cent of avalanche deaths are the result of snow slides that are triggered by the victim or someone in the victim's party. Skiers, snowboarders and riders of snowmobiles are the most frequent triggers of avalanches.

Avalanche control

Avalanche control is an important management issue in populated alpine regions. It begins with an assessment of the level of risk. This involves studying the topography, vegetation pattern and seasonal distribution of snowfall to determine the areas likely to be affected by avalanches. Once the avalanche risk areas have been identified, threatened elements of the built environment (such as roads, railways, settlements and ski resorts) can be protected. Avalanche prevention plans involve monitoring the snowpack and building structures to protect people and property.

Avalanche control includes the following measures:

- Management of the snowpack, by setting off small detonations, prevents large and dangerous snowpacks from forming.
- Snow racks (see Figure 8.8.2) and avalanche bridges (see Figure 8.8.3) can be built to protect towns, roads and railway lines.
- Dams, ditches and earth mounds can be built to deflect and slow an avalanche.
- Trees can be planted, as forested areas will slow an avalanche and may prevent one from occurring.
- Avalanche awareness programs educate and protect people who take part in recreational activities in alpine regions.

8.8.1 Two mountaineers were swept away by this avalanche on Europe's Mont Blanc. Fortunately, they escaped.





8.8.2 Snow racks are used to retain snow, thereby reducing the risk of avalanches.



8.8.3 Avalanche bridges are used to protect vital transport infrastructure.

Surviving avalanches

If you are ever caught in an avalanche, try to get out of the avalanche pathway as quickly as possible.

8.8.4 Avalanche safety checklist

Avoiding avalanches
• Be aware when an avalanche is likely to occur, especially on steep slopes after heavy snowfalls. • Always follow avalanche warnings and never ski or board alone in avalanche-prone areas. • Avoid crossing steep slopes. • If skiing or boarding in a group, always spread out. That way, if some of you are trapped in an avalanche, the others can dig you out. • Avalanches can happen without notice. Be prepared and know what to do.
If caught in an avalanche
• Do not attempt to out-ski or out-board the avalanche. It will be travelling faster than you can ski. Try skiing towards the edge of the avalanche, where the mass of snow is thinner and less powerful. • Try to stay on the surface, grab onto a tree or rock, or thrust yourself upward by kicking.
If you are knocked over
• Use a swimming-like stroke to avoid being covered in snow. • When you come to a stop, curl up into a ball and use your hands to cover your face. Rotate your head to make an air pocket. • To see which way is up, spit into your hands and feel which way the saliva runs. Remember you may be in complete darkness unless you are close to the surface. • If you can see a hint of daylight, try to push one hand to the surface to attract attention. • Breathe steadily to preserve energy and oxygen.

Did you know?

Unlike in the movies, noise does not trigger an avalanche.

The human body is three times denser than avalanche debris and will sink quickly.

Activities

Remembering and understanding

1 Explain what an avalanche is and the conditions when avalanches take place.
2 List the factors that determine the nature of an avalanche.
3 Outline what can be done to manage, or control, the threat of an avalanche.

Evaluating and creating

4 Study Table 8.8.4. Produce a podcast to educate people who take part in alpine recreational activities about avalanche safety.

8.9 Living in areas of risk

Predicting hazards

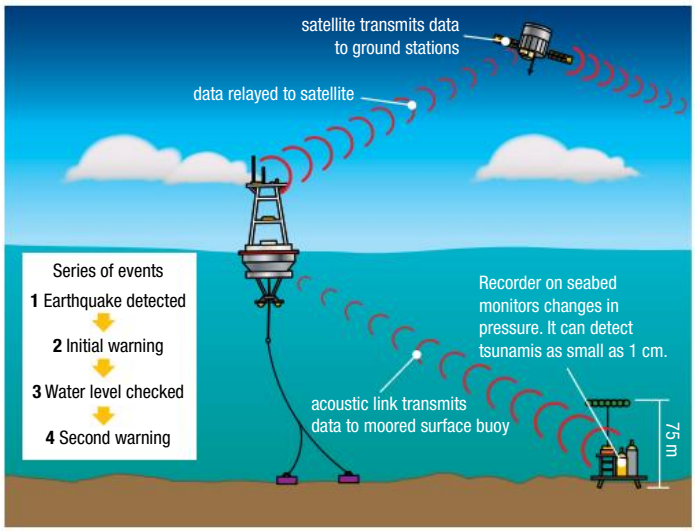
Scientists study the Earth's crust in order to understand the processes involved in plate movements. As a result, they are able to assess the risk of earthquakes and volcanic eruptions. With this knowledge, authorities are able to plan for, and respond to, natural hazards such as earthquakes and volcanic eruptions.

Earthquake prediction

Scientists study the past frequency of large earthquakes to determine the possibility of similar large shocks in the future. Where this possibility is high, special building laws can be made so that buildings will not collapse in an earthquake. Authorities can also plan emergency responses to earthquakes.

Tsunami warning systems

Tsunami warning systems are used to detect tsunamis and issue warnings to minimise the loss of life and damage to property. A tsunami warning system consists of two equally important parts: a network of sensors to detect tsunamis (see Figure 8.9.1), and a communications infrastructure to issue alarms in time for people to evacuate coastal areas.



8.9.1 A tsunami warning system

Volcano monitoring

There are currently about 500 active volcanoes in the world. Around fifty of these volcanoes erupt each year. Volcanologists monitor high-risk volcanoes so they can determine the level of risk and forecast eruptions. Experts now issue alerts using a classification system. In the United States, volcanoes are classified according to the following stages: normal, advisory, watch or warning.

Adapting to threats

The forces involved in earthquakes and volcanic eruptions are so great that they are beyond the control of humans. All we can hope to do is minimise their impact and make sure we are ready to respond in the event of a natural disaster.

Earthquakes

When an earthquake strikes, land may move up and down, and side to side. Modern engineering techniques are used to construct buildings that can withstand such movements.

In earthquakes, the biggest danger is not the earthquake itself, but falling debris and collapsing buildings. Broken glass becomes deadly and falling concrete can crush people. Engineers have designed windows and walls that will not break when shaken by the intense motion caused by earthquakes. Specially designed foundations absorb the energy of the earthquake and allow buildings to flex rather than shake violently.

Did you know?

In areas of high risk (such as Japan), it is important to build houses and other buildings that react well to earthquakes. Clever design can help stop buildings collapsing under the stress of large earthquakes.

Tsunamis

The impact of tsunamis can be reduced by natural barriers such as sand dune systems, mangroves, plantations and native forests. During the 2004 Indian Ocean tsunami, some coastal communities escaped with little loss of life and damage to property because trees such as coconut palms and mangroves absorbed the tsunami's energy. For example, the entire Nagapattinam district in the state of Tamil Nadu, India, was severely affected by the tsunami, although the town of Naluvedapathy emerged virtually unscathed. This was due to the presence of a very large windbreak of 80 000 casuarina trees. They had been planted in 24 hours in 2002 as part of a Guinness World Record.

Tree planting along tsunami-prone coastlines has been recommended as a cheap and long-lasting way of reducing the effects of tsunamis. They are an effective alternative to building expensive barriers. In India's worst tsunami-hit state, Tamil Nadu, tree planting has begun along the coastline to act as a barrier against future tsunamis.

In coastal areas it is not always possible to use forest barriers so other barriers must be built. For example, in existing urban areas, concrete walls are constructed, as are seawater barriers that deploy, or are activated, automatically when tsunami waves approach shorelines (see Figure 8.9.2).

Volcanoes

Worldwide, an estimated 500 million people live near active volcanoes. Fortunately, the loss of life from volcanic eruptions has been relatively low. A notable exception was the 1991 eruption of Mount Pinatubo in the Philippines. There was a large-scale evacuation of people in the days leading up to the eruption. This preventive action demonstrated the effectiveness of eruption prediction by volcanologists. However, despite these efforts 847 people were killed. Most died when roofs collapsed under the weight of accumulated ash. Mount Pinatubo's dense forest was home to several thousand indigenous people, the Aetas. Many of them were displaced by the eruption.

Spotlight

Surviving earthquakes

If you are indoors, remain there and:

- take shelter under a sturdy table or desk, stand or crouch in a strong doorway in a load-bearing wall, or brace yourself in an inside corner of the room
- shield your head with a blanket, doona or cushion
- stay clear of windows, mirrors or other glass that might shatter
- keep clear of bookcases, cabinets and other pieces of heavy furniture that might topple or spill their contents
- stay away from fireplaces, and any area where bricks might fall from the chimney.

If you are outside:

- quickly move into an open space where nothing can fall on you
- stay clear of power lines and poles, trees or branches, building facades, chimneys, or anything else that might fall.

If you are in a city centre:

- avoid falling glass and masonry by taking shelter in a strong doorway or under a large vehicle
- don't use elevators or stairs during the quake.



8.9.2 A tsunami barrier and gate in Numazu, Japan

Activities

Remembering and understanding

1. Explain why scientists study the movements in the Earth's crust.
2. Outline the ways we can respond to a high-level earthquake risk assessment.
3. List the ways in which coastal communities can be protected from the impacts of a tsunami.

Applying and analysing

4. Study Figure 8.9.1. Explain how a tsunami warning system operates.

Evaluating and creating

5. Investigate the ways buildings can be made earthquake-resistant.
6. Investigate a recent volcanic eruption. Identify the ways people were informed about the coming eruption and the actions they were able to take to minimise its impact.
7. Research the different ways to respond to natural disasters, such as an earthquake, a tsunami or a volcanic eruption. Create a poster highlighting how people should respond if these hazards occur.

LS 8C

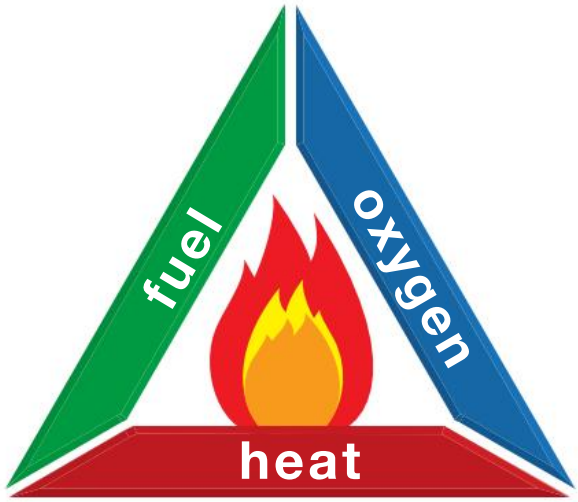
8.10 Bushfires in Australia

Bushfires

'Bushfire' is an Australian word that is used to refer to any fire burning out of control in bushland areas. In other countries, and increasingly in Australia, the term 'wildfire' is used to describe these types of fires. Bushfires are common in Australia and are associated with the explosive burning of the 'bush', the eucalypt forests and woodlands. Grassfires are also common.

How bushfires start

A fire requires material that can burn (fuel), a source of ignition (heat) and a supply of oxygen. Fire is the **combustion**, or burning, of fuel as it reacts with oxygen in the air. The fire triangle shows the three things needed to start a fire.



8.10.1 The fire triangle

Fuel

The greater the fuel load (the amount of combustible material), the hotter and more intense a fire is. The main fuel for bushfires comes from trees, debris (fallen leaves and bark) and undergrowth. During droughts and in very hot, windy weather, the leaves and small branches of trees can become very dry and flammable. Dead or dried-out grass can also fuel grassfires, and some grasses can burn even when they are green.

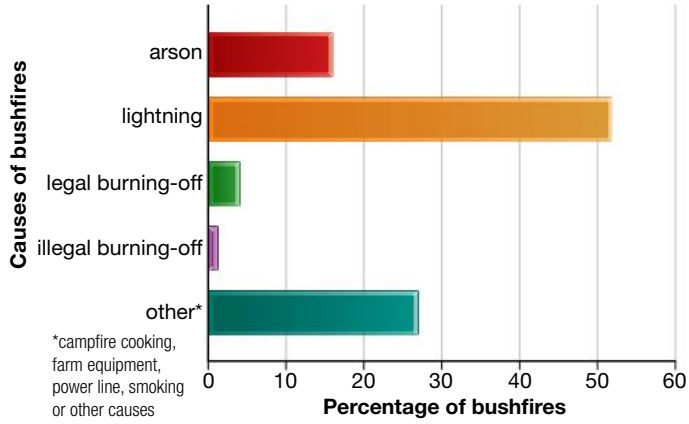
Ignition

Bushfires have long occurred naturally in Australia, but they can also start from human activity. Bushfire causes are shown in Figure 8.10.2. Lightning strikes cause over half of all bushfire ignitions. Sometimes, controlled fires are initiated in an effort to reduce fuel loads. Occasionally, however, changes in the weather can cause these fuel-reduction fires to get out of control and become bushfires.

Some very serious fires have been lit by arsonists (people who deliberately light fires). Fires can also be the result of accidents, such as when a mower blade hits a rock and produces sparks, or power lines are brought down during high winds.

Oxygen

Combustion requires oxygen, and once lit, a fire will only continue to burn if it has a supply of oxygen. Loose litter on the ground can easily catch fire in open spaces because there is plenty of oxygen available for it to burn.



8.10.2 Bushfire causes in Australia in 2006–07

How bushfires attack

The fire front

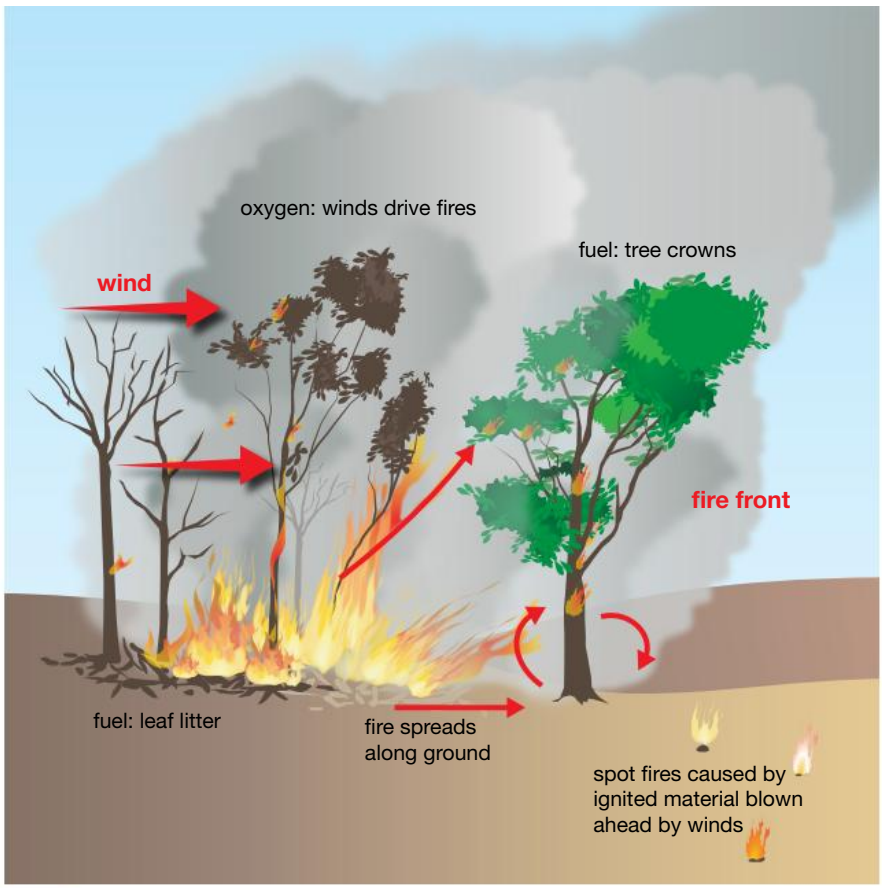
Flames at the fire front, or the leading edge of a fire, will ignite anything flammable with which they come into contact. The most dangerous of all fronts is that of a running crown fire, which burns at the top of trees. In eucalypt forests, bushfires can move at fast speeds through the upper layers of the forest, as shown in Figure 8.10.3.

Ember attack

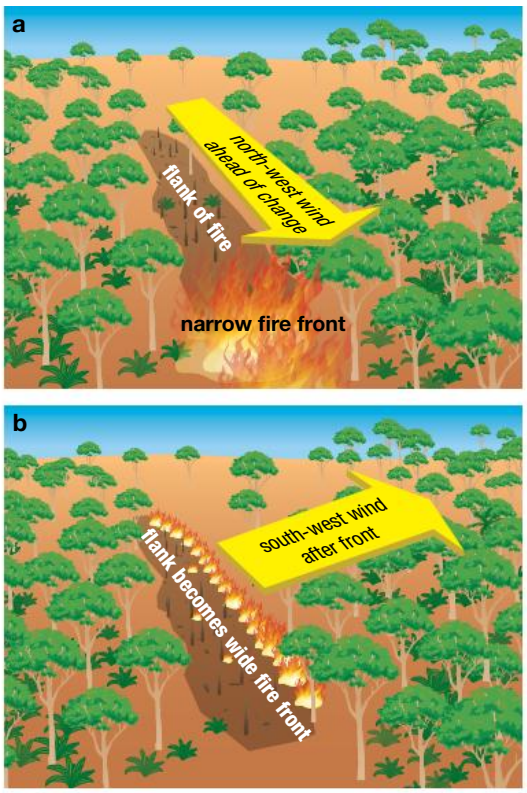
Spot fires occur in front of a fire. They can break out when hot embers (burning debris such as twigs, bark and small branches) from the fire front are picked up by winds and dropped elsewhere. Embers can be carried as far as 30 kilometres downwind from the fire front.

Wind

Winds drive a fire by delivering a continuous supply of oxygen. They also blow the flames towards fresh fuel. Even a slight increase in wind speed results in an increase in the rate at which a fire can move forwards. Changes in wind direction also affect fire behaviour and can quickly cause the size of a fire front to increase and the direction in which it moves to change (see Figure 8.10.4). Winds also create spot fires, as they lift the burning embers into the sky and carry the embers ahead of the fire front.



8.10.3 How a bushfire attacks



8.10.4 (a) Wind direction ahead of a cold front. (b) When the wind direction changes, the part of the fire becomes the new front, and is now much wider.

Spotlight

Grassfires and bushfires

Grassfires move quickly, passing in 5 to 10 seconds, and smoulder (burn with no flame) for only minutes after the fire has passed. They are low to moderately intense fires, but can do a lot of damage to crops, livestock, fences and farm buildings.

Bushfires usually move more slowly than grassfires, but are much hotter and stronger. They pass in 2 to 5 minutes, but logs and tree stumps can smoulder for days afterwards. Bushfires can completely burn large areas and destroy whole townships.



8.10.5 A grassfire

Severity of bushfire hazard

Bushfires have long been part of the Australian landscape, and vegetation has evolved (changed and adapted) with them. Indigenous and European occupation of the continent have had a significant impact on the biophysical environment and the incidence and intensity of bushfires.

Dry Australian climate

The Australian climate today is influenced by high-pressure systems over most of the continent. These conditions produce fine, sunny conditions, resulting in low, unreliable rainfall and prolonged dry periods. The Australian continent today is generally hot, dry and has frequent droughts. Such conditions dry out the country and increase the bushfire threat.

Evolution of Australian flora

Australia's vegetation has adapted to its dry climate and poor soils. Plants such as the eucalypt (gum) trees developed characteristics that meant they require less water and fewer nutrients—their small, thick, leathery leaves are tough and need to be replaced less often.

During times of drought, Australian eucalypts survive by reducing their water loss through shedding (dropping) their leaves. The dead leaves build up on the forest floor together with bark, creating fuel. In dry conditions, the rate of decay of the leaves and bark slows down and so the fuel load builds up even more.

Eucalypt leaves also contain oils and waxes to stop insects from eating them. The leaves also have a low water content and this explains why they burn explosively. On hot days the oils in eucalypt leaves pass into the atmosphere as a vapour. This vapour is quite combustible given the right conditions, and when a fire passes through, tree crowns (tops) appear to explode when the oil-rich vapour given off by the leaves ignites in a fireball.

Evolution with fire

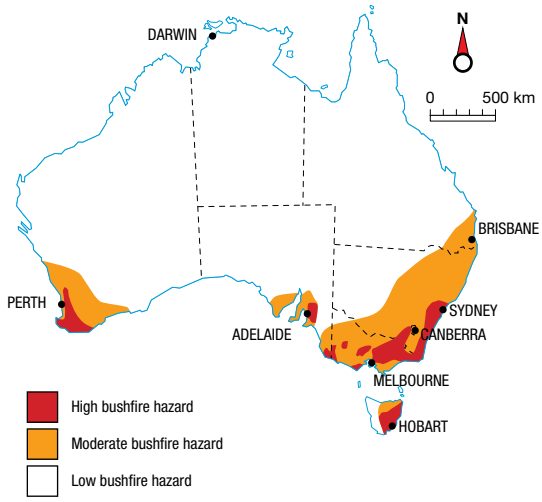
The Australian environment evolved with fire. Lightning strikes have ignited the country for millions of years. Many plant species developed a range of adaptations to survive bushfires. Some plants need regular burning to start the release or germination of seeds for the next generation of plants. Some trees also developed thick bark, so when there is a fire the tree does not die. Figure 8.10.6 shows regeneration (new growth) after a bushfire.



8.10.6 The bush regenerating after fire

Australia's eucalypt forests and woodlands

Eucalypts dominate the less dry regions of the continent in the south-east and south-west. The forests occupy areas with relatively high rainfall nearest the coast, while the woodlands of smaller, more sparsely planted trees are further inland, where it is drier. These coastal and inland areas have the highest bushfire risk in Australia, as shown in Figure 8.10.7.



8.10.7 Areas at risk of bushfire in Australia

Human impact

While bushfires have always been part of Australia's natural environment, human attitudes and management of fire have had a significant impact on the severity of bushfires.

Aboriginal use of fire

When the first Aboriginal people arrived more than 50 000 years ago, they adapted their lifestyle to the conditions. They also learnt to manage the land in ways that met their needs. The main tool they used to do this was small fires that could be controlled and had a low-intensity impact on the environment.

Aboriginal people made frequent use of fire:

- to keep the country open and therefore easy to move through
- to promote the growth of fresh green grass and herbs that would attract the animals they hunted
- as a means of signalling and hunting
- for the purposes of warmth and cooking.

European settlement

European settlers considered the Australian environment to be difficult and hostile, and they were especially fearful of bushfires. The explosive fires in the Australian bush were unlike anything they had seen before. In Europe, fires had to be put out because they destroyed forests. There was no understanding that the vegetation in Australia actually benefited from burning. Bushfires were terrifying and their response was to try to put out bushfires or to prevent them from occurring.

As more Europeans came and took the land from Aboriginal and Torres Strait Islander peoples, the regular burnings stopped. As a result, there was a build-up of fuel loads in the bush. Fires are part of the natural cycle in Australia, and with more fuel to burn they became stronger and more destructive.

The pattern of European settlement also placed people in areas where the bushfire hazard was greatest. The majority of Australians live on or near the south-east coast of the continent, where the eucalypt forests are also located.

Climate change

Climate change has increased the length of the fire season in Australia. Bushfires are also becoming stronger and more destructive due to hotter weather and more droughts.

Activities

Remembering and understanding

1 Define the term 'bushfire'.
2 Identify the three things that must be present for a fire to occur.
3 Distinguish between a bushfire and a grassfire.
4 Explain the danger of ember attack.
5 Explain how winds influence bushfire behaviour.
6 Describe the adaptations of eucalypts to the difficult Australian environment.
7 Explain why eucalypts easily catch fire and burn.
8 Compare the attitudes to fire of the Aboriginal and Torres Strait Islander peoples and the European settlers.

Applying and analysing

9 Study Figure 8.10.2 and draw up a table like the one below.

Natural causes	Human causes

   a Write the fire ignition type in the correct column.
   b Is the most common type of ignition due to humans or nature?
   c Considering your answer to Question 9b, what measures would you suggest to reduce the incidence of bushfires?

10 Discuss how the actions of Europeans have increased the severity of the bushfire hazard in Australia.

Geographical skills

11 Study Figure 8.10.7. List the states that have a high bushfire hazard.

Evaluating and creating

12 Design an annotated visual display illustrating how bushfires start, progress and attack.

LS 8D

8.11 Surviving bushfires

Knowing the risk

Australians will continue to live in places that are at risk from bushfires. It is therefore important that people are aware of what they can do to prepare their properties and improve their chances of survival should they get caught by a bushfire.

Increasing your chance of survival

Protecting property

Figure 8.11.1 outlines the measures that you can take to protect your property.

Well-prepared property

- Mature trees can help shield against radiant heat and embers. They must be strategically located and well managed.
- Remove flammable items from decks and verandahs, such as boxes, furniture and doormats.
- Keep grass cut to less than 10 centimetres.
- Keep woodpiles away from the house.
- Store flammable liquids away from the house.
- Get rid of dry grass, leaves, twigs and loose bark.
- Prune lower branches of shrubs to separate them from surface fuels underneath.
- Prune shrubs well away from tree branches.
- Cut back overhanging tree branches close to property—no branches within 10 metres.
- Do not have large shrubs next to or under windows.
- Use pebbles and rocks in your garden (not flammable mulch).
- Keep gutters clear of leaf litter.

Home improvements

- Roof: Seal gaps and install sarking (reflective, non-combustible sheeting).
- Windows: Install shutters, seal gaps and maintain window sills.
- Doors: Install metal screen doors, seal gaps and install non-combustible doorsill.
- Decks: Use non-combustible deck materials, separate decking from dwelling and ensure no fuel under decking.
- Ensure access to at least 10 000 litres of water independent of water pipes.
- Install water pipes underground.
- Install a firefighting pump with separate power generator, including firefighting hoses.

Defending your property

- Block downpipes and fill gutters with water. Hose down the house and surrounding areas.
- Place a ladder in the manhole so that you can inspect the roof cavity at regular intervals.
- Put wet towels against spaces under doors. Close curtains and blinds.
- Wear personal protective clothing (wide-brimmed hat, eye protection such as goggles, mask/scarf to filter smoke, longsleeved shirt and pants made from a cotton fibre, tough leather gloves and sturdy boots with woollen socks).
- Ensure you have firefighting equipment: torch, shovel, bucket, mop, radio and water sprayer.
- Install a sprinkler on the roof.
- Fill buckets, basins, baths and sinks with water to put out spot fires.

Note: A new code red fire rating has been created for use throughout Australia. What this means is:

- These are the worst conditions for a bush- or grassfire.
- Homes are not designed or constructed to withstand fires in these conditions.
- The safest place to be is away from high-risk bushfire areas.

Source: CFA Victoria

8.11.1 Protecting your property from bushfires

Prepare. Act. Survive.

The decision to stay and actively defend your property or leave the area must be made well before a fire threatens. It is also important to follow advice to evacuate. Waiting until the last minute to leave can be deadly. It is hard to see through the smoke, and fallen trees and power lines may block the road. You are also at risk of radiant heat (heat that travels through the air from the fire). This scorching, invisible heat surrounds the flames and kills anything caught in its path. The greatest danger in a fire may not be the flames but breathing in smoke. Some of the best ways to increase your chances of survival if you are in the path of a rapidly approaching bushfire are listed in Table 8.11.2.

8.11.2 Bushfire survival

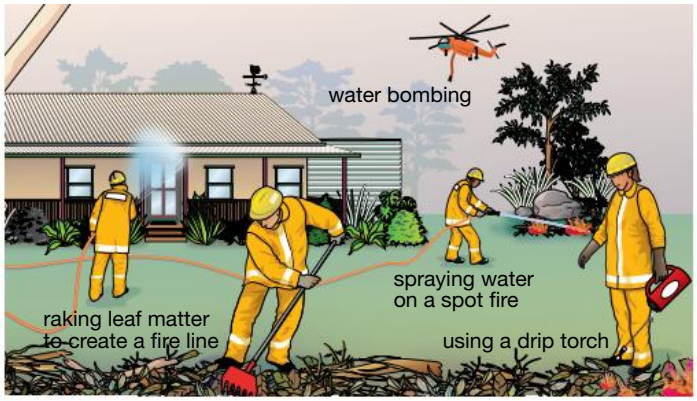
Personal survival indoors	• Wear as much cotton or woollen clothing as possible to cover the whole body (jeans are good); no synthetic fibre garments as they will melt onto the skin. • Sturdy leather boots with thick soles are best. • Crouch or lie down on the floor of a room that is away from the approaching fire; the air close to the ground contains less smoke. • The fire front and associated radiant heat usually pass in 2 to 4 minutes. Even if the house catches fire, it is safer to stay indoors until the fire front has passed.
Personal survival outdoors	• If you see smoke ahead, go in the opposite direction. • Find the clearest or most open area. Never run uphill through unburnt country or shelter at the bottom of a valley, as the wind will suck the fire across or along these. • If possible, lie down in a depression, pond or dam, or cover yourself with loose earth or rocks. Thick, woollen clothing or woollen blankets offer some protection from the radiant heat. • If in a car, park by the roadside in the clearest area possible. Stay in the car, wind up the windows and put on the headlights. Crouch down and shelter under a rug, floor mat or anything similar that is available.

Government responsibility

Government authorities are responsible for advising the community of the current level of fire danger and fire bans that are in force. In the event of a bushfire occurring, the authorities coordinate evacuations and ensure that residents are updated on the status of the fire. Laws also require local governments to develop strategies to protect homes, farms, water supplies and roads from fire. These may include preventive slashing of undergrowth or prescribed burning (controlled burning in advance of fires so as to reduce the availability of fuel) and keeping watch from fire towers.

Community support

In Australia there are 250 000 volunteer firefighters who willingly answer the call for assistance. Leaving their jobs and families, they travel great distances to fight fires. State Emergency Services volunteers assist by staffing road blocks, refuelling helicopters and assisting the police with evacuations. Fighting a bushfire is often likened to a military campaign, with highly trained fire fighters deployed strategically on the ground and air support striking from above.



8.11.3 Strategies commonly used to fight bushfires

Did you know?

Emergency services in each state and territory provide up-to-date information during an emergency. Other providers include the ABC, which works with emergency agencies to deliver warnings, alerts, information and news about disasters and emergencies on television, radio, the internet and mobile phones.

Activities

Remembering and understanding

1 Outline the steps that individuals can take to protect themselves, their families and their property.

Applying and analysing

2 Assess and analyse the readiness of your home or school for a bushfire event. Prepare a sketch with annotations (short explanations) indicating changes required.



Alpine landforms G1

The word ‘alpine’ is used to describe snow-covered areas. The location and extent of the world’s alpine landscapes are determined by the distinctive climate found at high altitudes. Many alpine areas are home to landforms shaped by the processes of glaciation, in either the past or the present. These harsh but spectacular places, and the related landforms, plants and animal life, are among the most culturally important of all environments.

OVERVIEW QUESTIONS

G1A What are the principal geomorphic processes responsible for the shaping of alpine landscapes and landforms?

G1B What are the distinctive landform features associated with glaciation? How are they formed?

G1C Why are alpine landscapes worth protecting?

G1D In what ways can alpine landscapes be managed sustainably?

GLOSSARY

abrasion the wearing down or wearing away of rock by friction (rubbing)

accumulation zone an area where snow and ice accumulate (collect) at a faster rate than they melt

arêtes sharp-sided ridges separating two cirques (valleys)

cirque a small valley that is shaped like an amphitheatre (stadium)

endemic unique to a particular geographical location

firn a compacted layer of new snow that survives the summer melt

fjords long, narrow, flooded valleys with steep sides, carved by glaciation

glaciers slow-moving rivers of compacted snow and ice

ground moraine rock debris deposited across a valley floor as a glacier retreats

hanging valleys valleys formed at the point where a smaller (tributary) glacier once joined a larger, deeper glacier

horns the pyramid-shaped peaks of a mountain formed by three or more cirques (valleys); also pyramidal peaks

lapse rate the rate at which air temperature declines with elevation (increasing height or level), because it expands

lateral moraine the rock that accumulates along the edge of a glacier

medial moraine the rock debris (rubble or broken pieces) found in the centre of a valley, resulting from the merging of two lateral moraines when two glaciers merge

melting zone an area where snow and ice melt at a rate faster than they accumulate; the end of a glacier

moraine the rock material deposited by a glacier

tarn a lake at the base of a cirque (valley)

terminal moraines the rock material exposed as a glacier melts and retreats

treeline the elevation at which it is too cold for trees to grow; the edge of the habitat in which trees are able to grow

U-shaped valleys valleys with a flat floor and steep sides, formed by the abrasive power of material embedded in a glacier

V-shaped valleys valleys eroded by rivers

LS Before you begin

G1.0.1 Mount Assiniboine, British Columbia, Canada

G1.1 Alpine landscapes

Location of alpine landscapes

The Earth's highest mountains and plateaus are home to its alpine landscapes. The extent of such landscapes is determined by the distribution of alpine climates. An alpine climate is defined by the conditions that exist above the **treeline** (the elevation at which it is too cold for trees to grow).

Alpine climates

The climate is the average weather conditions of a place, experienced over a long period of time. One of the most important elements of weather is temperature. Alpine temperatures range from –18°C to 10°C. Precipitation is low and often falls as snow. Night temperatures are almost always below 0°C. The growing season of plants in alpine climates is usually less than 180 days per year.

The treeline in an alpine environment appears well defined from a distance. However, on closer inspection it is actually a zone of slow change. The growing season of trees becomes shorter with increased altitude and more extreme climate conditions, and eventually there is a point where trees stop growing. In Australia's Snowy Mountains the treeline is approximately 1800 metres above sea level. In the Swiss Alps the treeline is approximately 2200 metres above sea level (see Figure G1.1.1) and in the Canadian Rockies it is 2400 metres.



G1.1.1 The treeline in Davos, the Swiss Alps

Temperatures decline with elevation

Air expands as it rises, and as it expands air cools. Therefore, temperatures drop as elevation increases. It is important to remember that the atmosphere is heated by the Earth's surface, not from above. As a dry mass of air rises, it cools at a rate of –10°C per 1000 metres.

Shaping alpine landforms

When mountains are formed, weathering and erosion begin to wear them away. Exposed rock surfaces are broken down by physical and chemical weathering. The material is then removed by wind and water, and deposited (by rivers and glaciers) at lower elevations as sediment.

Work of rivers

Running water is the most powerful form of erosion in alpine landscapes that are not permanently covered with snow and ice. The water transports and deposits rock and soil. In mountainous areas, rivers erode downwards, creating narrow, **V-shaped valleys**. Away from the mountains, valleys become wider and some of the river's load of sediment is deposited. Eventually, this material finds its way to the sea, where it is deposited in layers.

Glaciers: Rivers of ice

Glaciers are the main type of erosion at elevations where it is cold enough for snow and ice to accumulate (collect) over a long period of time. **Glaciers** are slow-moving rivers of compacted snow and ice. Figure G1.1.2 shows a river of ice at the Gorner Glacier in Switzerland. Glaciers form when compacted snow, which has accumulated over many years, gradually moves downhill under the force of gravity.

The formation of a glacial valley is shown in Figure G1.1.3. As the glacier moves, the surface of the land is scratched and worn down by rock fragments that have been picked up from the ground and frozen into the base of the glacier. This process is known as **abrasion**. The most spectacular landform features of glacial landscapes are **U-shaped valleys**. These flat-floored valleys are formed during periods of glacial activity. Glaciers cause the valleys, which were once occupied by rivers, to deepen and widen. **Hanging valleys** form where smaller (tributary) glaciers join larger glaciers.

Other erosional features include **cirques** (small valleys that are shaped like an amphitheatre), **arêtes** (sharp-sided ridges separating two valleys) and **horns** (pyramid-shaped peaks of a mountain formed by three or more valleys).

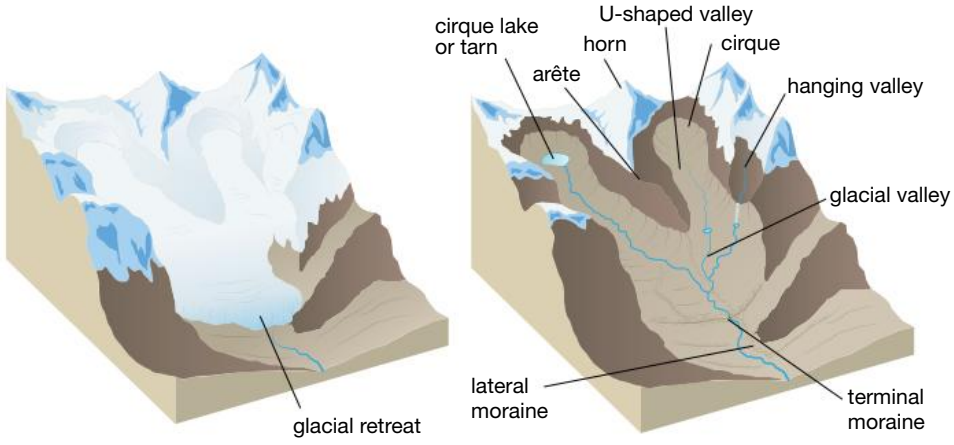


G1.1.2 A U-shaped valley at Gorner Glacier, Switzerland

Fjords are flooded valleys with steep sides, carved by glaciation. They form when rising sea levels flood the valleys that were once occupied by glaciers.

The rocks that are picked up and transported by the ice can be carried long distances before they are deposited. Once deposited, the rocks form features known as **moraines**.

LS G1A



G1.1.3 Glacial landforms during and after glaciation

Activities

Remembering and understanding

1. Explain how the extent of an alpine landscape is determined.
2. State what the term 'treeline' refers to.
3. In your own words, explain why the weather gets colder with altitude.

Applying and analysing

4. Identify the main types of erosion that shape alpine landscapes.
5. Discuss what glaciers are and how they shape the land.
6. Identify the landform features associated with the movement of glaciers (glaciation).

Evaluating and creating

7. Investigate Australian and Austrian alps by visiting the Australian Alps government website. Complete the following tasks.
   - **a** Write a description of the Australian Alps and include two photographs.
   - **b** Search for images of the Austrian Alps. Compare and contrast the processes that formed the Australian Alps and the Austrian Alps.
   - **c** Label photographs to highlight the differences in landforms and vegetation at the two locations.

G1.2 Glacial landforms and processes

Glacier formation

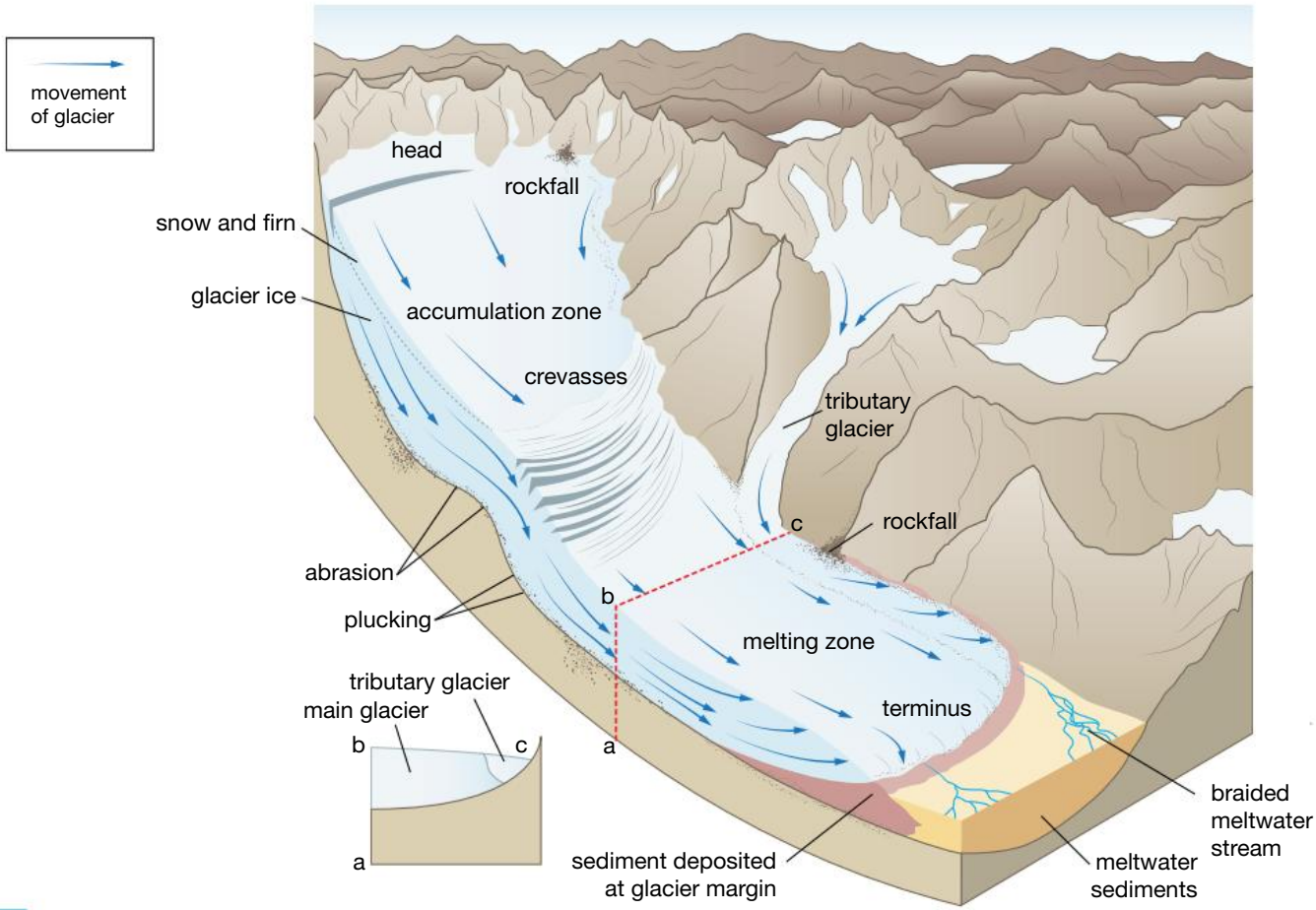
Glaciers are slow-moving rivers of ice. They are found in alpine landscapes where temperatures are below zero for most or all of the year. Glaciers create a range of distinctive landform features that give alpine landscapes their spectacular appearance.

When snow falls to the ground it forms a light, feathery layer that traps a lot of air. Where snow collects in a low area of land, or depression, it becomes compressed by more snowfalls. This gradually develops into a more compact, thick layer of snow. When this compacted layer of snow experiences one winter's freezing and survives a summer's melting it is called **firn**. Air is progressively squeezed out of the firn and after 20 to 40 years it becomes solid ice. In parts of Antarctica and Greenland where there is no summer melting, the same process can take more than 200 years. Large masses of this ice may begin to 'flow' downhill, under the force of gravity, as a glacier. The main features of a glacier are shown in Figure G1.2.1.

Glacier types

Glaciers are classified according to their size and shape. The five main types are:

- *niche glaciers*—very small accumulations of glacial ice that are found in depressions and gullies
- *cirque glaciers*—relatively small glaciers found in 'armchair-shaped' depressions in mountains
- *valley glaciers*—larger masses of ice that move down former river courses and are bounded by steep (almost vertical) valley sides
- *piedmont glaciers*—glaciers that form when valley glaciers extend onto lowland areas, spread out and merge.
- *ice caps and ice sheets*—huge areas of ice covering more than 50 000 square kilometres. Ice sheets once covered much of northern Europe and North America, but they are now found only in Antarctica and Greenland.



G1.2.1 Main features of a valley glacier



G1.2.2 A U-shaped, former glacial valley with hanging valley and associated waterfall and landforms found in Yosemite National Park, United States of America

Glacial inputs and outputs

Water enters the glacial system mostly as snow and leaves as meltwater. At higher elevations, inputs (snow accumulation or collections) exceed outputs (evaporation and meltwater). This area is called the **accumulation zone**. At lower elevations, outputs exceed inputs. This area is called the **melting zone**. It is shown in Figure G1.2.1.

Glacial erosion

Nearly all the glacial processes of erosion are physical, as the climate is too cold for chemical reactions to occur. Frost shattering (when water freezes in the cracks of rocks and expands, breaking them) is common and produces large amounts of loose rock. This rock material falls from valley walls to form **lateral moraine** along the edges of the glacier. Glacial abrasion, which is the scraping and grinding effect of rock material in the glacier, smooths and widens the U-shaped valley. U-shaped valleys are a distinctive characteristic of areas shaped by glaciation.

Large steep-walled bowls called cirques are located at the top of glacial valleys. When glaciers carve out valleys next to each other, a sharp-sided ridge (called an arête), will separate them. If several of these valleys begin near the top of a mountain, a sharp peak, or horn, is formed. A glacial hanging valley forms where a smaller tributary glacier joins a larger valley glacier. After the glacial ice melts, the valley formed by the smaller glacier is left 'hanging' high above the valley floor. Hanging valleys often have spectacular waterfalls, as shown in Figure G1.2.2.

Did you know?

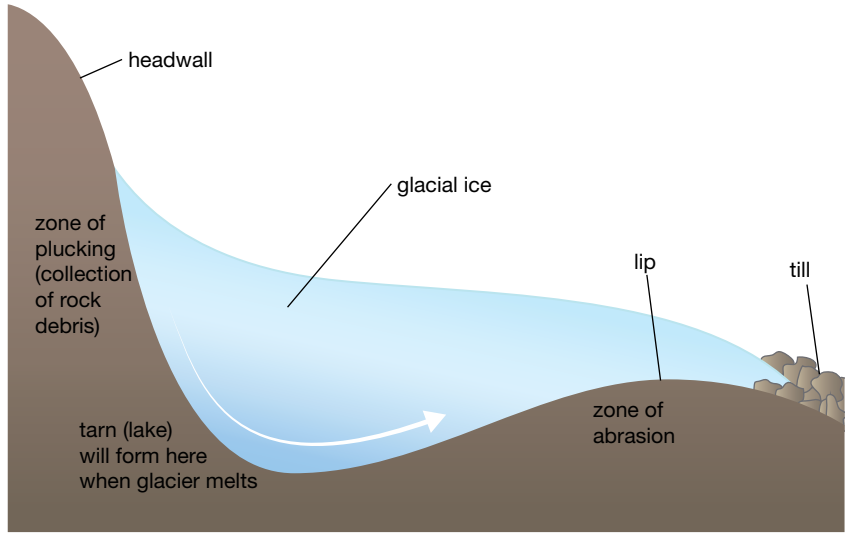
Ten per cent of the Earth's land area is covered with glacial ice, which includes glaciers, ice caps and ice sheets.

Spotlight

Formation of cirques

A cirque is a bowl-shaped landform feature often found at the beginning, or head, of a valley glacier. Carved by ice, this distinctive feature is usually surrounded on three sides by steep cliffs. The highest cliff is often called a headwall. The fourth side, known as the lip or sill, is the point at which the glacier flowed away from the cirque. Many glacial cirques are now occupied by tarns. A **tarn** is a lake-like feature that forms behind the till (rock debris) that collects at the lip. The ridge between two adjacent cirques is called an arête.

A glacial horn (or pyramidal peak), is formed when three, or sometimes four, cirque headwalls and their arêtes join together to form a single peak that has a distinctive pyramid shape with very steep walls. The number of faces that make up the sides of a pyramidal peak depends on the number of cirques involved in its formation.



G1.2.3 Formation of a cirque



G1.2.4 Blue Lake in Kosciuszko National Park is an example of a tarn.

Glacial transportation

Glaciers are able to move large amounts of rock material, known as moraine. There are three main ways this material is moved downhill. It can be moved on the surface of the glacier as lateral or **medial moraine**, as debris carried within the body of the glacier, or as material embedded in the base of the glacier, called **ground moraine**.

Glacial deposition

The rock debris carried by glaciers is deposited at the point at which the glacier melts. When glaciers retreat (melt), these materials are deposited across the exposed landscape. These deposits of rock across the face of a glacier are called **terminal moraines**. The terminal moraine can be used to establish the maximum advance of a glacier. This is because ground moraine is deposited as rock debris across a valley floor as a glacier retreats. Lateral moraine is rock debris deposited as an embankment along the valley sides as the glacier retreats. Medial moraine is found in the centre of a valley and results from the merging of two lateral moraines when two glaciers merge (see Figure G1.2.5).



G1.2.5 Aletsch Glacier, the largest glacier in Switzerland. The glacier's terminal, medial and lateral moraines are clearly visible.

Activities

Remembering and understanding

1 Explain the process of glacier formation.
2 State the difference between valley and piedmont glaciers.
3 Explain why physical rather than chemical weathering processes dominate in alpine areas.
4 Outline what is meant by the term 'abrasion'.
5 State the conditions under which arêtes and horns develop.
6 Study Figure G1.2.2. Write a paragraph explaining the circumstances in which hanging valleys develop.

Geographical skills

7 Study Figure G1.2.1. Sketch a glacier and label the main glacial landform features.
8 Study Figure G1.2.2. Construct an annotated photo sketch of Yosemite National Park, highlighting the key elements of the U-shaped and hanging valleys.
9 Study Figure G1.2.4. Construct an annotated photo sketch of Blue Lake, highlighting the key elements of the cirque.

LS G1B

G1.3 Alpine ecosystems

Factors influencing alpine ecosystems

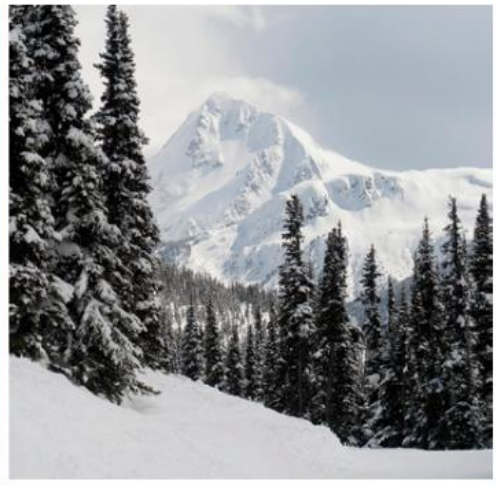
The factors that help to shape alpine ecosystems are altitude, slope and aspect.

Altitude

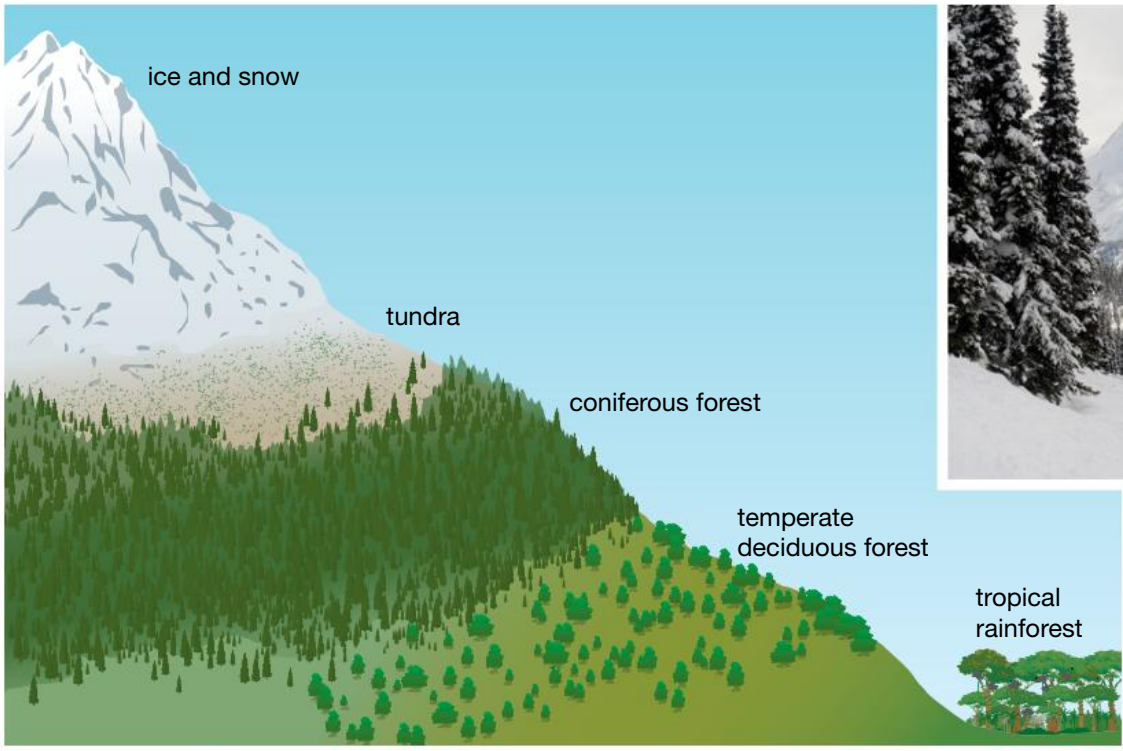
With increasing elevation (or altitude), air temperatures decrease and wind speeds increase. These changes have a major impact on plant growth. As you go up a mountain, you can see very distinct zones of vegetation (see Figure G1.3.1). At the highest zone there is no plant life, only ice and snow. The beginning of this zone is called the snow line. Below this zone is the tundra. (The flowering plants that grow in the tundra of the Rocky Mountains are shown in Figure G1.3.2.) Below the tundra is the coniferous forests zone (see Figure G1.3.3). Beneath the forest is the temperate or deciduous forests zone.



G1.3.2 The tundra above the treeline, Rocky Mountains, United States. Flowering plants have a brief and intense life, with a growing season as short as 30 days. During this time, the plants must race through the processes of germination, growth and reproduction.



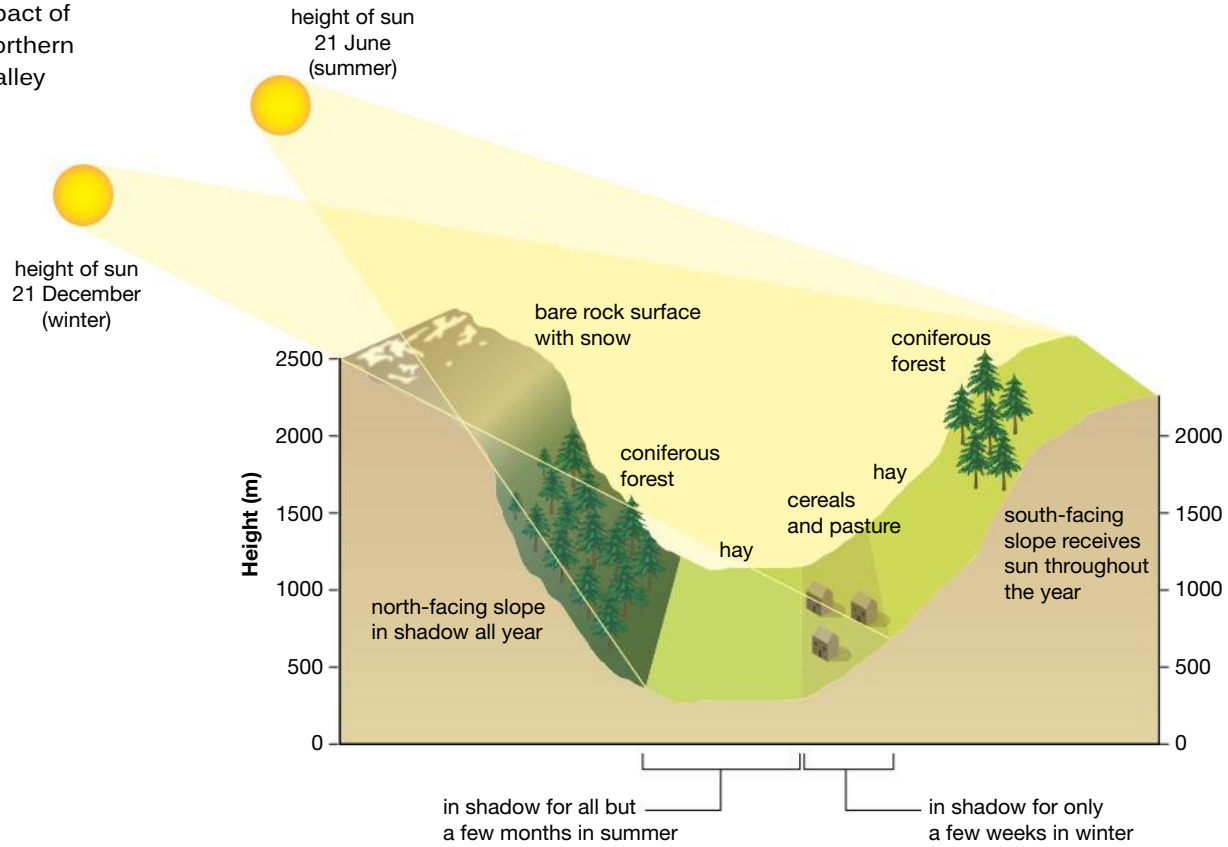
G1.3.3 A coniferous forest on the slopes of Canada's Whistler Mountain





G1.3.1 Ecosystems change with altitude.

G1.3.4 The impact of climate in a Northern Hemisphere valley



Slope

The degree of slope is important in alpine regions because it influences soil depth and moisture content. Rates of erosion are higher on steep slopes because moisture drains away quickly. This makes it difficult for steep slopes to support plant life.

Aspect

The aspect of a slope affects both light and temperature conditions. South-facing slopes in the Northern Hemisphere are more favourable for plant growth than those facing north (especially in winter). This is because north-facing slopes receive less direct sunlight, as illustrated in Figure G1.3.4. In the Southern Hemisphere, north-facing slopes receive more direct sunlight.

Alpine climates

Latitude, altitude and aspect interact to produce alpine climates. In general, the climate becomes colder with elevation. This characteristic is described by the **lapse rate** of air (the rate at which air temperature cools as it rises, because it expands). Dry air cools as it rises at a rate of 10°C per kilometre of altitude. Therefore, the temperature at the summit of a 4000-metre-high mountain will be up to 40°C cooler than the sea-level temperature. This vertical variation in temperature determines which flora and fauna can survive at different altitudes.

Did you know?

Alpine plants and animals are restricted to an area between the treeline and the mountain summit. In Australia, there are more than 250 species of alpine plants that grow only in this restricted habitat.

Activities

Remembering and understanding

1. Explain how altitude affects plant growth.
2. Outline how slope affects the potential for plant life in mountain environments.
3. Outline how aspect affects the pattern of vegetation in mountain environments.

Applying and analysing

4. Study Figures G1.3.2 and G1.3.3. Write down the vegetation differences you observe in the different alpine environments.
5. Study Figure G1.3.4. Explain the impact that aspect has on the valley shown in the diagram. If you were going to build a house, where would you build it? Justify your answer.

G1.4 Managing Australia's alpine environments

Location of Australia's alpine environments

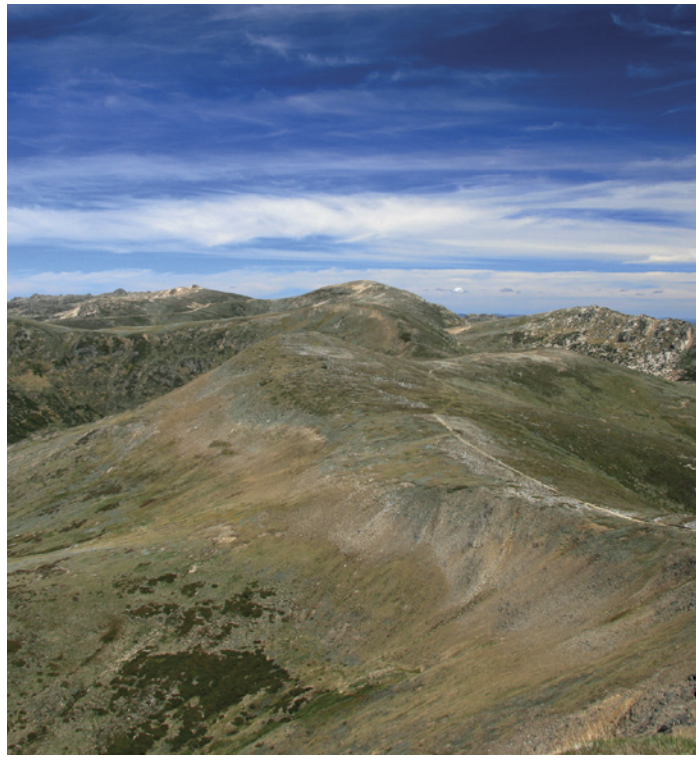
Australia's alpine areas are found on both sides of the mountains and plateaus of the highest part of the Great Dividing Range. This is the only region on the mainland where snow accumulates on the ground, forming a snowpack that remains throughout winter. Australian alpine environments are unique and vulnerable.



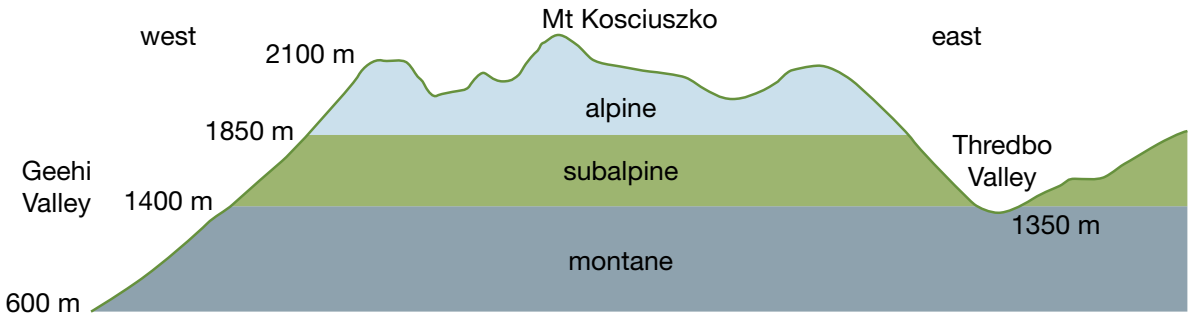
G1.4.1 Australia's alpine environments

Alpine environments

The word 'alpine' is used to describe all snow-covered areas. In the strictest sense it refers to the higher country where it is too cold for trees to survive, such as the Main Range of Kosciuszko National Park. On mainland Australia this occurs at 1800 metres (shown in the cross-section of Kosciuszko National Park). In Tasmania it occurs at 1200 metres.



G1.4.2 The Main Range of Kosciuszko National Park, where it is too cold for trees to grow at the highest elevations



G1.4.3 Cross-section of the Kosciuszko National Park alpine landscape

Environmentally significant features

Australia's alpine regions are an important part of Australia's natural and cultural heritage.

Natural values

Australia's alpine region includes:

- landforms such as cirque lakes (tarns) resulting from glacial activity during the last Ice Age
- unique flora and fauna communities that have adapted to the harsh conditions of low temperatures, frequent frosts and strong, cold winds. The alpine marsh marigold actually flowers under the snow in icy meltwater, enabling it to have enough time to flower and set seed in the brief summer
- rare cold-climate animal species such as the mountain pygmy possum and the corroboree frog. Many of these species are **endemic**, which means they are only found naturally in the alpine region. Several species are restricted in their distribution to within 5 or 6 kilometres of Mount Kosciuszko
- the only mountains in the world with such a substantial covering of soil. The humus soils (soils with a high content of organic matter) are globally significant.



G1.4.4 The mountain pygmy possum

Cultural values

The following aspects of the alpine region are an important part of Australia's cultural heritage.

- Aboriginal peoples have a living spiritual connection with the mountains. Researchers believe their summer visitation started 9000 years ago. Tribes travelled long distances to hold celebrations in the mountains. While there, they feasted on Bogong moths.
- There is a cultural history associated with European grazing of the alpine area that dates back to the 1830s. Legends of the high-country horsemen and relics such as stockyards and huts are valuable elements of Australia's colonial heritage.
- The mountains are significant water catchments and the Snowy Mountains Hydro-electric Scheme is one of the world's most complex engineering feats. The scheme enables water to be collected and diverted through the mountains to inland New South Wales and Victoria, where it is used for irrigation.
- People have long visited the mountains for recreation, to enjoy the spectacular scenery in the summer, and to ski or snowboard in the winter.

A fragile environment

While the species that survive in the climatic extremes of the alpine area are hardy, their survival depends on their environment remaining the same. Historically, considerable damage has resulted from human land-use practices in the mountains. Today, there are still a number of risk factors.

Damage from grazing

Records show that graziers started bringing large numbers of sheep and cattle into Australia's alpine environments in the early 1820s. They were in search of pastures and water. The heavy, hard-hoofed animals caused considerable damage to the native alpine vegetation, resulting in severe soil erosion. Grazing continued for over 120 years.

The pressure of tourism

As numbers of tourists grow, increasing pressures are placed on the environment. Vegetation is trampled, rubbish and human waste are left behind, and damage is caused by people camping in the wrong areas. Victoria's five alpine resorts attract up to 900 000 people each winter. An increasing number also visit outside the snow season. The New South Wales ski resorts, including Thredbo and Perisher Blue, attract 1.2 million visitors a year and are important sources of employment for those living in the region.

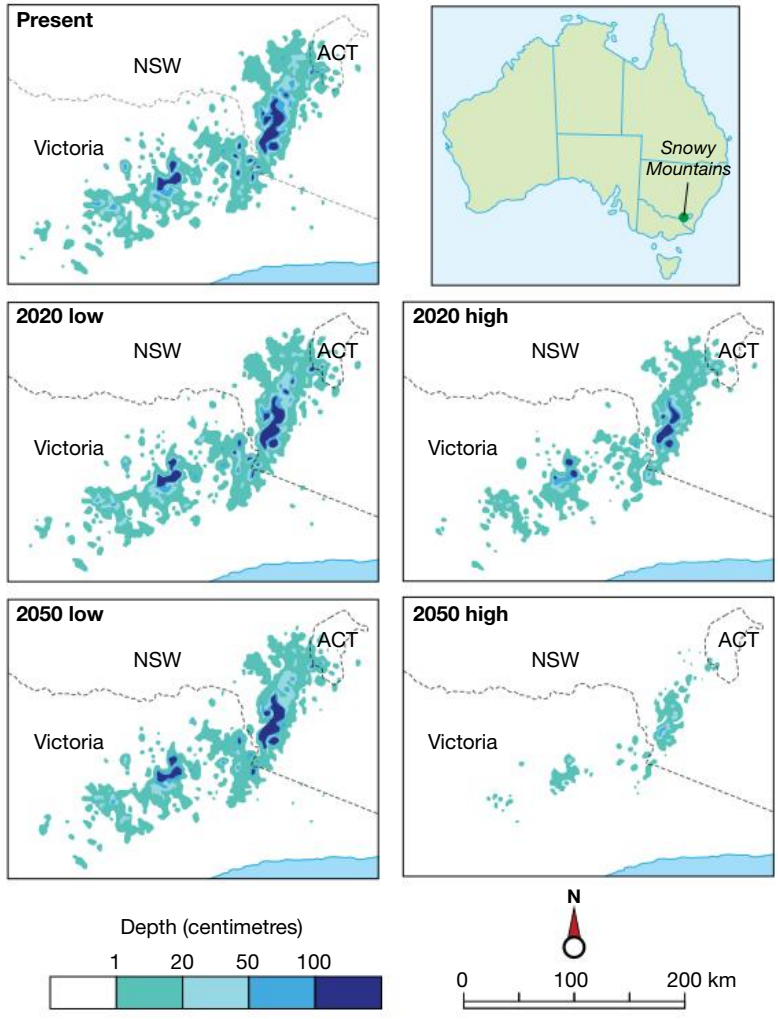


G1.4.5 Victoria's Mount Hotham has thousands of visitors each year. A range of sustainable practices have been implemented to minimise environmental impacts.

The threat of climate change

Climate change has the potential to lead to a reduction in snow cover. This is because milder temperatures will result in fewer snow days and a reduced depth of snow. If the change is too rapid, species will not have a chance to adapt. Australian alpine areas are particularly vulnerable, as they occupy only 0.00001 per cent of the continent. The impact of global warming would significantly reduce the size of this already small area. Current snow cover and projected reduction in snow cover up until the year 2050 is shown in Figure G1.4.6. The two projected scenarios are:

- *low scenario*—the lowest projected level of global warming combined with the highest levels of precipitation
- *high scenario*—the highest projected level of global warming combined with the lowest levels of precipitation.



G1.4.6 Current and projected decline in Australia's snow cover. The two predictions show the impact of 'high' and 'low' temperature rises due to climate change.



G1.4.7 Paths and boardwalks are used to protect fragile landscapes at Mount Kosciuszko.

Environmental management

Australia's alpine national parks are included on the Australian National Heritage List. With this recognition comes the responsibility to manage and protect them for the benefit of future generations.

The management plans for Australia's alpine national parks aim to:

- protect the unique mountain landscapes
- protect the region's natural and cultural values
- provide an appropriate range of outdoor recreation and tourism opportunities that encourage the enjoyment, education, understanding and conservation of natural and cultural values, and protect mountain catchments.

Management also includes guarding against the impacts of:

- introduced plants and feral animals
- soil erosion
- fragmentation or division of habitats
- pollution of waterways
- incompatible human activities.

Minimal impact is one strategy used to protect the alpine environment. Under this strategy, all users of the parks are asked to reduce their environmental impact. Educational and information brochures on minimal impact are distributed to visitors. People are asked to take all rubbish out of the park, stay on tracks, camp well away from watercourses and fragile landscapes, use fuel stoves instead of wood fires for cooking, leave all Aboriginal and historic sites undisturbed, and avoid disturbing any plants, rocks, logs or animal nesting sites.

Activities

Remembering and understanding

1. Justify the protection of Australian alpine environments.
2. Define the term 'endemic species'.
3. Explain how the Australian Alps differ from mountainous areas elsewhere in the world.
4. Outline the threats to Australian alpine environments.

Applying and analysing

5. Use the 'think, pair, share' strategy to complete the following tasks.
   - **a** Consider why the treeline that marks the beginning of the alpine area is at a lower elevation in Tasmania than on the mainland.
   - **b** Assess the impact of grazing on soil formation in the alpine environment of Australia.

Evaluating and creating

6. Create a poster designed to educate visitors to the Australian alpine parks on how to minimise their environmental impact.

LS G1C

G1.5 Australia's alpine national parks

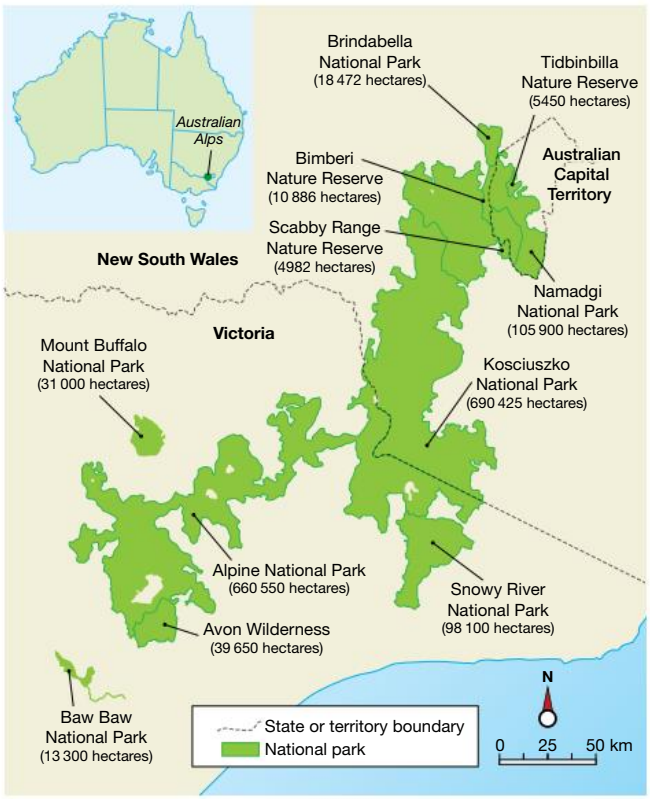
National parks

Australia's unique alpine areas are protected by a system of eleven national parks and reserves. They cover 1.6 million hectares, stretching south from Canberra, through the Brindabella Range, to the Snowy Mountains of New South Wales, and along the Great Divide through eastern Victoria.

The alpine environment

The climate, soils and landforms of the region change as altitude increases. As a result, there are a variety of environments in which different plant communities dominate. In turn, these plant communities provide habitats for a wide range of native animals. Many of these plants and animals are found nowhere else in the world, and some are threatened or endangered. Many species are found both within and outside the alpine national parks and reserves (see Figure G1.5.1).

The Australian Alps are home to many species of animals that are native to the region. These include more than 40 species of native mammals, 200 bird species, 30 reptile species, 15 amphibian species, 14 native fish species and many species of invertebrates (such as insects). The region is the only part of mainland Australia that has reliable winter snow cover. The plant species that grow there have evolved special characteristics in response to the harsh environment. This includes sub-zero temperatures, burial by snow for months at a time and a short growing season.



G1.5.1 Australian Alps national parks

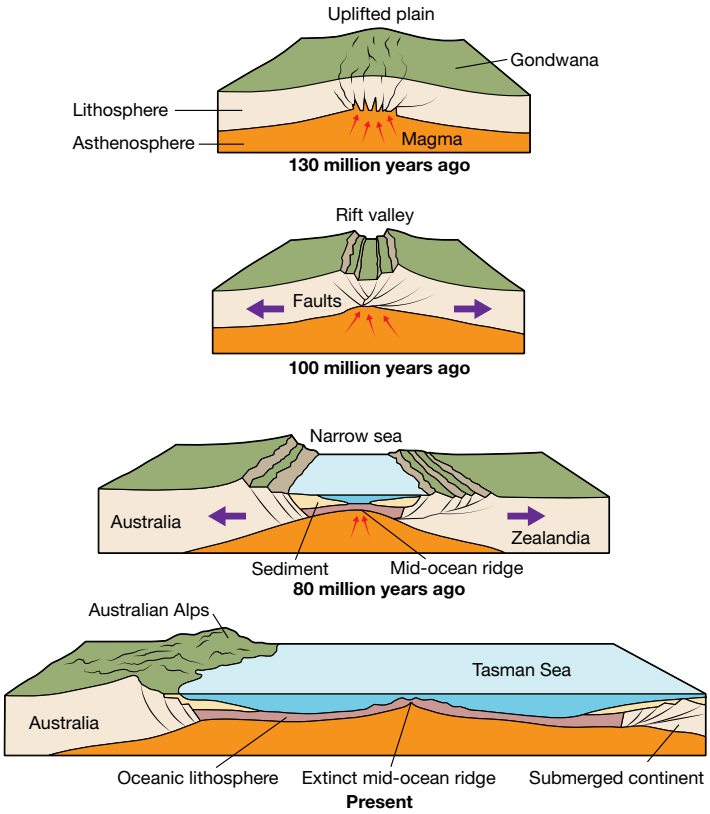
The highest part of the Alps, above the treeline, is shown in Figure G1.5.2. Here, alpine heaths, herbfields, bogs and fens (a marshy, often flooded area of land) are found. Plants include the yellow billy buttons, pink trigger plants, and white snow and silver daisies. Below the treeline, the alpine woodlands are dominated by snow gums, montane and wet sclerophyll forest (typically Australian vegetation, with short, hard and often spiky leaves, such as wattles and banksias), alpine ash and mountain gum.



G1.5.2 Lake Cootapatamba, New South Wales, was formed by ice spilling from Mount Kosciuszko's southern face.

Landforms

There is a range of distinctive landform features in the Australian Alps. Some of them date from the last glacial age, which peaked about 20 000 years ago. The climate of the highest peaks of the Main Range, near Mount Kosciuszko, was cold enough for glaciers to form. Evidence of this glaciation can still be found. Figure G1.5.3 shows how the Australian Alps were formed. The process started about 130 million years ago when magma pushed up to create an uplifted plain. About 100 million years ago, a rift valley was created and the landmass began to spread apart. As the spreading of the sea floor continued, a narrow sea became the Tasman Sea and the Australian Alps were formed.



G1.5.3 The formation of the Australian Alps

Human impacts

Indigenous Australians visited the Alps for thousands of years, leaving little obvious evidence of their presence. However, the impact of Europeans has been much more obvious and severe. The first European explorers visited in the early 1800s and graziers followed in the 1820s. Goldminers arrived in the 1850s, hoping to strike it rich. Skiing was introduced to Australia at Kiandra goldfields in New South Wales in the 1860s. The past 60 years have seen the development of large hydro-electric and water supply schemes, extensive road infrastructure, ski resorts and other tourist facilities. Tourism is central to the economy of the region, and Kosciuszko National Park receives more than 3 million visitors each year.

While the alpine landscape may appear to be a rugged and at times harsh environment, it is actually very fragile and sensitive to disturbance. Careful management is needed if this unique environment is to be protected for the benefit of future generations.

Activities

Remembering and understanding

1 Describe the biodiversity of the alpine region and outline the factors that influence this diversity.
2 State what is special about the landform features surrounding Mount Kosciuszko.
3 Outline the nature of the human impacts on the alpine environment over time.
4 Explain why Australia's alpine environments need protecting.

Applying and analysing

5 Hypothetical: 'It has recently been proposed that local graziers be allowed to graze their cattle in the alpine areas of Kosciuszko National Park. The New South Wales State Government is considering the request.' Consider this statement and list the arguments for and against allowing farmers to graze their stock in Australia's alpine region.

Geographical skills

6 Study Figure G1.5.1.
  a Describe the shape of the national park network through the Australian Alps.
  b List and name the number of national parks in the Australian Alps.
  c List the smallest and largest national parks.

Evaluating and creating

7 Throughout this chapter we have learnt about the importance of preserving and conserving alpine regions in Australia and around the world. Investigate examples of alpine environments of national and global significance. Analyse the following statement with reference to the examples you have investigated.
'The globally accepted purpose of a national park is to preserve nature and heritage.'
Your response should demonstrate your understanding of the value (economic, social and environmental) of special landscapes and why custodians of the land have important roles to play.

LS G1D



Riverine landforms

G2

Water has travelled across landscapes and sculpted the surface of the land for millions of years. In this chapter we examine the processes shaping riverine (river-based) landscapes and landforms. We also look at how the activities of people impact on riverine landscapes. In particular, we look at the Bow River catchment in Canada to examine the landforms shaped by rivers and the ways in which people affect such riverine environments.

OVERVIEW QUESTIONS

G2A What are the processes responsible for the formation of riverine landscapes and landforms?

G2B How do riverine landforms change over the course of a river?

G2C Why are rivers important for humankind?

G2D How do the activities of people affect riverine landscapes and landforms?

GLOSSARY

abrasion the wearing down or wearing away of rock by friction (rubbing) against other hard surfaces or materials

attrition the wearing away of material due to the friction caused by particles rubbing against each other

bed load material transported along the bed of a river

braided channels river channels (pathways) featuring a network of small channels separated by small and often temporary islands of sediment

catchments areas drained by rivers and their tributaries; an alternative term for 'river basin' or 'drainage basin'

deltas extensive deposits of alluvial material (sediment) at the mouth of a river

deposition the accumulation or build-up of sediment by the action of erosional agents (water and wind)

discharge the amount of water that flows from a river catchment and into another river system, a lake or the sea

flood plain a nearly flat plain along the course of a river that is subject to flooding

gradient a measure of the steepness of a slope

groundwater water found beneath the Earth's surface in pores or tiny spaces in the earth or rock

infiltration the movement of water from the land surface into the soil

meandering bending or curving in the course of a river

rapid a section of a river with a relatively steep gradient (slope) that causes the velocity and turbulence of water to increase

sediment rock-based material that has been broken down by weathering and erosion, and then transported by the action of wind, water or ice, and the force of gravity

suspended load fine particles of silt and clay carried in river water

turbidity muddiness; high turbidity occurs when there are high levels of suspended sediment in water

watershed a high area of land that divides the flow of water; the boundary between catchments

G2.0.1 Horseshoe Bend, Colorado River, United States of America. This landscape has been formed over thousands of years, slowly eroded by the river.

LS Before you begin

G2.1 Rivers

Power of rivers

Rivers are responsible for shaping most of the landforms covering the Earth's surface. They are powerful agents of erosion and they transport vast amounts of **sediment** (rock-based material) that is eventually deposited (laid down) to form a range of depositional landform features.

River erosion

Rivers erode the land they flow over. This erosion occurs through the processes of:

- ***abrasion***—sediment in the river grinds against the beds and banks of the river channel. This action dislodges material and carries it away



G2.1.1 The meandering (curving) Uvac River in Serbia has transformed the land over time.

- ***attrition***—dislodged materials that are being carried by water collide with each other. Over time, they become smaller and are eventually reduced to fine particles called silt
- *corrosion*—the solvent action of water dissolves soluble materials and carries them away in solution
- *hydraulic action*—the rocks are broken down, usually along lines of weakness, in the rock lining the river channel.

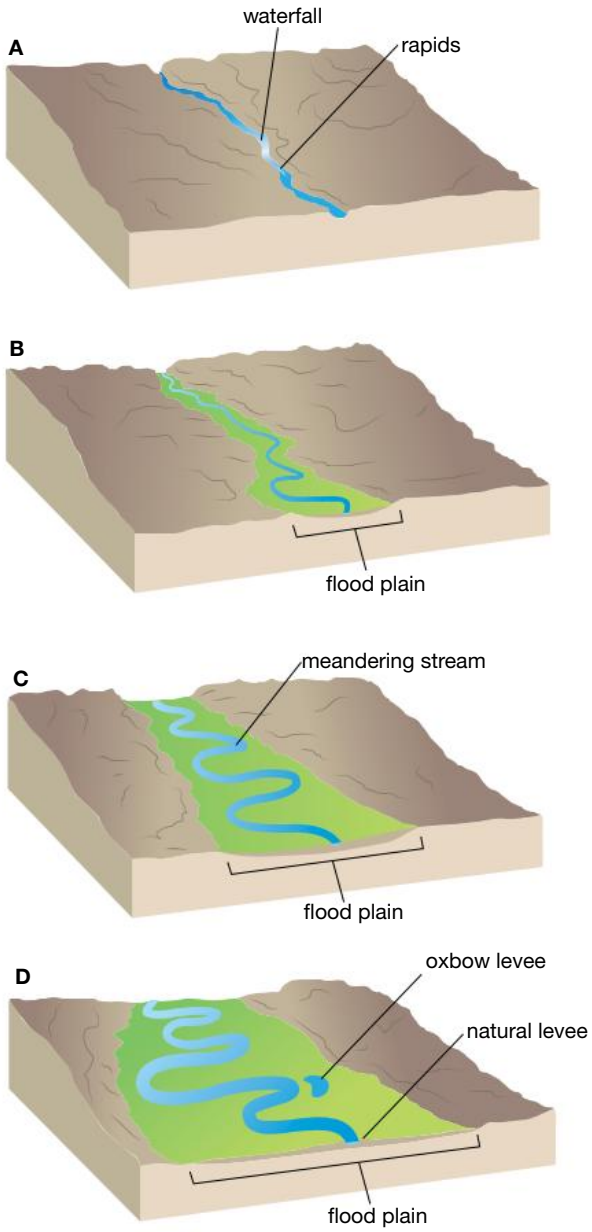
Transporting sediment

The eroded sediment in a river is transported as either **bed load** (larger fragments that move along the riverbed) or **suspended load** (the finer fragments that are carried in the water). This process is illustrated in Figure G2.1.2. Transported sediment will eventually be subject to **deposition**, which means it is deposited (laid down) after being released from the water, usually due to a reduction in the speed of water flow.

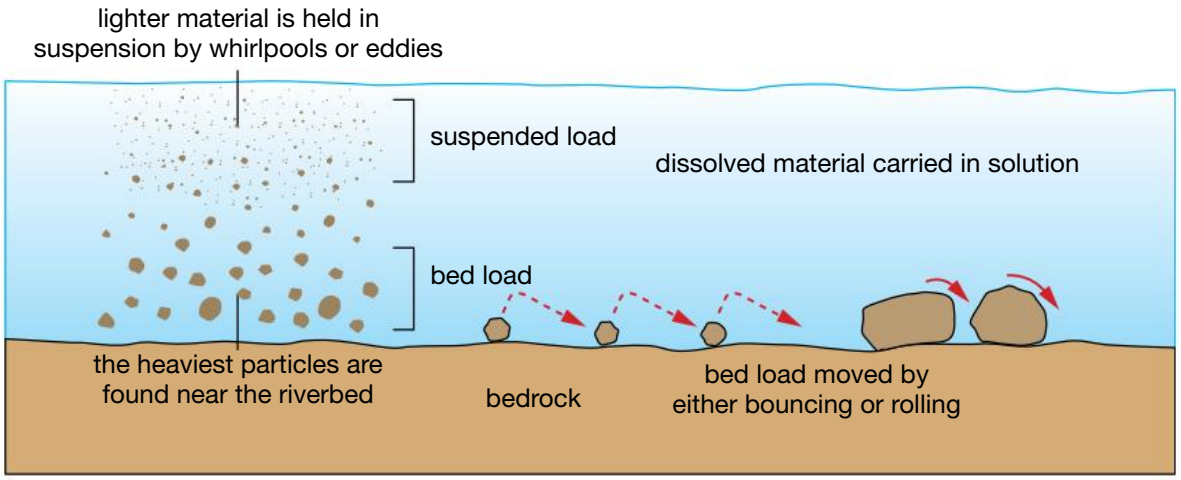
Transforming the land

As a river flows from its source towards where it empties into the sea or lake, it changes the land.

Usually a riverine landscape will change from a narrow V-shaped valley in the upper reaches of the river to a broad, meander-dominated river valley in its lower reaches (see Figure G2.1.3). In the upper reaches or sections of the river (A), it is narrower and usually has a rapid, tumbling flow that cuts a narrow channel through rocky hills or mountains. Over time, a small **flood plain** (a nearly flat plain along the course of a river that is subject to flooding) develops. The first signs of river **meandering** (bending or curving) appear (B). In the middle reaches of a river the flood plain develops further. A series of meanders form in the sediment deposits that have accumulated on the valley floor (C). In the lower reaches of a river, the flood plain is broad and the meandering river channel is well developed (D). The presence of oxbow lakes suggests that the course of the river has changed over time. These lakes are a U-shaped, freestanding body of water that is created when a meander is cut off from the main river.



G2.1.3 Riverine landscapes change over the course of the river.



G2.1.2 The process of sediment transport in a river

Catchments

When rain or snow falls, some water soaks into the ground. This process is known as **infiltration**. The rest of the water runs over the surface of the land and is referred to as 'run-off'. The high points in the landscape determine which river system the water flows into. This is called a **watershed**, or divide. The watershed forms the boundary between river **catchments**, or drainage basins (see Figure G2.1.4).

Drainage patterns

Rivers are fed by a network of smaller rivers or streams, called tributaries. These tributaries form different patterns depending on the nature of geology (the structure of the land, for example sandy soil) and topography (the shape of the land). For example, hard rock such as basalt is difficult to erode, so rivers or streams tend to flow around this type of rock, influencing the course of the river.

Rivers as systems

A river catchment is an open system and is part of the water cycle. When a catchment is viewed as a system, the terms 'inputs' (precipitation) and 'outputs' (evaporation, transpiration and human use) can be used. Within the system some of the water is stored in lakes or the soil, at least temporarily. From here, it may be accessed by plants, animals or humankind.

Impacts on rivers

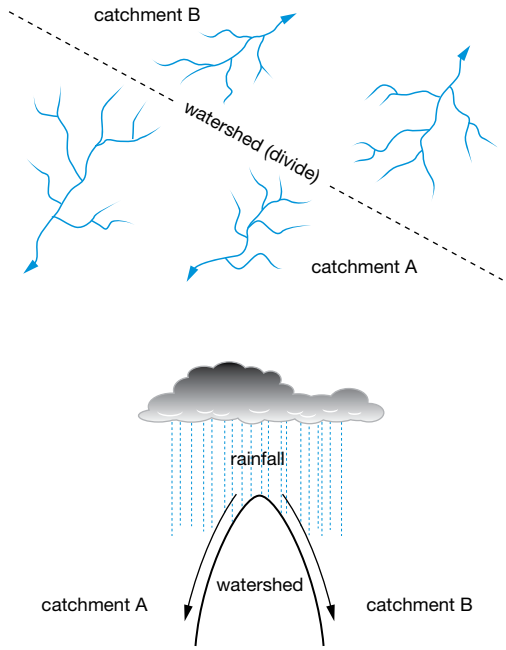
There are many factors that determine the nature of a river and its associated landforms.

Geology

The geology of a catchment affects the nature of the river in at least two important ways. The first is the rate of infiltration. The second is the type and amount of sediment that washes into rivers. For example, sandstone landscapes produce very porous, sandy soils. Erosion of sandstone therefore creates a sandy river system. The geology also influences the river channel pattern. A river will flow through an area of weaker rock types (such as sandstone) or along fault lines, which are areas of relative weakness within the rock.

River basin topography

The size, shape and **gradient** (slope) of the catchment or river basin have a major impact on the rate of the river's **discharge** (the amount of water that flows from the river catchment). Large catchments tend to discharge more water over a longer period of time than smaller ones. Also, a steeper gradient causes water to drain more quickly.



G2.1.4 A watershed, or divide, separates water catchments.

River channels

As water passes over land, friction slows down its movement. Figure G2.1.5 shows a cross-section of a river. The fastest flowing water is found in the part of the river that is least affected by frictional drag.

Areas more affected by frictional drag are those that have more rough surfaces for the water to travel over. For example, when water has to flow over boulders on a riverbed, frictional drag slows the velocity (speed) at which the water travels (see Figure G2.1.6A). Because there is less resistance on a smooth riverbed, water velocity increases towards the mouth of a river (see Figure G2.1.6B).

Soils and vegetation

The soils and vegetation of a catchment also affects the amount and rate of water run-off. If soils are sandy, much of the water soaks into it. Thick groundcover vegetation also increases water absorption. Clay soils are heavy and water is not easily absorbed. When clay soils with little vegetation cover have been saturated (filled with water) from previous rainfall, there is much greater water run-off and sometimes flooding, as any additional water cannot soak into the soil.

Climate

Precipitation and temperature have a major influence on the amount of water that flows through a river catchment. High temperatures increase the rate of evaporation during and after rainfall. This reduces infiltration and run-off. Under cold conditions, precipitation in the form of snow often accumulates at higher altitudes. This does not provide much run-off until it melts in warmer temperatures. Therefore, rivers that have their source in cold alpine regions often have a seasonal flow of water, peaking mostly in warmer conditions when snowfall melts.

Velocity, capacity and discharge

Velocity

The velocity, or speed, of water within river channels is influenced by:

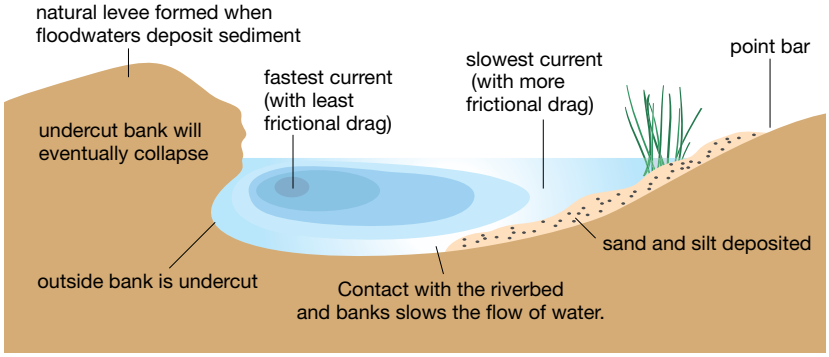
- *the shape of the channel*—the rate of flow is fastest in channels that are as deep as they are wide. The velocity is slower in channels that are wide but very shallow, or very deep but narrow
- *the roughness of the channel bed and banks*—water flowing through a channel full of large rocks is more turbulent, but slower, than water flowing through a channel lined with fine silt
- *the gradient or slope of the river*—as a river approaches the sea its gradient decreases, but because more water is added to the channel, the velocity of the river actually increases.

Capacity

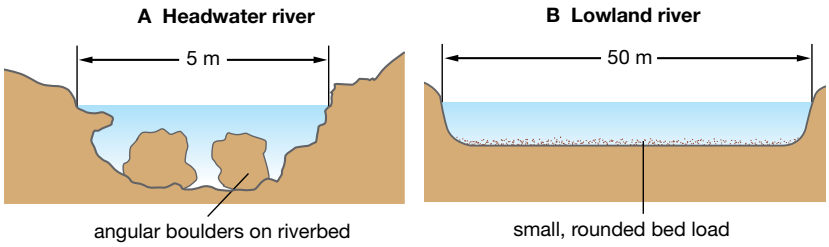
Stream capacity is the ability of a river to transport its load of sediment. It is expressed as the amount of sediment that can be moved past a particular point over a specified period of time. Stream capacity increases as the size of the sediment carried in the channel decreases, and as stream discharge (the amount of water that flows from the river) increases.

Discharge

Discharge is the amount of water that flows from a catchment into another river system, the sea or a lake. It is expressed in cubic metres per second.



G2.1.5 Water velocity in the cross-section of a river



G2.1.6 Frictional drag slows the velocity of water as it moves over land. This is why the velocity of a river slows in headwater rivers that are far from its meeting point with another river (A), and increases in lowland, or low-lying, rivers (B).

Did you know?

A river running down a steep slope will run at its maximum velocity. Therefore, the shape of the river will be very narrow. The width of a river increases as the gradient and velocity decrease.

Activities

Remembering and understanding

1. Define 'abrasion' and 'attrition', noting the differences between the two.
2. Explain what corrosion and hydraulic action are.
3. State what a catchment is and outline the role of the watershed.
4. Outline the ways in which a river can be thought of as a 'system'.
5. Outline the factors that influence the velocity of water in a river channel.
6. State what is meant by the term 'stream capacity'.
7. Define the term 'discharge'.

Applying and analysing

8. Distinguish between bed load and suspended load.
9. Study Figure G2.1.3. Outline how and why the nature of riverine landscapes and landforms changes along the course of the river, beginning at its headwaters or source.
10. Study Figure G2.1.5. Explain why water velocity is fastest at the point highlighted in the illustration.
11. Study Figure G2.1.6. Explain why average river velocity is greater in the lowland stretches of a river.
12. Construct a mind map illustrating the factors that determine the nature of rivers.

LS G2A

G2.2 Riverine landforms

Riverine landforms

There is a wide variety of riverine, sometimes referred to as 'fluvial' landform features. This range or diversity results from the ways the river interacts with the geology and topography of the land. The nature of the vegetation and the activities of people also play a role.

Upstream landforms

In the upper reaches near the river's source, the channel is often narrow and deep, and the gradient is generally steeper than further downstream. This results in the development of a number of distinctive landform features, including V-shaped valleys, rapids (sections of turbulent river water) and waterfalls.



G2.2.1 V-shaped valleys develop in sections of the river where erosion cuts downwards more than it does sideways.

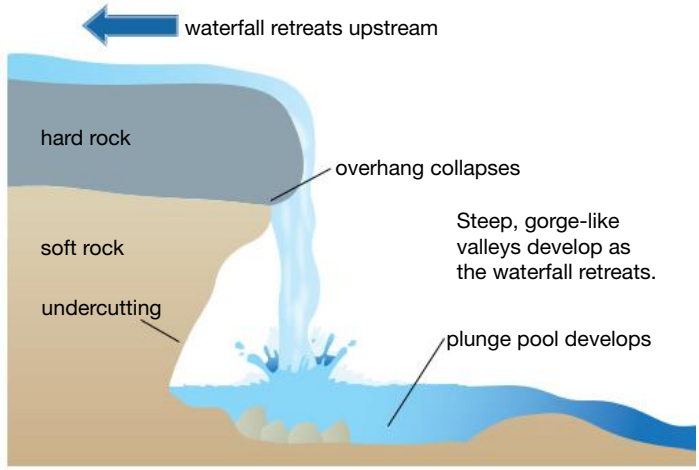
V-shaped valleys

The turbulent, fast-flowing waters of the upper reaches of a river generate a great deal of corrasion, which is erosion of the Earth's surface by materials that are transported across it, such as rocks crashing against the riverbed. In this part of the river, erosion cuts downwards more than it does sideways. The development of a V-shaped cross-sectional profile is the result (see Figure G2.2.1).

Rapids and waterfalls

A **rapid** is a section of a river with a relatively steep gradient that causes the velocity and turbulence of water to increase. In a rapid, the river is generally shallower and large rocks are exposed above the surface.

Waterfalls occur where water plunges over a vertical drop in the course of a river. They are most commonly found where the river channel is narrow and deep (that is, V-shaped). Figure G2.2.2 illustrates the formation of a waterfall. When a river comes into contact with a harder layer of rock, the rate of erosion slows. As the water plunges over the edge of the harder rock it creates turbulence, which erodes any underlying softer rock.

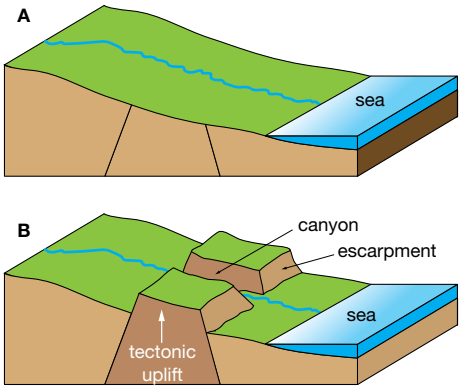


G2.2.2 Waterfalls develop when a harder layer of rock slows the downward rate of erosion. Repeated undercutting and collapsing of the overhang cause the waterfall to retreat over time—it appears to move 'backwards' upstream.

Tectonic influences

Tectonic forces can also impact on riverine landform features. Figure G2.2.3 shows what can happen when a section of land is uplifted either slowly or rapidly. If the rate of uplift is slower than the downward rate of erosion, a canyon will form. If the rate of uplift is faster than the downward rate of erosion, the path of a river can be blocked or a lake formed.

G2.2.3 The impact of geological processes on river systems



Slow tectonic uplifts may allow the river to maintain its existing path but result in the formation of canyons or valleys.

Rapid tectonic uplifts can result in changes to drainage patterns and the formation of lakes.

Downstream landforms

In the lower reaches of a river that is characterised by depositional landforms, the water speed slows.

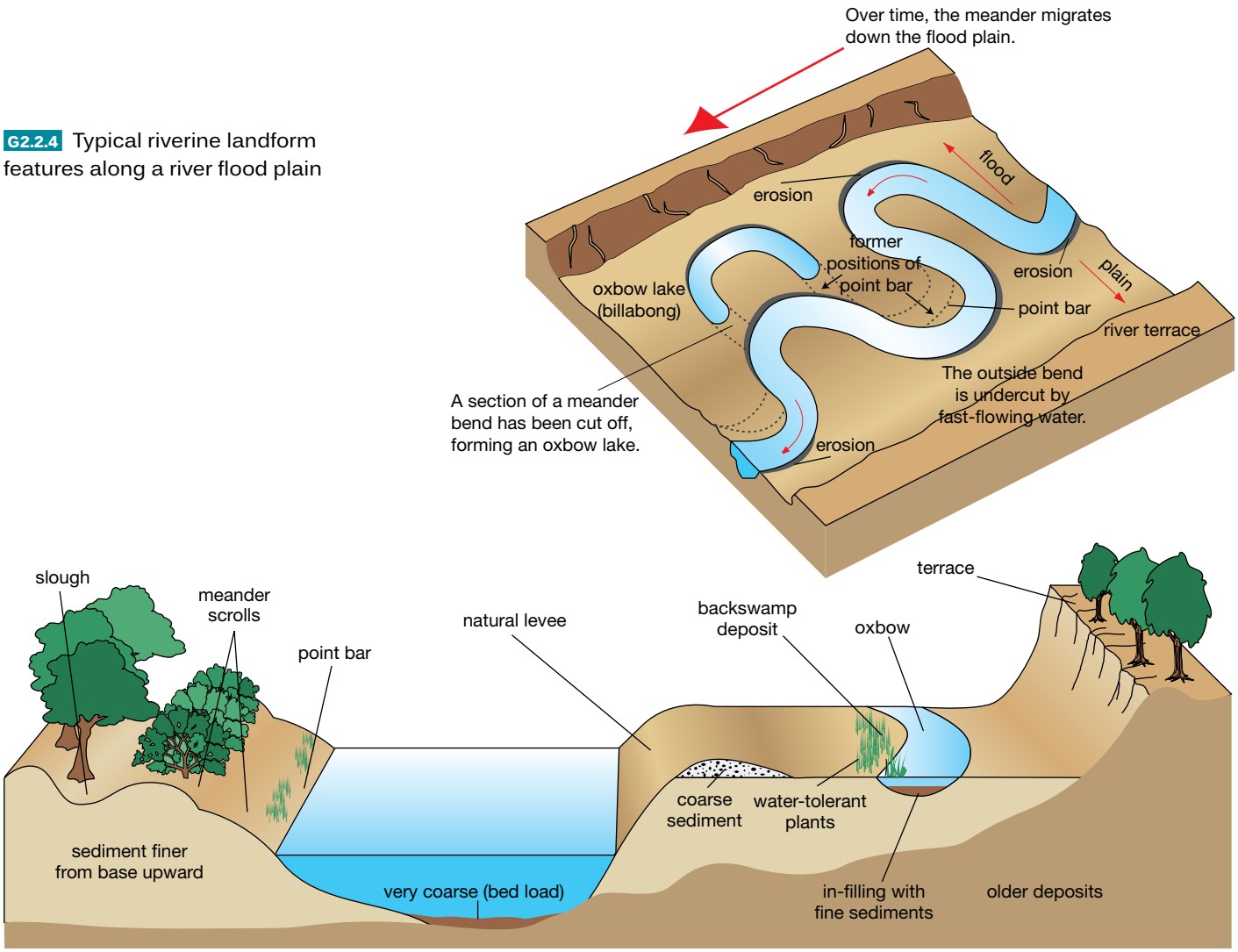
Flood plains

A flood plain refers to the flat or nearly flat land on either side of a river. It stretches from the banks of the river channel over the area inundated (flooded) when the river is at its peak. The landform features of the flood plain change over time. During floods, the waters of a river are capable of eroding, transporting and depositing vast amounts of sediment. The landform features of the flood plain are shown in Figure G2.2.4.

Natural levees

As sediment-full floodwaters spread out across the flood plain, they quickly lose speed. Much of the suspended silt and sand settles on the ground. The greatest amount of deposition (accumulation of sediment) occurs close to the channel. This causes a natural levee (raised area or bank) of elevated ground to develop on either side of the main channel (see Figure G2.2.4).

G2.2.4 Typical riverine landform features along a river flood plain



Braiding

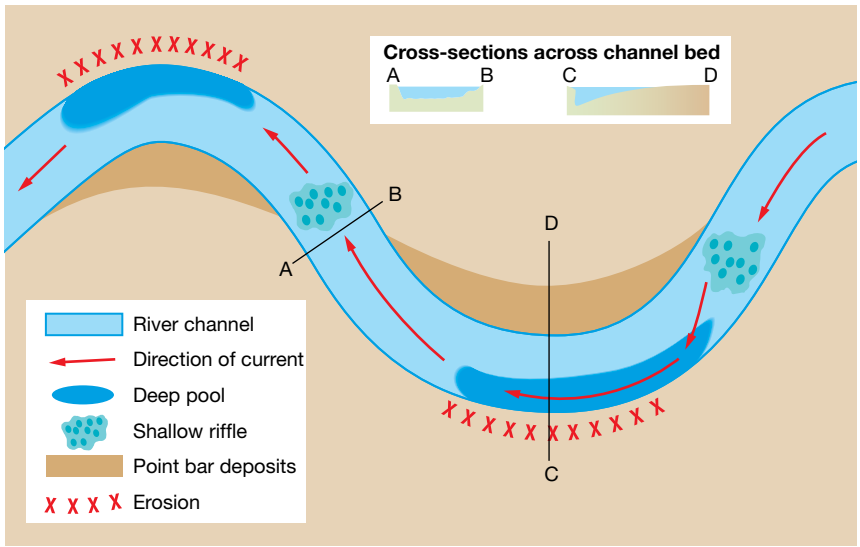
When a river becomes choked or full with sediments it divides into a series of **braided channel**s (networks of small channels separated by small and often temporary islands of sediment; see Figure G2.2.5). The sediment 'islands' are a feature of braided channels. Braided channels are common in regions with seasonally heavy precipitation (for example in alpine and semi-arid areas) and heavy loads of sediment.



G2.2.5 A braided river channel, Murray River, Victoria

Meanders

Meanders are the repeated curves of the river channel. They are formed when the moving water in a river erodes the outer banks and widens its valley. Meanders are more common in areas where rivers flow through flat land.

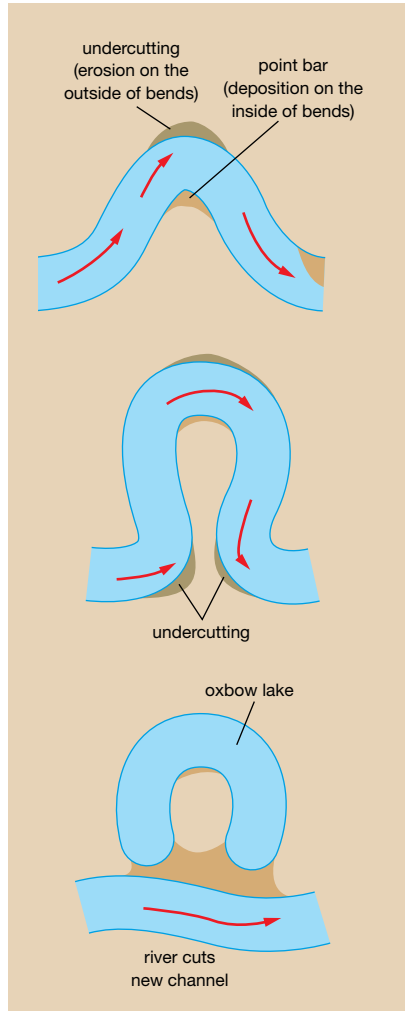


G2.2.6 Features of a meandering river

Meanders are formed from deep pools and shallow riffles (shallow gravel bars) in the river channel. As water travels past a riffle it is deflected towards the outside bank. As the river undercuts the outside bank, the meander migrates or moves outwards. Point bar deposits build up on the inside of the loop. This process is illustrated in Figure G2.2.6.

Oxbow lakes

The meander loops grow larger and larger until the channels almost meet. During floods, there is an increase in the amount and speed of water. This may cause the river to cut straight across the narrow neck of land separating two meander loops and to form a new channel. The old sections of the former channel are called cut-offs as they are now literally cut off from the main river channel. These features are also referred to as oxbow lakes. An oxbow lake, in time, fills with sediment, becoming a waterhole or, in Australia, a billabong, an Aboriginal word meaning 'dead river'. Figure G2.2.7 illustrates this process. Meanders and oxbow lakes can be observed in Figure G2.2.8, in which a map extract and an aerial photograph are compared.

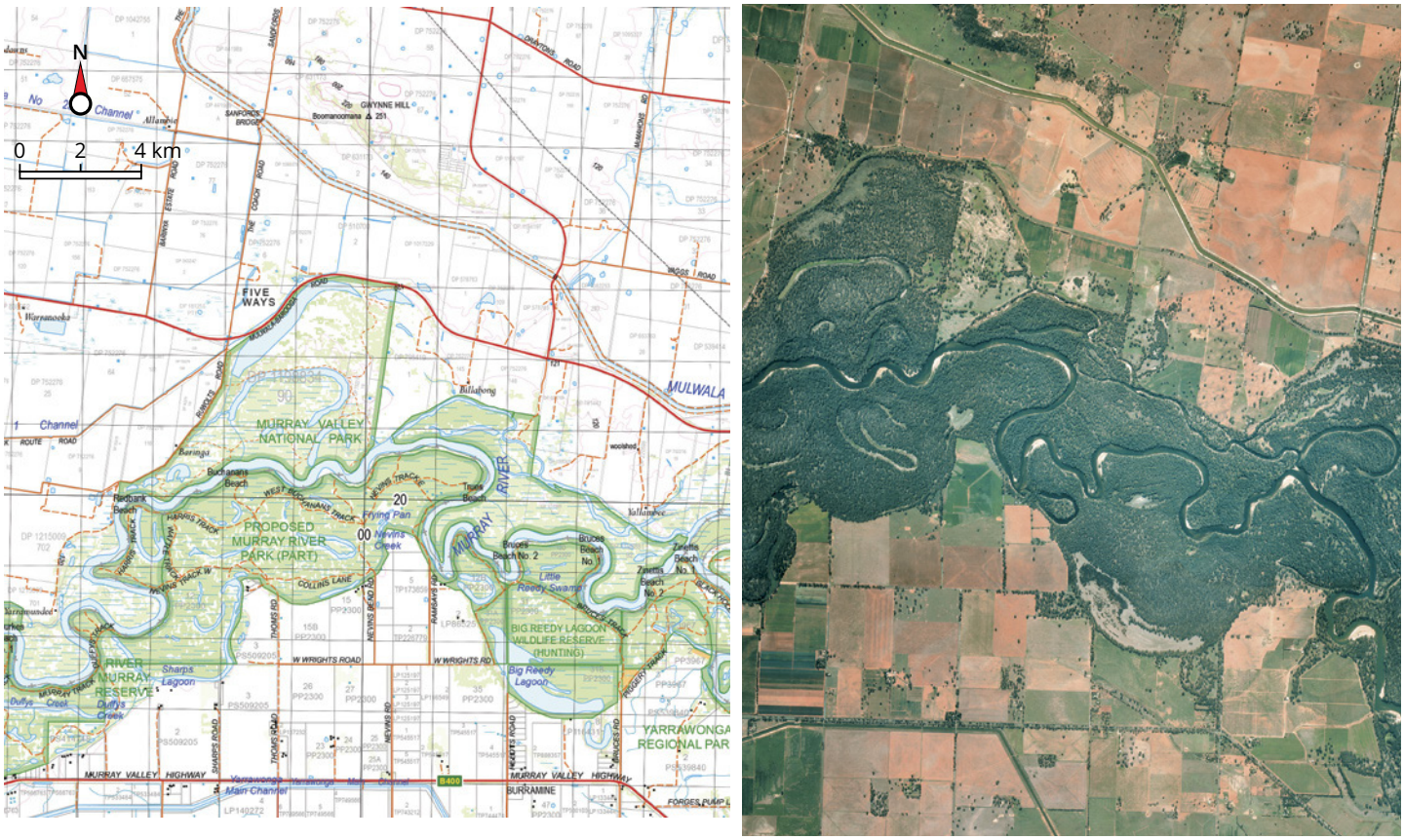


G2.2.7 Formation of an oxbow lake

Deltas

Deltas are the landform features that develop at the mouth of a river. As the water in a river reaches the sea (or a lake), there is a drop in the water's speed and the river's ability to support its suspended load declines. As a result, much of the sediment load is deposited near or at the mouth of the river. Over time, a delta develops. Depending on factors such as wave action, currents and tides, different types of deltas develop.

Other rivers, particularly those located on coasts with a large tidal range, do not form deltas. Rather, they enter the sea through an estuary or inlet—a partly enclosed coastal body of water.



G2.2.8 A topographic map extract (left) and an aerial photograph (right) showing the landform features associated with meandering rivers

Activities

Remembering and understanding

1 **a** List the landform features associated with the upper and lower reaches of a river.

b Identify and describe the main process responsible for their formation (that is, whether they are erosional or depositional landform features).

Evaluating and creating

2 Study Figure G2.2.8. Construct an annotated sketch map to identify the various meander-related landform features of the topographic map extract and the aerial photograph.

3 Investigate the world's longest rivers. Choose one and outline its location, length and main uses. Create a digital slide on your chosen river and answer the following question: How is this river used sustainably?

LS G2B

G2.3 Investigating rivers

Aim

The aim of this fieldwork activity is to investigate a river. A fieldwork investigation of a length of river provides an opportunity to learn more about this important feature of the physical environment. It also allows you to practise a range of geographical skills.

How to investigate a river

A variety of instruments will be required to investigate a river (see Figure G2.3.1):

- ruler
- tape measure
- ranging pole
- stopwatch
- clinometer
- flow meter.

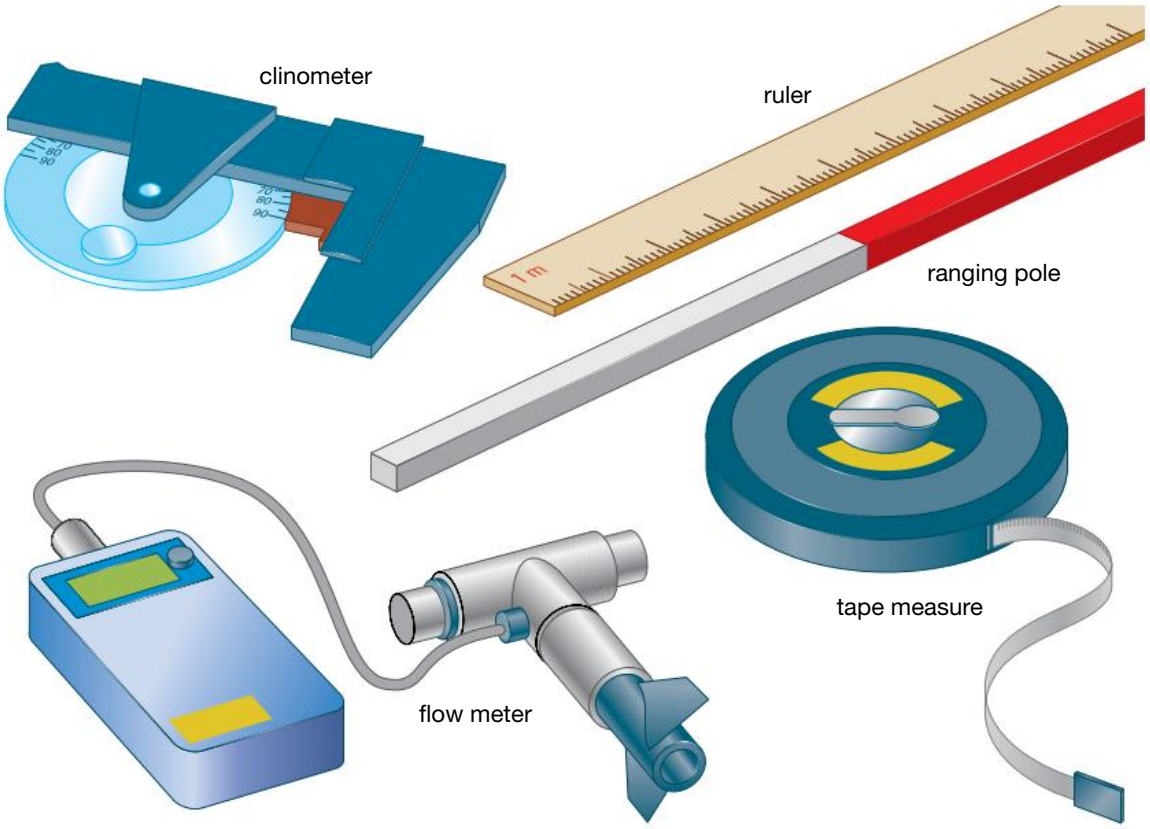
You will need to select a river or stream location that has the following features:

- a bridge to cross
- easy access to riverbanks at a variety of locations.

Calculating water velocity

The most accurate way to measure water velocity is to use a flow meter. If you don't have a flow meter you can use the following procedure.

1 Select a straight section of the river that is free of pools and/or shallow, fast-flowing sections. Measure out a distance of 50 metres along the riverbank.
2 Find an object that will float on the surface of the river. The object should be brightly coloured and it is best if it is heavy enough to be partly submerged in the water. With the aid of a stopwatch, measure how long it takes for the floating object to cover the 50 metres. Ensure that you select an area of riverbank you can easily and safely access.
3 Take at least three readings. For greater accuracy take readings on both sides of the river and in the middle. Record your readings on your data record sheet. Average the readings to determine the water velocity.



G2.3.1 Tools used to collect data in the field

Calculating the cross-section

To calculate the cross-section of an area of river, carry out the following steps.

1 Use a long tape measure to determine the average width of the river.
2 Measure the depth of the water at regular intervals across the width of the river (for example every 100 centimetres). A 2-metre pole marked with 10-centimetre intervals will assist you in this task. If there is a low bridge over the river, stand on it to measure the depth of the river. Record your measurements on your data record sheet.
3 Calculate the average depth by adding all the depth readings and dividing by the number of readings. Using the data shown in Figure G2.3.2, the average would be (1.2 m + 1.4 m + 1.5 m + 1.3 m + 1.0 m) ÷ 5 = 1.28 m.
4 Multiply the average depth by the average width of the river to give the cross-sectional area. Using the data shown in Figure G2.3.2, the area would be 1.28 m × 16 m = 20.48 m^2.

Width of channel (bank to bank): 18 metres						
Average width of river: 16 metres						
Height of bank above the river:		• Left side: 50 centimetres • Right side: 75 centimetres				
Depth of river:		Left bank			Right bank	
	Reading	1	2	3	4	5
	Depth	1.2 m	1.4 m	1.5 m	1.3 m	1.0 m

G2.3.2 Data sample for a cross-section

Calculating river discharge

Discharge is the amount of water that flows from a river catchment and into another river system, the sea or a lake. The discharge can be calculated by using the following formula:

Discharge = velocity × cross-sectional area

Measuring turbidity

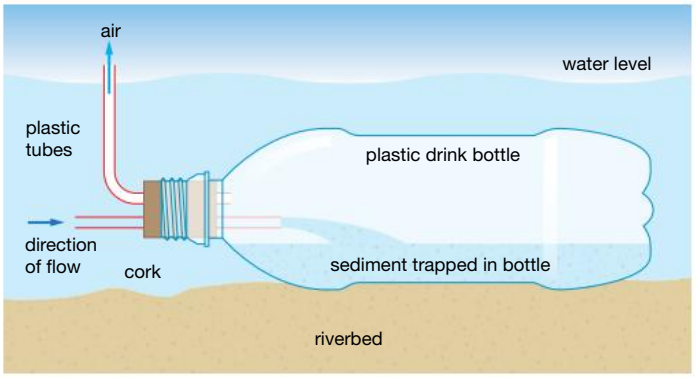
Turbidity refers to the cloudiness of water, which is caused by suspended sediment. To measure the turbidity of a river, carry out the following steps.

1 Collect a 1-litre sample of water at a number of sites along the course of a river.
2 Transfer the samples into separate glass containers. Allow the water to stand for at least 24 hours so the sediment will settle.
3 Using a ruler, measure the depth of sediment at the bottom of each container. Record your data in a spreadsheet and present your data as a graph.

Measuring suspended load

The suspended load of a river contains fine sand particles, silt and clay. The amount of suspended material in water is closely linked to the level of discharge. To measure the amount of suspended load in a river, carry out the following steps.

1 Use four 1-litre plastic bottles to collect water samples at four sampling sites along the course of a river. When preparing each plastic bottle, block the opening with a cork and then drill two holes through the cork. Push two flexible plastic tubes through the holes and you have made a sediment sampler as shown in Figure G2.3.3.
2 Anchor the bottle to the riverbed with two or three stones. When doing so, make sure that you stand downstream, so that you do not stir up too much sand and sediment.
3 When the bottle is full, remove it from the river and remove the cork and plastic tubes. Seal the bottle with its original screw cap. Repeat the exercise at your other sampling sites. Allow the bottles to stand overnight.
4 Observe the layer of sediment that has collected at the base of the bottle. Make note of the sediment's colour, the water's clarity (turbidity) and, if possible, the amount of time it takes for the sediment to settle.
5 Shake the bottle so that the sediment is again redistributed through the water sample and then very slowly pour the contents of the bottle through a previously weighed piece of dry filter paper. You could use a filter suction pump to assist in this process.
6 Allow the sediment-encrusted filter paper to dry for at least 48 hours, or dry it in an oven for 1–2 hours at 100°C. Subtract the weight of the dry filter paper to find the weight of the suspended sediment. Express your answer in grams per litre of water.



G2.3.3 A sediment sampler

Drawing a cross-section

To draw a cross-section of a river, you need measurements of the:

- depth of the river
- width of the channel
- width of the river from bank to bank
- height of the bank above the river.

Using these measurements, construct your cross-section by carrying out the following steps.

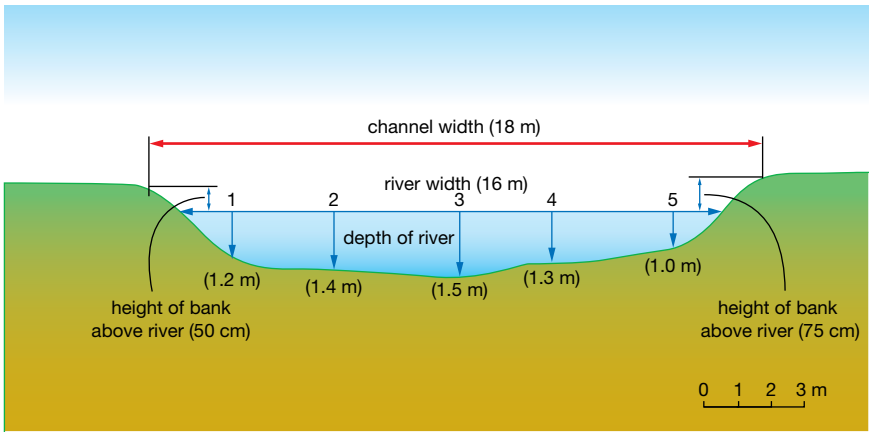
1 Study the measurements you have collected and select a scale that will fit on your paper. Start your cross-section by drawing a line representing the width of the river. Make sure you leave enough space to draw in the river channel below it.

2 Look at the measurements for the height of the bank above the river level on both sides and mark the position of both banks. Measure the width of the channel from bank to bank. Now draw in the banks.

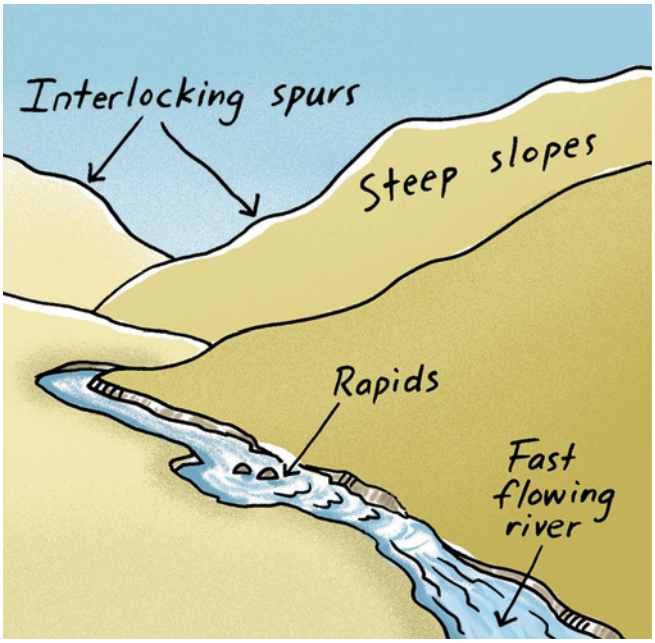
3 Mark in the riverbed by using your measurements of the depth of the river from the surface. Join the points together to show the shape of the riverbed. Add a scale and a heading, as shown in Figure G2.3.4.

Drawing a field sketch

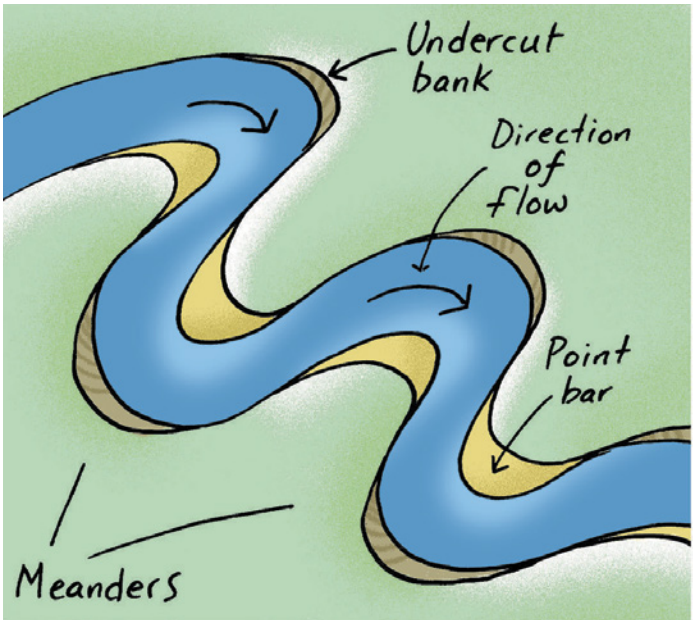
To draw a field sketch of the river being studied, use Figures G2.3.5 and G2.3.6 as a guide.



G2.3.4 A sample cross-section of a river



G2.3.5 An annotated field sketch of the upper reach of the river being studied



G2.3.6 A sketch plan of the mid-reach of the river being studied

Activities

Aim

To investigate the physical features of a river

Instructions

1 Select a suitable river to investigate and include a map of the area investigated.

2 Calculate water velocity.

- **a** Collect data and record it in a data record sheet similar to the sample below.
- **b** Select data from two different locations, and follow the steps for calculating water velocity that are included in this unit.

River: Sandy Creek	**Location:** Site 1	**Date:** 23 May 2018
A. Water velocity		
Length of river section: 50 metres		
Measurement 1: 75 seconds		
Measurement 2: 90 seconds		
Measurement 3: 85 seconds		
Average: 83.3 seconds		
Average velocity: 50/83.3 = 0.6 metres per second (i)		

3 Calculate the cross-section of the river. Collect data and record it in a data record sheet similar to the sample below.

River: Sandy Creek	**Location:** Site 1	**Date:** 23 May 2018
B. Cross-sectional area		
Average width of the river: 15 metres		
Channel depth at various points (in centimetres)		
Point 1: 20		
Point 2: 25		
Point 3: 35		
Point 4: 45		
Point 5: 30		
Point 6: 20		
Average depth: 175/6 = 29 centimetres		
Cross-sectional area: average river width × average depth 15 × 0.29 = 4.35 square metres (ii)		

4 Calculate river discharge.

River: Sandy Creek	**Location:** Site 1	**Date:** 23 May 2018
C. Discharge		
Velocity (i) × cross-sectional area (ii) 0.6 metres per second × 4.35 square metres = 2.61 cubic metres per second		

5 Measure turbidity. Collect data and record it in a data record sheet.

6 Measure suspended load.

7 Draw a cross-section of the river.

8 Draw a field sketch of the river area being studied.

Option 1

Create an annotated visual display of the area investigated.

- **a** Take images of the river channel, upstream, downstream and land on either side of the river channel.
- **b** Explain how each has or might influence the river channel.
- **c** Include the photos and explanations as annotations around the map of the area of river investigated.

Option 2

Investigate the river from its source to the mouth of the river. Include the following information:

- topography, vegetation and land use
- how the river water is being used (agriculture, irrigation, recreational, household use, etc.)
- problems associated with the river (pollution, reduced water flow, etc.).

Evaluation

9 Once you have collected enough data, display the results and comment on your findings. Include the following in your commentary:

- **a** a description of the features of the section of river that you investigated
- **b** information about changes in speed of flow along the river
- **c** information about levels of turbidity and suspended load—was there a correlation between the two?

Conclusion

10 Describe what you have learnt about river profiles.

G2.4 People's impact

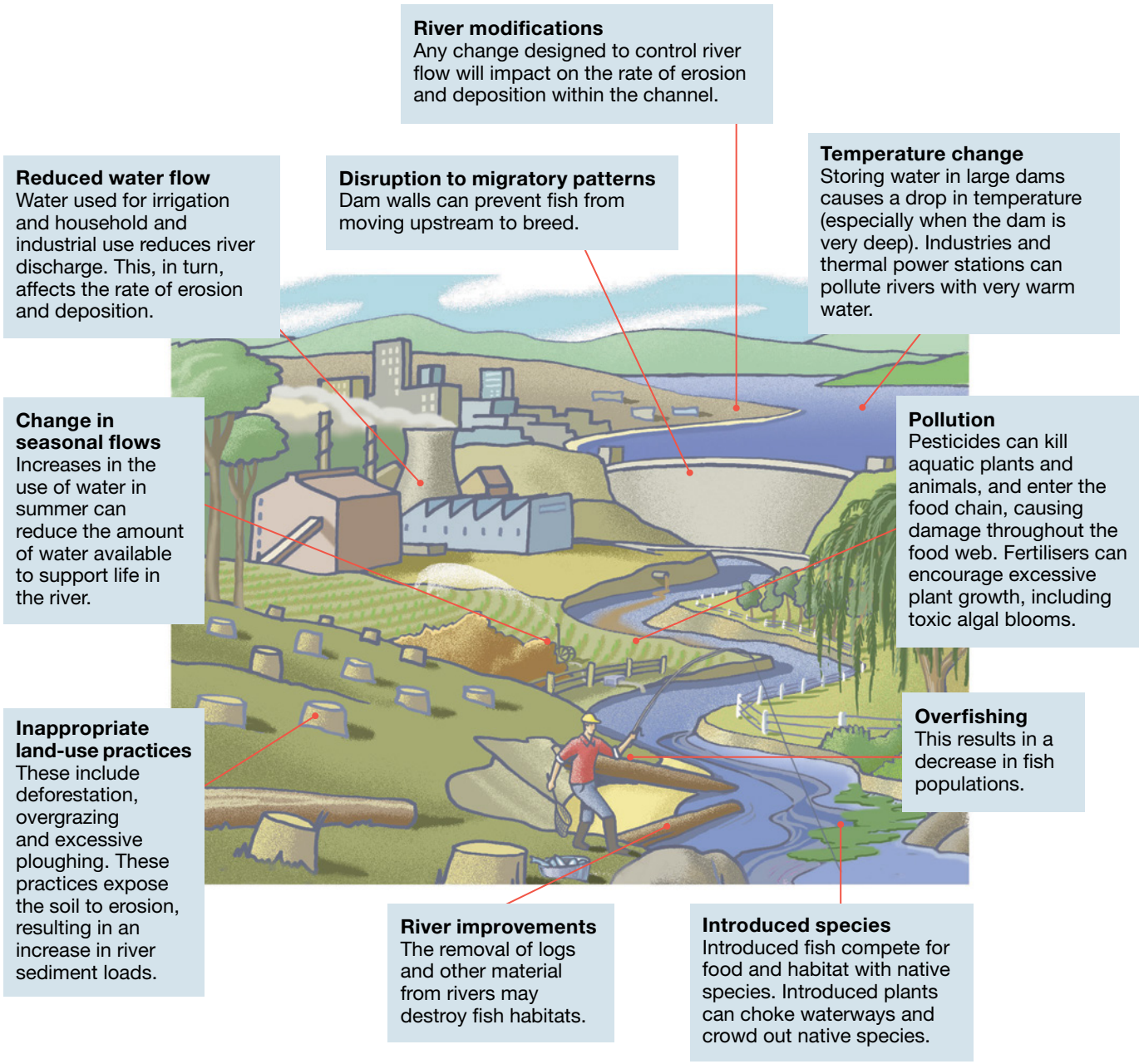
The impacts

There are many ways in which human activity can impact on river-based landforms and ecosystems. Any activity within a river's catchment has the potential to impact on the river.

The impacts of people on riverine landforms and landscapes are outlined in Figure G2.4.1.

River modification works

River modification works are designed to change or control the natural course or flow of a river. This is usually done to improve drainage and reduce flooding. The intention is to improve conditions for those people living along a river or in downstream areas.



G2.4.1 The impacts of people on river systems

River modification works usually involve rearranging the riverbed or bank material, as has been done along the River Lea in London, shown in Figure G2.4.2. It is commonly thought that straightening the channel, by constructing either a totally new river canal or a flow path across a meander bend, increases river drainage capacity. In some cases, a river channel's capacity can be increased by enlarging and straightening the channel and then lining it with concrete. This usually happens in urban areas when urban planners want to exercise some degree of control over the river.

The construction of levee banks (see Figure G2.4.3), or retarding basins, is designed to control floodwaters.

Rivers can also be modified to reduce erosion. This may involve the removal or relocation of sediment bars and islands within the channel to prevent flows from being diverted to the banks and causing erosion.

Almost all river modification works involve the use of earth-moving machinery in or near the river channel. These machines damage the riverbed and/or banks, and can, at least in the short term, increase the amount of sediment flowing into the river.



G2.4.2 London's River Lea is now a heavily modified urban waterway. The modifications date back hundreds of years. The most recent of these modifications occurred as part of the development of the Olympics site.



G2.4.3 A large-scale levee construction in the Sacramento–San Joaquin River Delta, California, United States

Protection

The best way to protect riverine landforms and landscapes is to manage the whole catchment. Sources of soil erosion can be identified and addressed. Obstacles to the natural flow of water can be removed. Pollutants such as sewage, industrial pollution, agricultural fertilisers and pesticides, and salty **groundwater** (below the Earth's surface) can be identified and treated before they find their way into a catchment's waterways.

There is also a need to control and manage the amount of water taken from rivers for irrigation, urban and industrial uses. Experts now talk of maintaining an adequate environmental flow. This means ensuring that there is enough water in the river to help maintain a river's natural processes and to protect the health of the river and its wetland ecosystems.

Figure G2.4.4 illustrates how farmland next to a river can be managed to control the quality of water entering a river.

Urban areas

People in cities can help to protect riverine landforms. Many stormwater drains in cities and built-up areas flow into rivers and creeks before flowing into the sea. Figure G2.4.5 shows how people can reduce the amount of waste entering stormwater drains. In this way, people can help to reduce the amount of waste that reaches the river system.

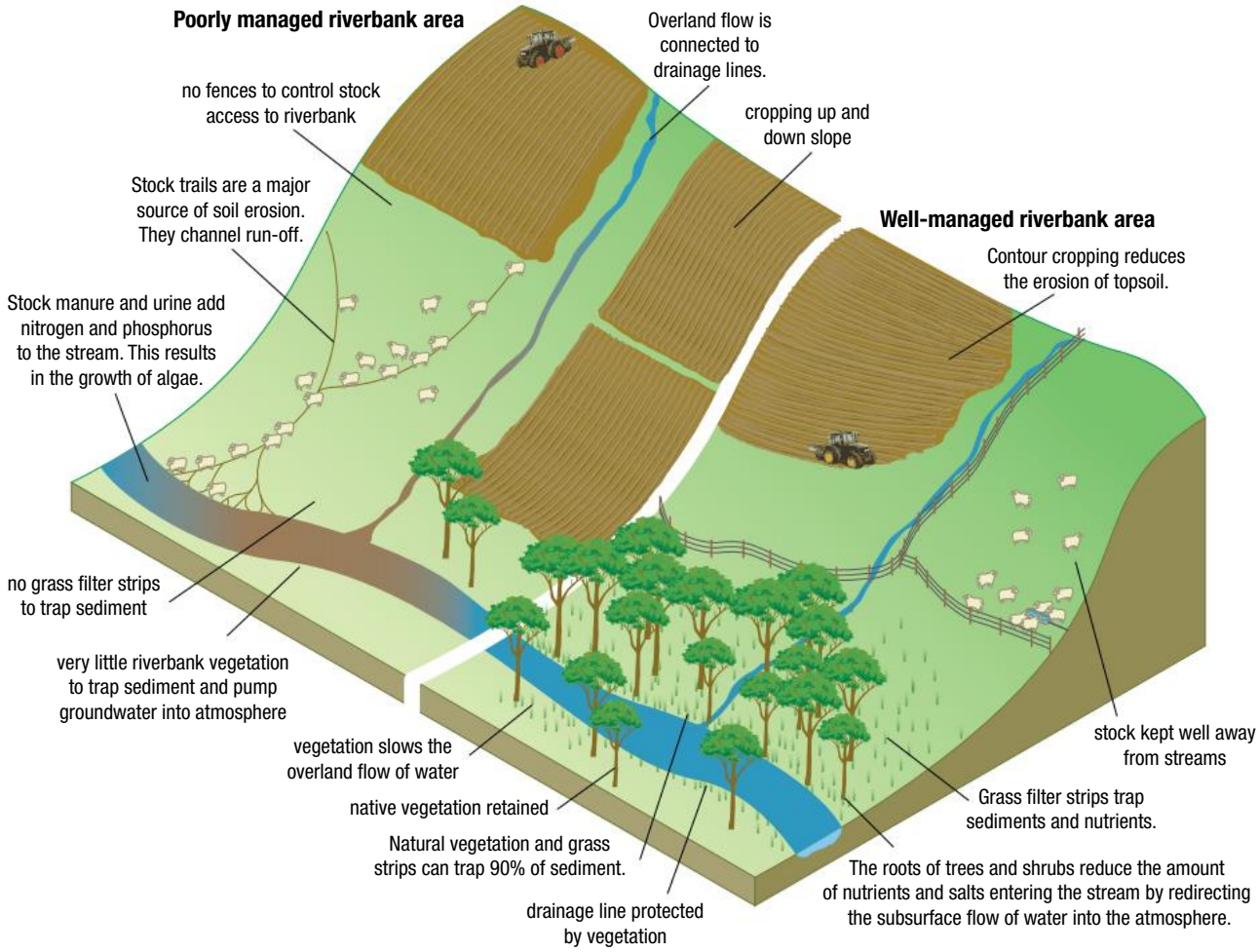
Raingardens

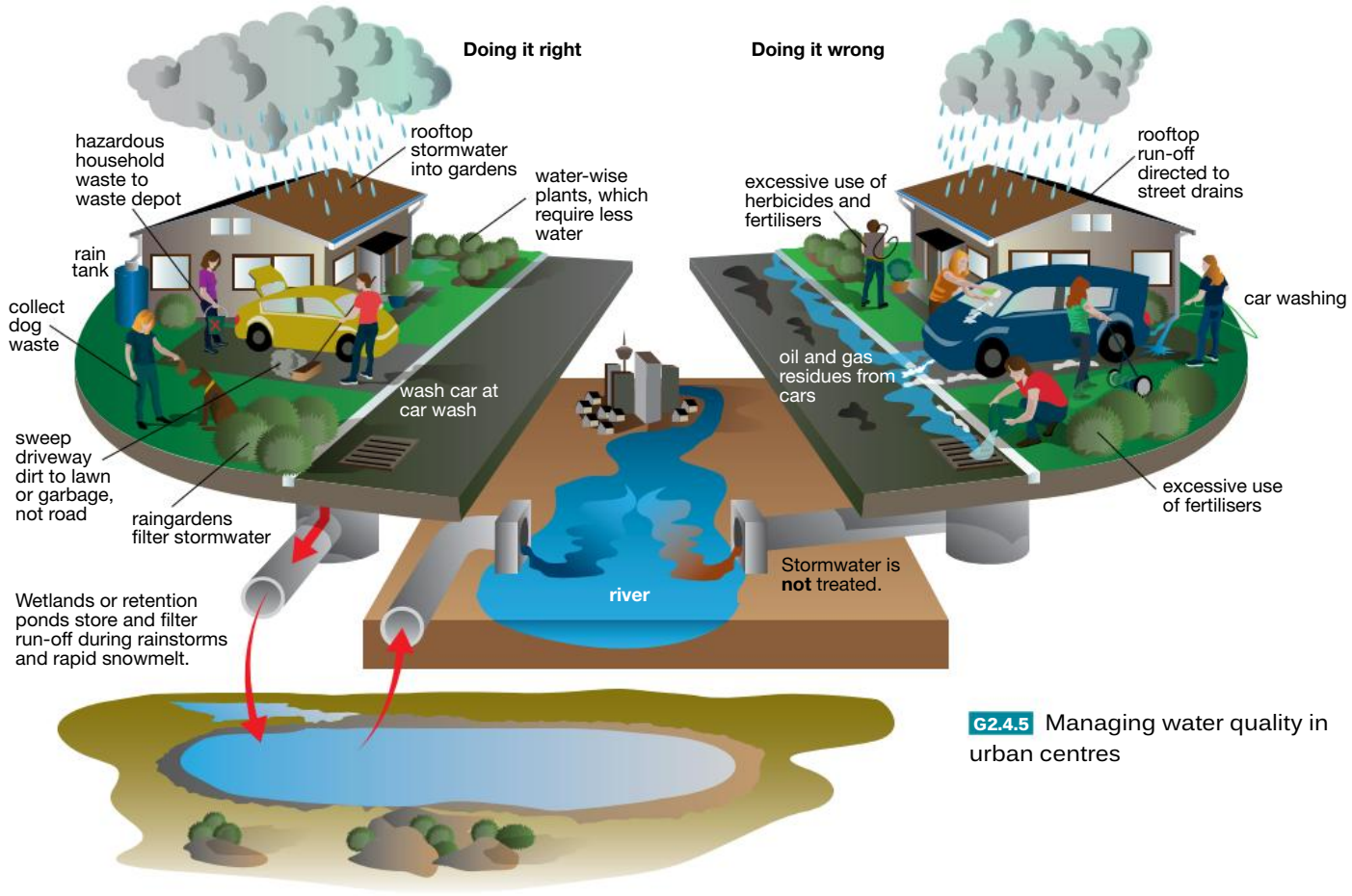
A raingarden looks like a normal garden but is designed to capture stormwater. When water falls on hard surfaces such as roads, footpaths and roofs, the raingarden captures the water and filters it through layers of sandy soil. As the water soaks through the layers, pollutants such as animal droppings are removed. Figure G2.4.6 shows a raingarden in action after rainfall.

Flood detention basins

Flood detention or retention basins capture a large amount of stormwater and slow the amount of water entering a stream or river after heavy rainfall. A basin can remove pollutants and sediment flowing into a river or stream. Basins like the one shown in Figure G2.4.7 are being constructed throughout Australia.

G2.4.4 Careful management of riverbanks can help to protect riverine landforms and water quality.





G2.4.5 Managing water quality in urban centres



G2.4.6 A suburban raingarden



G2.4.7 Karkarook Park—a flood detention basin aimed at removing pollutants

Activities

Remembering and understanding

1. Describe the ways in which river modification works can impact on a riverine system.
2. Explain how riverine landforms and landscapes can be protected.
3. Define the term 'environmental flow'.

Applying and analysing

4. List the ways your household could manage its wastewater better.

Evaluating and creating

5. In pairs or small groups, prepare a presentation for the school council and principal, outlining a plan for a new raingarden for your school. Your presentation should include the following information:
   - a map of the school showing the location of the raingarden
   - benefits of the raingarden
   - a sketch or diagram showing what the raingarden will look like.

G2.5 Bow River catchment

An important catchment

The Bow River is located in the Canadian province of Alberta. A full range of riverine landforms can be seen over the length of the river. The river is an important source of drinking water and water for irrigation and hydro-electric power. It also provides habitat for wildlife and opportunities for recreational activities such as fishing and boating.

Riverine landforms

The Bow River's source is the meltwater of the Bow Glacier high in the Wapta Icefield of the Canadian Rockies. The meltwater first finds its way into Bow Lake, shown in Figure G2.5.2, before it flows to the south through a rocky former glacial (U-shaped) valley. It then flows through the village of Lake Louise and the town of Banff to Ghost Lake reservoir. It then flows onto the prairies (grasslands) and on to the city of Calgary, which has a population of 1.1 million. Downstream from Calgary are a range of depositional river landform features, including meanders, cut-offs and oxbow lakes. Further downstream, the Bow River flows into the South Saskatchewan River, which continues to wind its way across the Canadian prairies before flowing into Lake Winnipeg and then into Hudson Bay via the Nelson River.



G2.5.2 The Bow River has its source in the meltwater of the Bow Glacier high in the Canadian Rocky Mountains. Bow Lake is in the foreground.

The water cycle

The Rocky Mountains force air to rise and cool, causing moisture to condense and fall as rain or snow. This precipitation, together with the meltwaters from glaciers, feeds the Bow River through its many mountain tributaries. Figure G2.5.3 shows the upper reaches of the river.



G2.5.1 The Bow River catchment

The prairies of Canada's interior have a relatively dry climate. Due to their height, the Rocky Mountains strip moisture from eastward-moving air masses in what is referred to as a 'rain shadow' effect. As a result, little of the moisture from the eastward-moving air masses reaches the prairies of Alberta. The region therefore relies on the Bow River and groundwater for irrigation in agriculture and human use.

The water cycle of the Bow River catchment is illustrated in Figure G2.5.4.

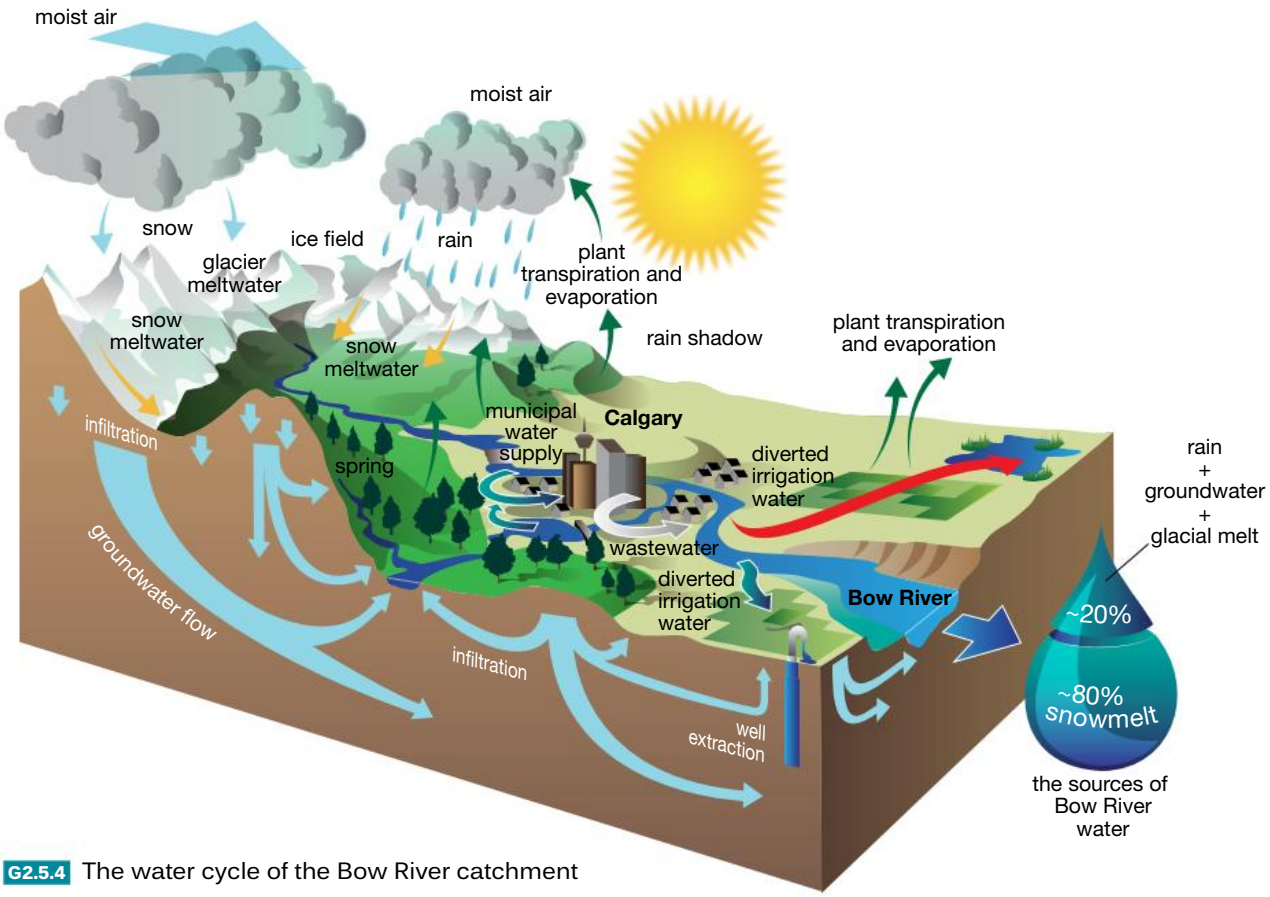
Spotlight

Canadian rivers

Canadian rivers are young in geological time, only about 10 000 years old. Most developed during the last ice age. There are more than 8500 named rivers in the country and there are 25 major watersheds. The longest river is the Mackenzie River at 4241 kilometres. This river feeds over 50 000 lakes. Only a few Canadian rivers are wild; most rivers have dams affecting their flow.



G2.5.3 The Bow River in its upper reaches



G2.5.4 The water cycle of the Bow River catchment

Human modifications

In their efforts to use the water resources of the Bow River for irrigation, people have significantly changed, or modified, the river. Water is used for agriculture (irrigation), urban water supplies, hydro-electric power, industry and recreation.

Irrigation

Early in the last century, European settlers developed irrigation systems to move the waters of the Bow River out onto the prairie. Water was supplied to farmers through a system of canals and storage reservoirs. Over time, communities and industries developed across Alberta's prairies.

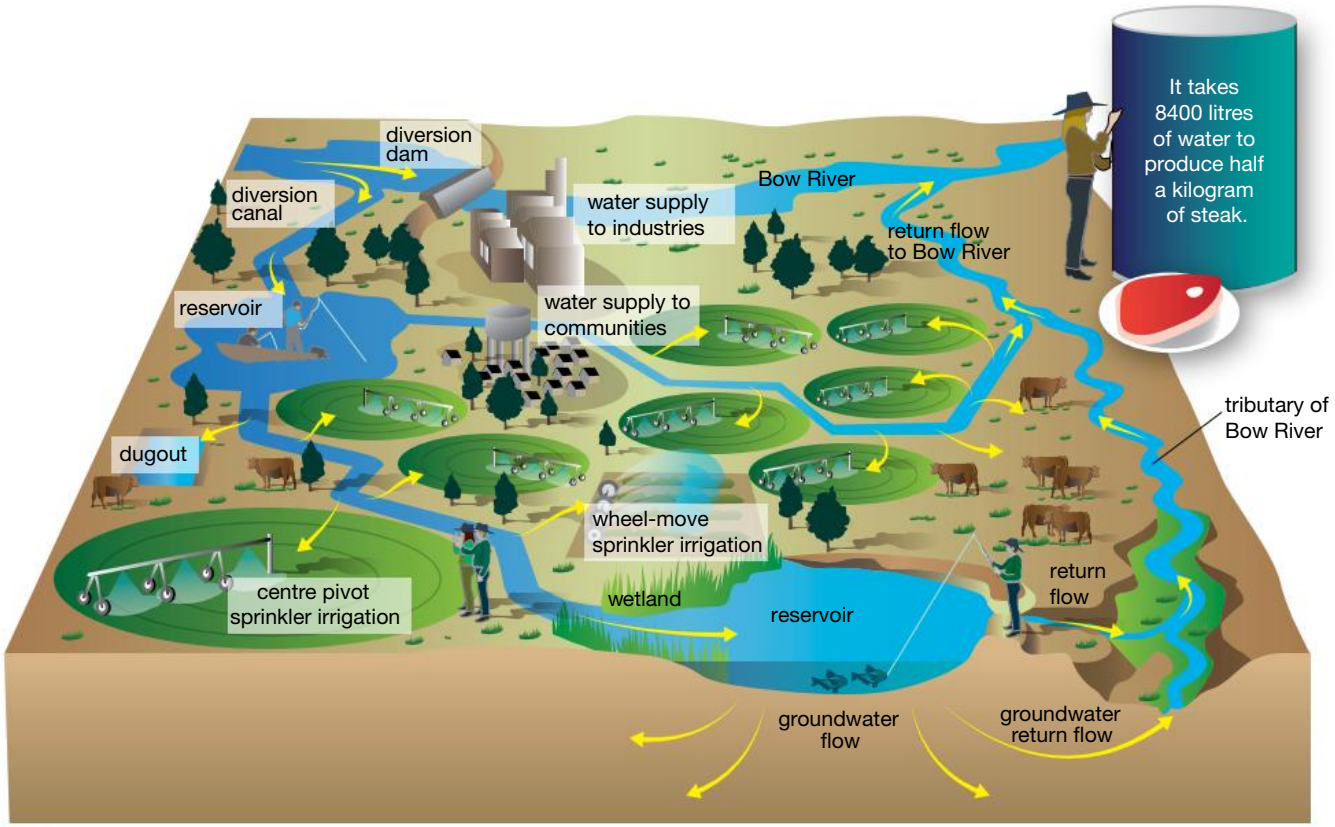
Figure G2.5.5 shows the extent of the modifications made to the river. Irrigation is used during the growing season, which begins in May and continues through to October. Improved irrigation techniques have greatly reduced the water required to grow crops. The canals and reservoirs provide important wetland habitat for waterfowl and fish.

Urban water use

Municipalities (towns and cities) in the area return over 90 per cent of the water they use as treated sewage back to the Bow River. Calgary, a rapidly growing city on a relatively small river, is by far the largest urban centre in the Bow River catchment. As a result, it has limited capacity to absorb wastewater without reducing water quality. Because of this, Calgary's wastewater treatment standards are among the highest in Canada. During summer, Calgary's residential water use rises by 50 per cent, largely due to garden and lawn watering.

G2.5.6 Municipal and residential water use in Calgary

Calgary's municipal water use	
residential	52%
industrial commercial infrastructure	34%
non-revenue (e.g. leakage)	12%
other communities	2%
Calgary's residential water use	
toilet	29%
clothes washer	20%
taps	16%
shower	13%
leaks	10%
water softener	9%
baths	2%
dishwasher	1%



G2.5.5 The waters of the Bow River have been diverted, dammed and used for irrigation.

Skills builder

Information and communication technology

ICT is a very powerful tool. It can be used in geography to help demonstrate our understanding of key concepts.

Study Figure G2.5.6. Construct two proportional pie charts—one showing Calgary's municipal water use and the other showing Calgary's residential water use. Use an electronic spreadsheet to help you record the data and to construct the required charts.

Protecting the Bow River

There are a variety of ways in which the riverine landscape of the Bow River can be protected.

Of particular importance is the health of the riparian zone—the area bordering streams and wetlands where moist soils and shallow water tables allow water-loving plant communities to establish. These zones are important ecosystems. They stabilise stream banks and protect water quality. They also provide habitat for wildlife. Cattle grazing in riparian areas must be managed carefully so that river-related landforms are not degraded.

Impacts of climate change on the Bow River catchment

The potential impacts of climate change on the Bow River catchment include:

- reduced snowfall and shrinking glaciers, causing a decline in the amount of river flow, which in turn will:
  - affect water supply, water quality and both the extent and type of recreational activities that people can participate in
  - lead to decreased hydro-electric power generation
- warmer, drier summers and earlier springs, resulting in an increase in the frequency and intensity of forest fires. This in turn may affect infiltration and run-off within the catchment
- an increase in the incidence of extreme weather events such as tornadoes, hailstorms, heatwaves, droughts, dust storms, floods and blizzards
- increased demand for irrigation water and a change in crop types due to a longer growing season
- warmer river temperatures, resulting in increased stress for cold-water fish species such as trout
- reduced groundwater recharge, resulting in lower water tables and the drying up of shallow wells.

Many people are concerned about the rate at which the glaciers high in the Rocky Mountains are retreating (moving up slope and becoming smaller). While this is a serious problem and one of the major impacts of climate change, the contribution of meltwater to the annual flow of the Bow River is relatively small (less than 1 per cent). However, the portion of Bow River water that comes from glaciers rises during the summer as snow melts. During a drought year, the relative contribution of glacier meltwater to the discharge of the Bow River is higher. Without glaciers in the Bow River basin, water supply during drought years would be less secure. However, as long as it snows and rains every year, we can expect the river to keep moving.

Activities

Remembering and understanding

1 With the aid of Figure G2.5.4, describe the geography of the Bow River catchment.
2 Explain why it is important to protect the catchment's riparian zone.
3 Outline the strategies used to manage land use in the Bow River catchment.
4 Describe the potential impacts of climate change on the Bow River catchment.

Applying and analysing

5 Study Figure G2.5.5.
  a Describe the extent to which people have modified the flow of water in the Bow River catchment.
  b Reflect on how this might impact on the river itself and list the ways in which the riverine landscape can be managed better.
6 Study Figure G2.5.1.
  a List the rivers that flow into the Saskatchewan River and the cities on each river.
  b Name the lake into which the Saskatchewan River flows.
  c True or false? All rivers that flow into the Nelson River originate in Canada. Explain your answer.

LS G2C/G2D



Desert landforms G3

Deserts are among the world's most spectacular landscapes. They feature amazing landforms that have been shaped by wind and water.

Deserts are found where precipitation is low and evaporation is high. Despite what most people might think, deserts are not necessarily hot. All deserts have a number of features in common, including very low and irregular rainfall, highly specialised plants and animals that are adapted to the tough conditions, and few, if any, people.

OVERVIEW QUESTIONS

- **G3A** Why are deserts dry places and how are their distinctive landform features formed?
- **G3B** Where are the deserts of the world and what factors determine their location?
- **G3C** What is the process of desertification?
- **G3D** In what ways do the activities of humans contribute to the process of desertification?

GLOSSARY

alluvial fan a low, cone-shaped deposit of sand and rock formed when a stream deposits its load on a low-lying plain; this usually happens as a result of a sudden change of slope

aquifer a layer of permeable rock (meaning that it allows liquid to pass through) that is capable of storing significant quantities of water

bolson an inland desert basin surrounded by mountains

butte a flat-topped landform feature that is taller than it is wide

deflation the process whereby material is removed from a surface by wind

desert a very dry environment in which evaporation is greater than precipitation or precipitation is less than 250 millimetres a year

desertification the process by which productive land in arid areas is changed into desert

erg a desert surface covered with sand dunes

escarpment a long, steep slope that determines the edge of a plateau or separates areas of land at different heights

hamada a desert landscape dominated by exposed bedrock

inselberg a large erosion-resistant rock feature surrounded by an eroded plain

mesa a flat-topped landform feature that is wider than it is high

oasis a fertile or well-watered area within a desert

playa lake a dried-up salt lake found in arid or semi-arid environments

reg a stone-covered desert

sand dune a hill of sand shaped by the wind

succulent a plant capable of storing water in its tissues

transpiration the loss of water vapour from the leaves of plants

wadi a watercourse or gully that is dry except during periods of rainfall

xerophyte a drought-resistant plant adapted to the dry desert environment

G3.0.1 Mountains and sand dune at Death Valley, California, United States of America

LS Before you begin

G3.1 Deserts

Desert features

Deserts are the driest places on Earth. They usually have few plants and hard, wind-blown surfaces covered with rocks and sand. The range of temperatures experienced each day is often large, with a big difference between the very high daytime temperatures and the very cold night temperatures. There is no cloud cover, so once the sun goes down, the heat received during the day is lost into the atmosphere very quickly at night.

Desert location

Deserts occur where evaporation is greater than precipitation or where precipitation is less than 250 millimetres a year. These areas cover about 30 per cent of the Earth's surface. Approximately 13 per cent of the world's population live in deserts.

Deserts occur in regions where the climate is dominated by high-pressure systems. High-pressure systems are areas of dry, falling air in which there is little rainfall, as outlined in Figure G3.1.1. Evaporation rates in deserts are often twenty times the annual precipitation, which means that deserts usually lose more water to the atmosphere than they receive from it.

Air near the Equator rises into the atmosphere because it is hot. This air then travels towards either the Tropic of Cancer or the Tropic of Capricorn. As it does so, the temperature of the air decreases and it sinks back towards the Earth. This sinking air creates an area of high pressure. There is little chance of precipitation in these areas because air must be rising before condensation can occur, which leads to precipitation (or rainfall) developing.

Distribution of deserts

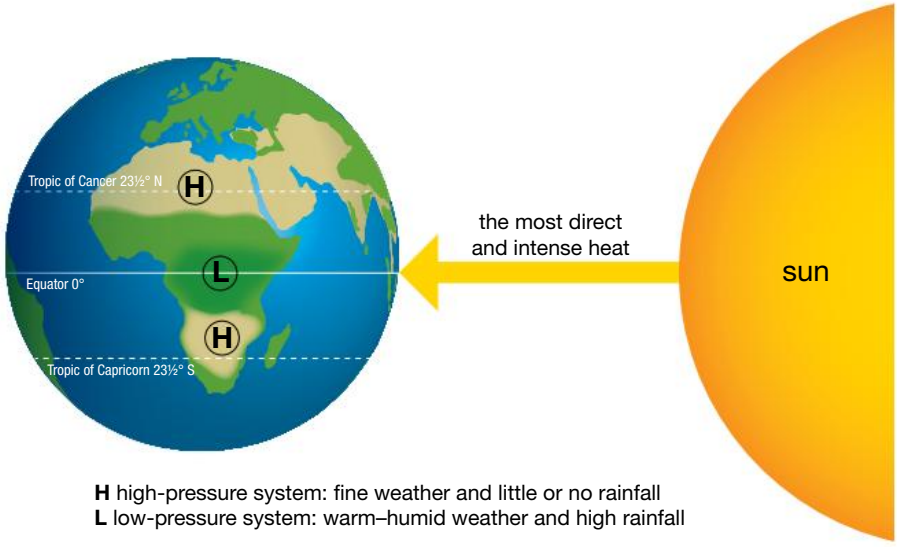
Figure G3.1.2 shows the global distribution of deserts. Deserts are located either in the interior of continents or near the coast next to cold ocean currents, excluding the Sahara.

The distribution of deserts is influenced by:

- *cold ocean currents*—as evaporation rates from cold water are low, the amount of water in the air and therefore the amount of rainfall are reduced (see Figure G3.1.3)
- *wind direction*—in the mid-latitudes, hot dry winds blow mainly across land towards the sea
- *mountain rain shadow*—mountains can block the inland movement of rainfall and may help to create deserts in their 'shadow' (see Figure G3.1.4).

Cold deserts

Antarctica and the Arctic regions are also classified as deserts. Although covered with a thick layer of ice, Antarctica is, in fact, a very dry place. Although they are not hot environments (due to their position on the Earth, a long way from the Equator), these regions qualify as deserts because of a lack of precipitation. For example, Antarctica's average annual snowfall equals just 50 millimetres of precipitation.

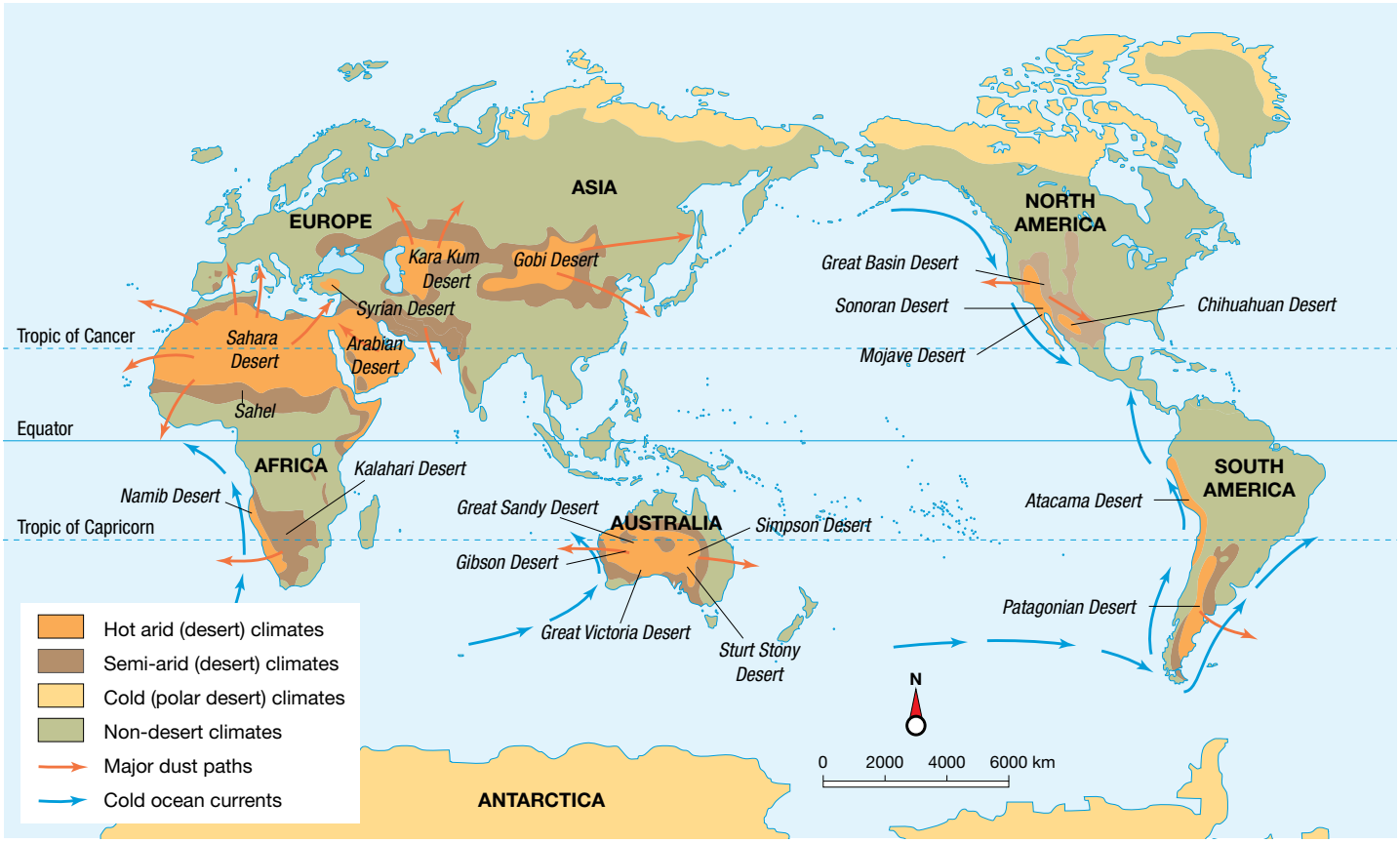


H high-pressure system: fine weather and little or no rainfall
L low-pressure system: warm–humid weather and high rainfall

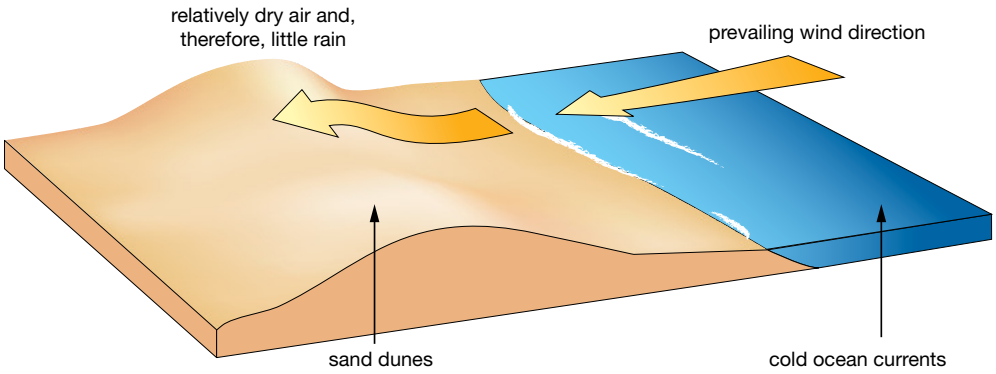
G3.1.1 Deserts occur in areas where the climate is dominated by high-pressure systems.

Did you know?

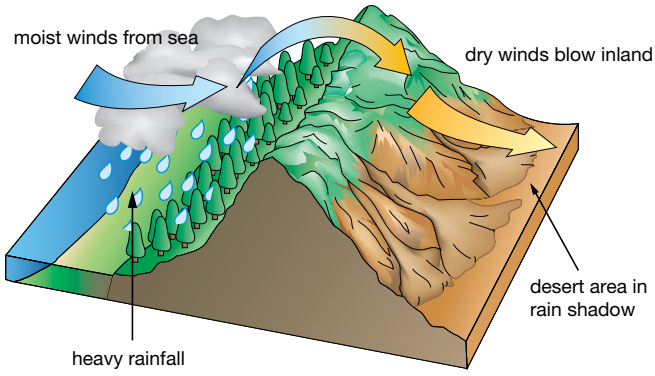
If someone spent a day in the desert with no shade, food, water or clothes, their temperature would be about 46°C by sunset, and they would have lost 2 to 3.5 litres of water. By nightfall they would be dead.



G3.1.2 Distribution of the world's desert lands



G3.1.3 Large bodies of cold water result in low rates of evaporation. As a result, the air moving onshore is dry.



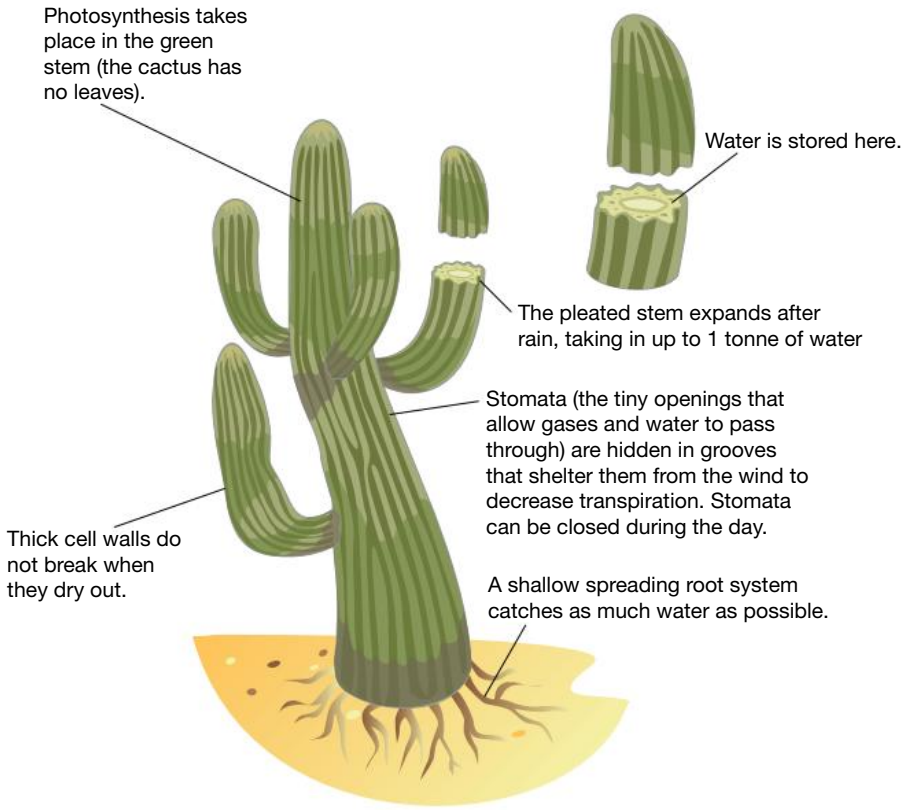
G3.1.4 Mountain ranges can block the inland movement of moisture, producing desert environments.

Spotlight

Surviving aridity: The cactus

Drought-resistant plants are known as **xerophytes**. Many xerophytes are **succulents**. This means that they are able to store water in their tissues. Cacti, for example, absorb large amounts of water following rainfall. Their fleshy stems swell up, then slowly shrink over time as moisture is lost through **transpiration** (the loss of water vapour from the leaves of plants). Many succulents further reduce the amount of moisture lost by transpiring only at night.

Most desert plants, including cacti, have small leaves that are spiky or wax-coated. This reduces transpiration. Cacti also spread their shallow roots wide to take advantage of any rain or dew; other adaptations are shown in Figure G3.1.6. These features mean that succulent plants can survive in desert conditions by making the most of any rainfall that is received.



G3.1.5 The saguaro cactus



G3.1.6 The cactus is a well-known symbol of North American deserts.

Desert size

The Sahara is the world's largest desert, although the Antarctic Desert (Antarctica), at 13 829 430 square kilometres, is sometimes referred to as the largest.

G3.1.7 The world's greatest deserts by area

Desert	Size (km²)
Sahara (Africa)	8 600 000
Arabian (Middle East)	2 330 000
Gobi (Asia)	1 200 000
Kalahari (Africa)	900 000
Patagonian (South America)	620 000
Syrian (Middle East)	520 000
Great Basin (North America)	492 000
Chihuahuan (USA)	450 000
Great Victoria (Australia)	418 750
Great Sandy (Australia)	395 250

Skills builder

Interconnection

The idea of interconnection reminds us that all of the things we study in geography are connected to other things. No subject of geographical study should be looked at in isolation. In terms of the environment, places like deserts occur because of cause-and-effect interconnections. These connections are operating between (and within) different places. Your task in this Skills builder is to identify and describe the interconnections that account for the distribution and characteristics of the world's deserts.

Study Figure G3.1.2.

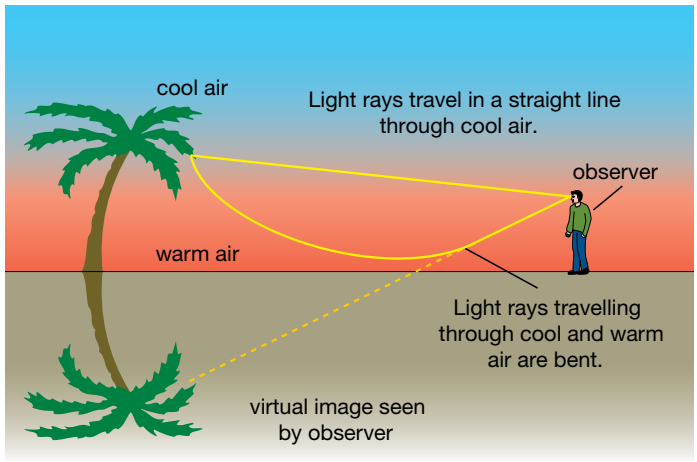
1. Describe the distribution of the world's hot deserts.
2. Describe the distribution of the world's cold deserts.
3. Explain why desert-like conditions are found in these areas.
4. Are there any deserts along the Equator? Explain.

Desert plants

Vegetation in deserts depends on the desert's location. The cactus is a well-known symbol of the desert, but is, in fact, found only in North American deserts. In southern African deserts, aloe plants are widespread, and in northern African and Middle Eastern deserts, date palms are typical plants. In Australia, grasslands cover large parts of the arid zones.

Desert mirages

Mirages are often seen in the world's hot deserts. A mirage is an optical phenomenon that can appear as a 'trick' to the eyes. Mirages occur when a shallow layer of warm air next to the ground is trapped by cooler air above. Light bends towards the horizontal line of vision, and eventually travels upwards: the mirage is an upside-down 'virtual' image.



G3.1.8 A mirage is an optical illusion.

Activities

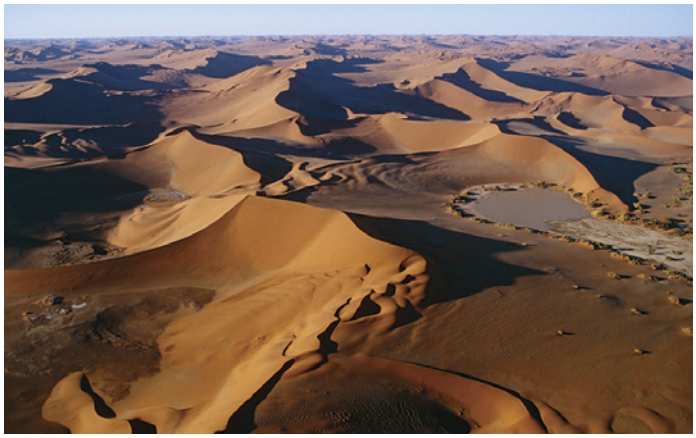
Remembering and understanding

1. Define the term 'desert'.
2. State the proportion of the Earth's surface that is covered by desert.
3. Identify the conditions under which deserts occur.
4. Identify the types of plants that are common in the deserts in the following locations:
   - a southern Africa
   - b northern Africa and the Middle East
   - c North America.

Applying and analysing

5. Explain why deserts are often very cold at night.

G3.2 Desert landforms



G3.2.1 Sandy desert or erg surface, Namibia, Africa



G3.2.2 Stony desert or reg surface (known as a gibber plain in Australia) of the Jbel Bani mountain range of Western Sahara, Africa



G3.2.3 Rocky desert or hamada surface, Double Arch, Utah, United States

Desert surfaces

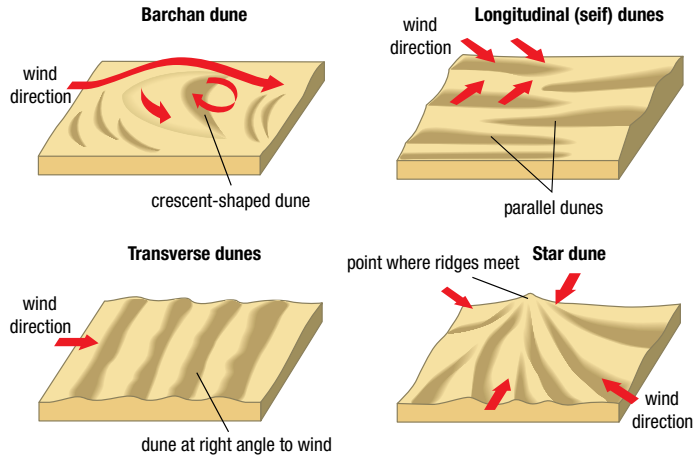
Sand dunes cover only about 25 per cent of the world's deserts. The remaining 75 per cent are either exposed rock or stone-covered plains. The rocks of the desert surface are usually quite smooth, having been polished by the wind-blown sand. This process is known as abrasion. The three main types of desert surfaces are:

- sandy or erg, see Figure G3.2.1
- stony or reg, see Figure G3.2.2
- rocky or hamada, see Figure G3.2.3.

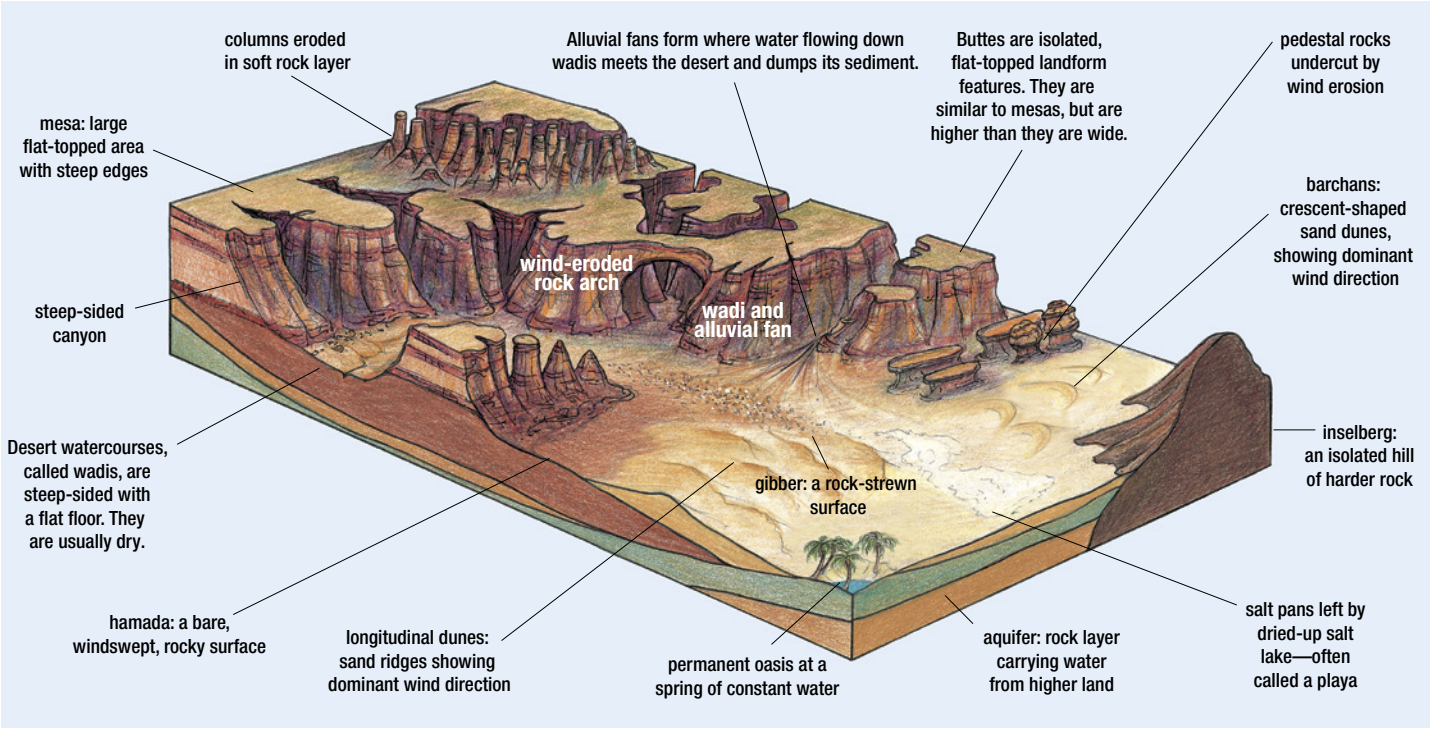
Landforms shaped by wind

The erosion of fine surface sand by wind is known as **deflation**. Once airborne, sand can act as an abrasive tool, wearing down and shaping exposed rock. Pedestal rocks, for example, are formed when wind-blown sand cuts away the base of rock structures but leaves their tops intact.

Eventually, material that is being blown by the wind will be deposited. When this occurs with wind-blown sand, the sand accumulates and forms sand dunes. The shape of these dunes varies according to the strength and direction of the wind, the amount of sand available, and the type and extent of vegetation cover in the area. Dunes are named according to their shape and direction. Some of the more common types are shown in Figure G3.2.4.



G3.2.4 Types of sand dunes



G3.2.5 Landforms of the desert

Landforms shaped by water

Although it does not rain often in deserts, when it does, the rain is often very heavy and results in flash flooding. Flash floods may occur without warning. Because there is little or no vegetation, run-off is extremely rapid and can erode large amounts of material.

Surface run-off is channelled into dry riverbeds (**wadis**) that cut through plateaus, forming canyons. As plateaus are eroded, **mesas** and **buttes** are formed from the retreating **escarpment**, or steep cliff. Mesas are wider than they are high, while buttes are higher than they are wide.

The eroded material is carried by the water through the wadis. It is eventually deposited on the lowlands, forming **alluvial fans**. These spread out across the desert basin, or **bolson**, where the fine particles can be shaped into dunes by the wind.

Where water flows into a desert depression or low point, **playa lakes** form. When the water eventually evaporates, salt pans or clay pans are formed.

Inselbergs are large masses of resistant rock that rise abruptly from the surrounding plain. They are exposed when the softer surrounding rock material is eroded. Uluru, in central Australia, is probably the world's best known inselberg. The landforms of the desert are shown in Figure G3.2.5.

Activities

Remembering and understanding

1 Name and describe the three types of desert surfaces.

2 Define the term 'deflation'.

Applying and analysing

3 Explain what abrasion is. What impact does it have on rocks?

4 Explain why rainfall is such an effective agent of erosion in desert environments.

Evaluating and creating

5 Use the information in this chapter to create an illustrated guide to desert landforms. Include diagrams of the types of landforms found in desert regions. Add annotations to your diagrams to help explain the processes involved in the formation of each landform.

LS G3A/B

G3.3 The Sahara

Location

The Sahara covers almost one-third of Africa (see Figure G3.3.1), stretching from the Red Sea to the Atlantic Ocean. Its boundaries are the Atlas Mountains, the Mediterranean Sea, Egypt, Sudan and the valley of the Niger River. It is a very hostile environment in which to live, with extremes of temperature (meaning very hot during the day and very cold at night), frequent sandstorms, little vegetation and few surface sources of water.

Landforms of the Sahara

One quarter of the Sahara consists of sand sheets (flat or gently undulating or wave-like plots of sand) and dunes. These areas are called **ergs**. Some of the dunes are as high as 190 metres and they are constantly being reshaped and moved by the wind. In other parts of the Sahara, there are large areas of stony plains, called **regs**, and high, rocky plateaus and mountains, called **hamadas**, shown in Figure G3.3.2.

At one point, in the Qattara Depression in north-west Egypt, the land drops to 133 metres below sea level. Other parts are quite mountainous. Emi Koussi, in the Tibesti Mountains, is the highest peak in the Sahara, with a height of 3415 metres. The Tibesti Mountains, a prominent feature of the central Sahara region, are a range of inactive volcanoes located in northern Chad. The landforms of the Sahara are undergoing constant change. They are shaped by the direction of the wind and the occasional rainfall.

Did you know?

In 2018, residents of Ain Sefra, Algeria, located in the northern Saharan region, awoke to 40 centimetres of snow on the sand dunes. People enjoyed the snow until it melted by the afternoon.



Source: *Heinemann Atlas*, 5th edition

G3.3.1 The Sahara occupies most of North Africa.



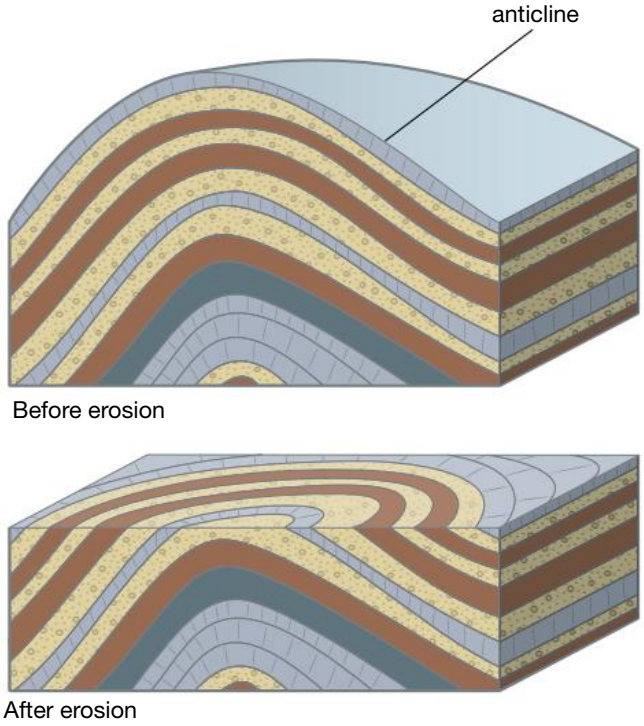
G3.3.2 Massive sand dunes, some as high as 190 metres, cover a quarter of the Sahara's land surface. In the foreground is a reg (stony) surface. A hamada (rocky plateau/mountain) can be seen in the background.

The 'Eye of the Sahara'

The Richat Structure, more commonly known as the Eye of the Sahara, is a circular landform feature in Mauritania. The landform is a deeply eroded dome, nearly 50 kilometres wide. The Richat Structure formed when an anticline, a product of the folding of rock strata, eroded.



G3.3.3 The Richat Structure, Mauritania

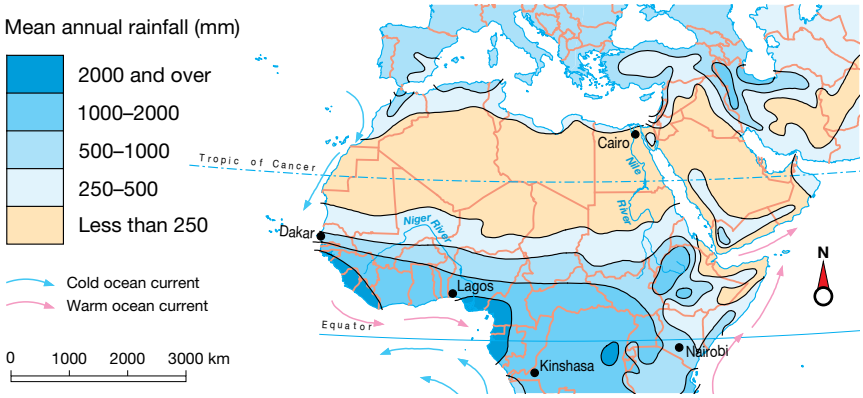


G3.3.4 The formation of the Richat Structure

Water in the Sahara

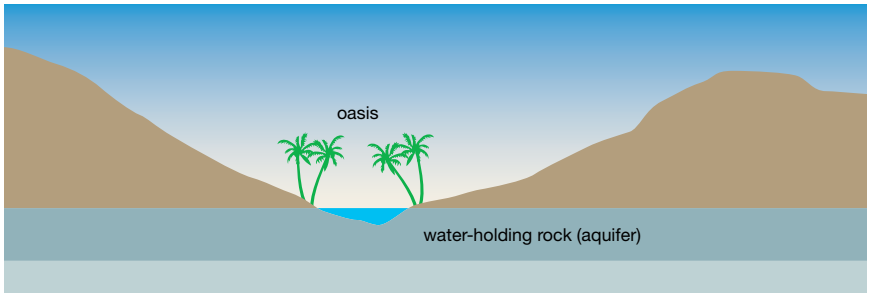
In the Sahara there is very little water, as rainfall is very low (see Figure G3.3.5). Some plants and animals are able to make use of the rainwater that filters through the sand or collects briefly on the rocky surfaces. However, humans can find permanent water supplies only in rivers or underground water-bearing rocks. The major rivers in the Sahara are the Niger and the Nile. The Nile dominates the north-eastern part of the Sahara.

The most widespread source of water in the Sahara is in underground water-bearing rocks called **aquifers** (see Figure G3.3.6). These lie in layers below the sand and surface rocks and collect water from rainfall slowly over time. An **oasis** (see Figure G3.3.7) is formed when these water-bearing rocks are exposed at the surface of a depression in the desert. Due to increasing human use of underground water, the supply is declining, causing some freshwater springs to dry up.



Source: *Heinemann Atlas*, 5th edition

G3.3.5 Vast areas of North Africa receive less than 250 millimetres of rainfall a year.



G3.3.6 An oasis develops when an underlying aquifer (a saturated layer of rock) meets a depression in the desert surface.



G3.3.7 A palm tree oasis, Sahara, Chad

Spotlight

Camels

There are millions of camels living in Africa, most of them in the countries that border the Sahara and the Horn of Africa. The African camels are of the single-humped (dromedary) type. They have a range of adaptations that allow them to cope with the harsh conditions of the desert.

These include:

- a woolly coat on the upper part of the body to provide good insulation (heat protection) from the sun
- a hump that stores fat reserves, which can keep the camel alive when there is no food available
- the production of dry dung, which reduces water loss
- the ability to carry large amounts of water (equal to about 25 per cent of its body weight) in its stomach
- a lack of wool on the underside of the body, which enables heat loss
- a web of tissue between the two toes, which stops the camel from sinking in the sand
- a feathery mouth, which enables the camel to eat thorny desert plants
- nostrils that can be closed during sandstorms.

Camels are used for transport, meat, milk, wool and leather. Because they are so well adapted to the desert, camels also made it possible for humans to establish trade routes across the Sahara, linking West Africa to North Africa.



G3.3.8 A Bedouin camel train among the Sahara's sand dunes

Peoples of the Sahara

The peoples of the Sahara have adapted to the harsh environment and developed ways of obtaining the food and water required for survival.

The Tuareg

'Tuareg' is a term used to identify the diverse groups of nomadic people living in parts of the Sahara. The Tuareg share a common language and history.

For thousands of years, the livelihood of the Tuareg revolved around trans-Saharan trade. There were five main trade routes that crossed the Sahara from the Mediterranean coast of Africa to the great cities on the southern edge of the Sahara. Tuareg merchants transported goods from these cities to the north. From there they were distributed throughout the world.

Tuareg camel caravans continued to transport goods across the Sahara until the mid-twentieth century, when European trains and trucks took over. Today, many Tuareg live in the cities bordering the Sahara.



G3.3.9 A Tuareg man dressed in the traditional blue robe

Activities

Remembering and understanding

1 Describe the location and extent of the Sahara.
2 Identify and describe the principal landform types found in the Sahara.

Applying and analysing

3 Explain why the Sahara is such a difficult environment for humans and animals.
4 Study Figure G3.3.5. Write a paragraph describing the rainfall pattern of Africa.
5 Construct a photo sketch of Figure G3.3.2. Annotate your sketch to highlight each of the types of desert landforms depicted in this image.

G3.4 Monument Valley, USA

Location and size

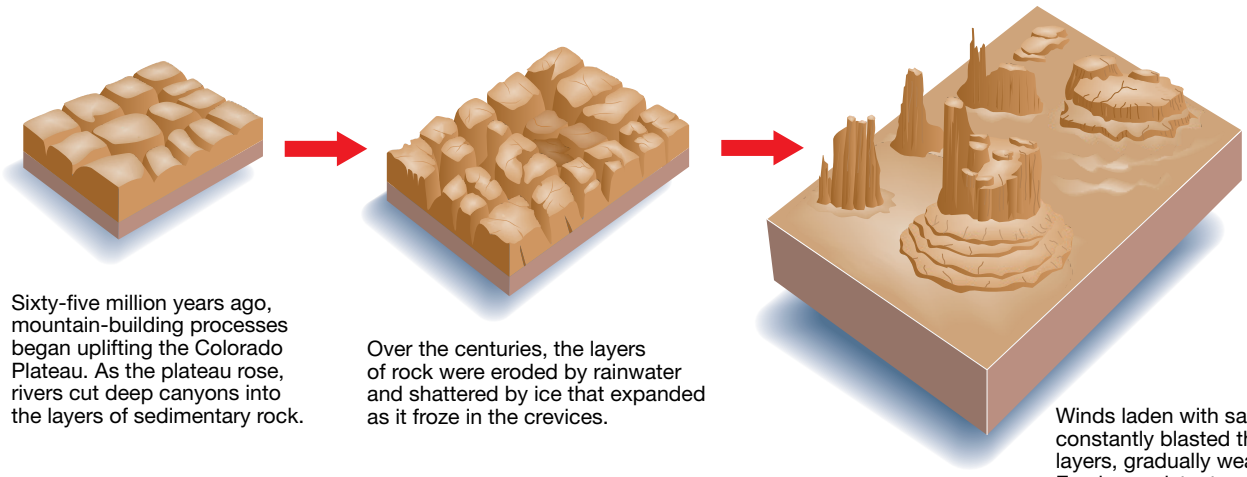
Monument Valley is one of the most famous landscapes in the United States and its unique sandstone landforms are instantly recognisable throughout the world. Monument Valley forms part of the Colorado Plateau and is located on the border between Arizona and Utah, the lands of the Navajo Nation.

Origins of Monument Valley

Monument Valley was once a vast lowland basin. For hundreds of millions of years, eroded material was deposited in the basin. Over time, tectonic forces gently lifted up the basin, which elevated the horizontal sedimentary rock by almost 5 kilometres above sea level. The basin became a plateau. Over the next 50 million years, wind and water eroded the surface of the plateau, creating Monument Valley. Figure G3.4.2 illustrates the formation of its main landform features.

G3.4.1 Monument Valley, United States





Sixty-five million years ago, mountain-building processes began uplifting the Colorado Plateau. As the plateau rose, rivers cut deep canyons into the layers of sedimentary rock.

Over the centuries, the layers of rock were eroded by rainwater and shattered by ice that expanded as it froze in the crevices.

Winds laden with sand and dust constantly blasted the exposed rock layers, gradually wearing them away. Erosion-resistant columns of red sandstone (together with large mesas and buttes) remained.

G3.4.2 The formation of Monument Valley's landform features

Skills builder

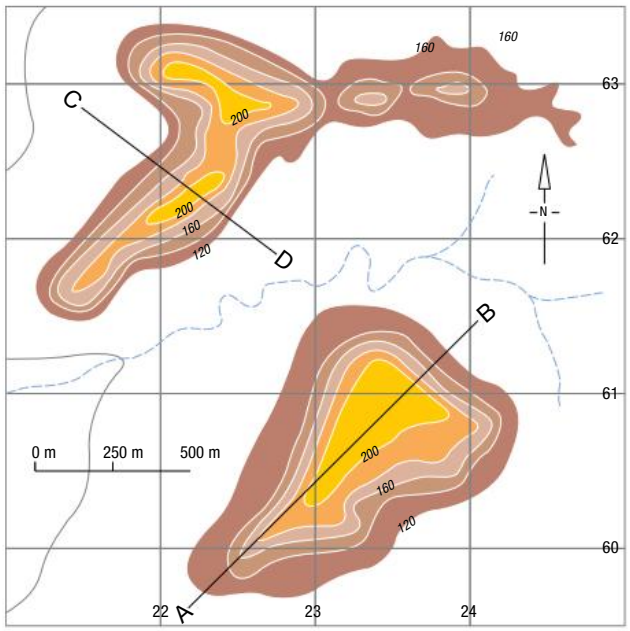
Creating a 3-D model of a mesa and a butte

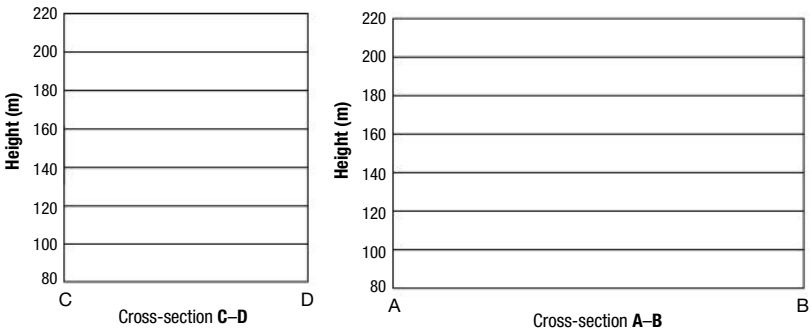
Materials required

A4 paper; ruler; pencil; thick cardboard; scissors; yellow, orange, light-brown, mid-brown and darkbrown paint; glue; plywood suitable for the base; light-yellow paint or sand.

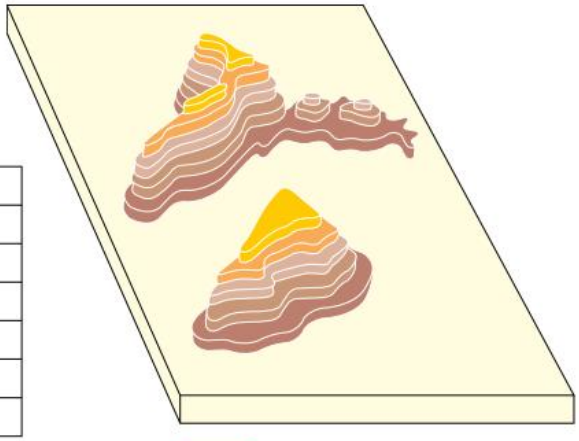
Procedure

1. Create a cross-section of a topographic map, using Figure G3.4.3.
2. Enlarge the map onto a sheet of A4 paper. Copy this enlargement five times: one for each contour height on the map.
3. Cut around each set of contour lines to create templates.
4. Using the templates, trace each set of contours onto a piece of thick cardboard. Carefully cut around the shape of the contour layer you have traced onto the cardboard. Paint each shape a different colour, starting with the darkest colour for the largest shapes through to the lightest for the smallest.
5. Using glue, assemble the mesa and butte and arrange them on the plywood base so that they are located in the same position as in the map. Paint the base a light-yellow colour or sprinkle sand onto a thin coating of glue. Refer to Figure G3.4.4 to see what the finished model should look like.





G3.4.3 Constructing cross-sections of mesas and buttes



G3.4.4 A completed model

Did you know?

Navajo Indians call Monument Valley *Tsé Bii' Ndzisgaii*, meaning 'valley of the rocks'.

Activities

Remembering and understanding

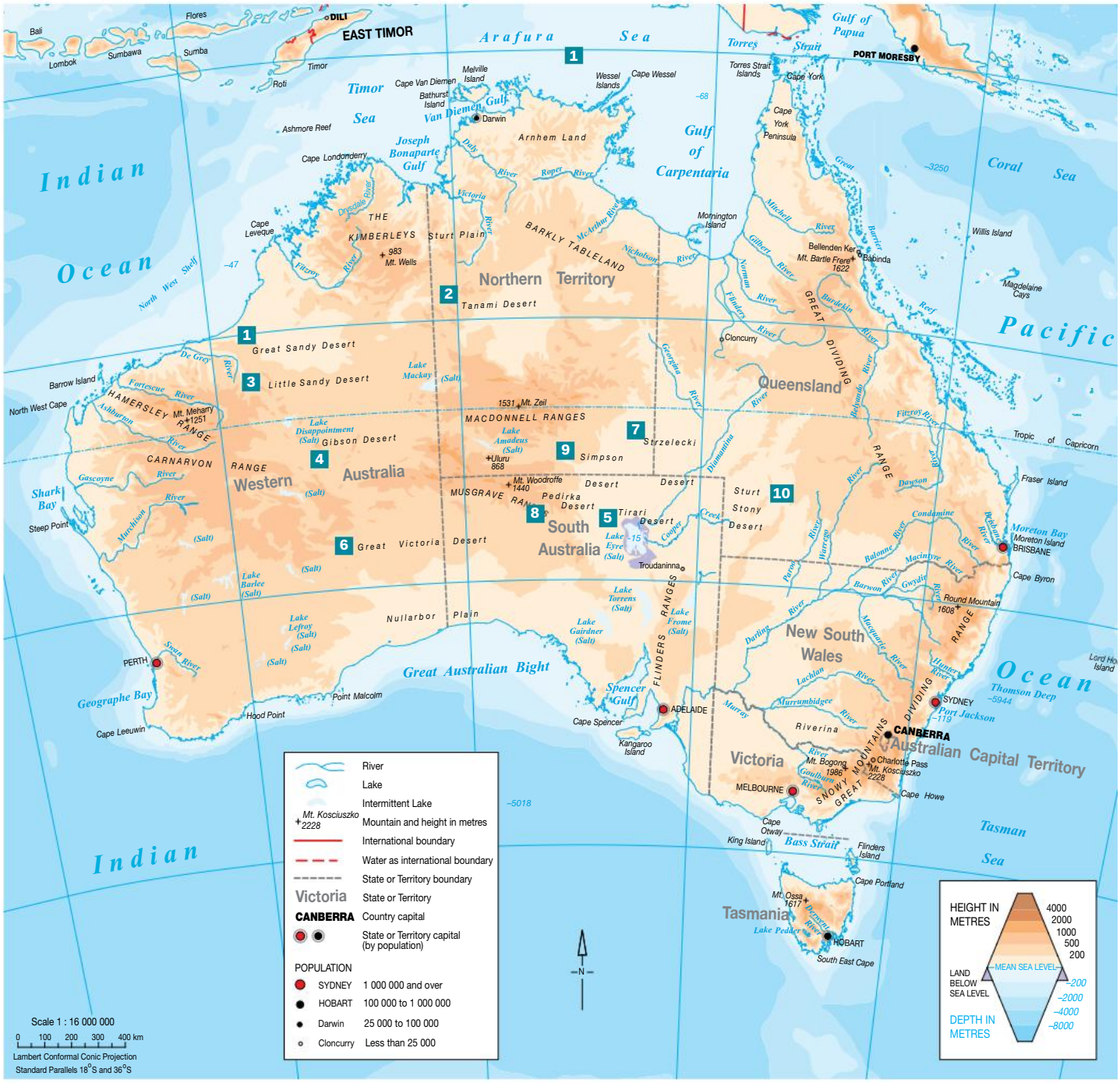
1. Describe the location of Monument Valley.
2. Outline the processes responsible for the formation of the landforms of Monument Valley.

G3.5 Australian deserts

Location and size

Australia's deserts cover approximately 20 per cent (or 1 569 000 square kilometres) of the Australian mainland, and desert is the largest landscape type in the country. Deserts are mainly located on the western plateau and interior lowlands of Australia.

1 Great Sandy Desert (WA/NT)
395 250 square kilometres (5 per cent of the Australian mainland)
The desert is located near the Pilbara and southern Kimberley regions. While the region has an average rainfall greater than 250 millimetres, it is very unreliable. Thunderstorms develop on 20 to 30 days a year.



Source: *Heinemann Atlas*, 5th edition

G3.5.1 Australia's deserts

2 Tanami Desert (WA/NT)
184 500 square kilometres (2.4 per cent)
The Tanami Desert is dominated by a rocky terrain with small hills.

3 Little Sandy Desert (WA)
111 500 square kilometres (1.5 per cent)
The landforms of the region are similar to those of the Great Sandy Desert.

4 Gibson Desert (WA)
156 000 square kilometres (2.0 per cent)
The Gibson is dominated by gravel-covered surface with tussock desert grasses. There are also large areas of red sand plains and dunefields. Several saltwater lakes are found in the centre of the region. Large areas of the desert remain in a near-natural state.

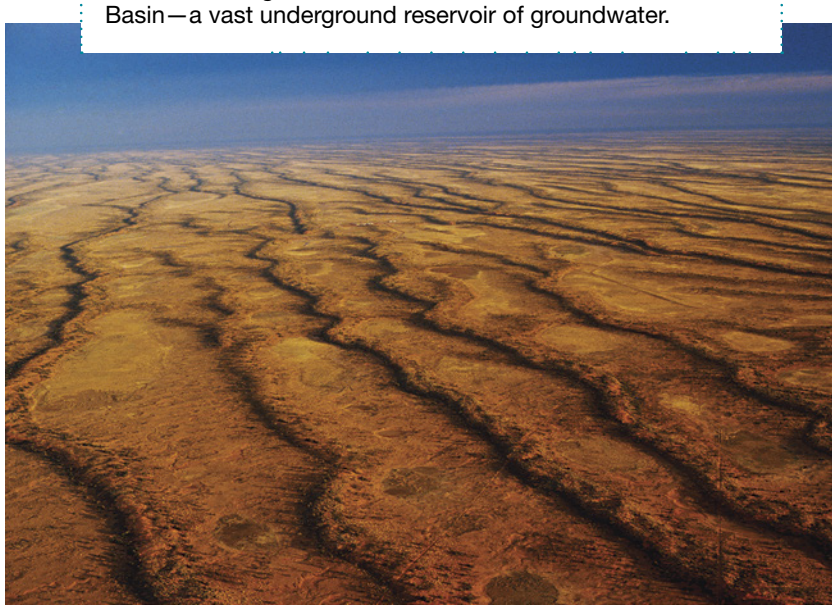
5 Tirari Desert (SA)
15 250 square kilometres (0.2 per cent)
The Tirari is dominated by windswept, white sand dunes and numerous salt lakes. The climate is characterised by high temperatures and very low rainfall. Average annual rainfall is below 125 millimetres.

6 Great Victoria Desert (WA/SA)
418 750 square kilometres (5.4 per cent)
The Great Victoria is dominated by many small sand hills, grassland plains, gibber (stone) plains and salt lakes. Average annual rainfall is low, ranging from 200 to 250 millimetres per year. Thunderstorms are relatively common.

7 Strzelecki Desert (SA/Qld/NSW)
80 250 square kilometres (1.0 per cent)
The Strzelecki is located to the north-east of the Lake Eyre Basin and to the north of South Australia's Flinders Ranges. The Tirari and Simpson deserts are also in the Lake Eyre Basin.

8 Pedirka Desert (SA)
1250 square kilometres (0.016 per cent)
Pedirka is Australia's smallest desert. The landscape is dominated by a deep red longitudinal (north–south) dunefield. Dense scrub and grasses grow in between the dunes.

9 Simpson Desert (NT/Qld/SA)
176 500 square kilometres (2.3 per cent)
The Simpson is an erg (a sand-dominated desert). It contains the world's longest parallel sand dunes. These north–south oriented dunes vary in height from 3 metres in the west to about 20 metres in the east. The tallest dune, Nappanerica, is 40 metres high. Under the desert lies the Great Artesian Basin—a vast underground reservoir of groundwater.



G3.5.2 The Simpson Desert contains the world's longest parallel sand dunes.

10 Sturt Stony Desert (SA/Qld/NSW)
29 750 square kilometres (0.3 per cent)
As the name suggests, the Sturt Stony Desert is a reg desert—a largely flat plain covered with fist-sized rocks.



G3.5.3 The Sturt Stony Desert

Famous Australian desert landforms



G3.5.4 Wave Rock, a 14-metre granite cliff face near Hyden, Western Australia, weathered into a perfect wave formation



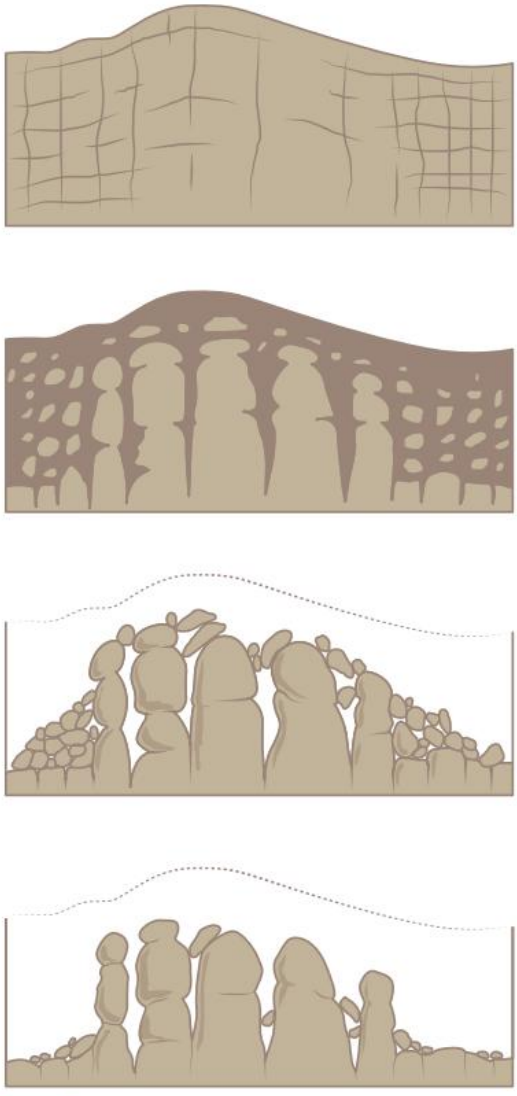
G3.5.5 Uluru, the world's second largest monolith (only Mount Augustus, Western Australia, is larger), central Australia. Uluru is an inselberg, an isolated residual landform that rises abruptly from, and is surrounded by, extensive and relatively flat erosion lowlands.



G3.5.6 Kata Tjuta (the Olgas), a large group of rock domes in central Australia



G3.5.7 The Pinnacles, Western Australia—a desert of upright sandstone formations, weathered over time into weird shapes



G3.5.9 How inselbergs such as Kata Tjuta were formed



G3.5.8 Kati Thanda–Lake Eyre, 15 metres below sea level in the South Australian outback

Activities

Remembering and understanding

1 Study Figure G3.5.1. List the Australian states and/or territories that have no desert regions.

2 Study Figures G3.5.4 to G3.5.8. Write a description of the different types of landforms. Comment on the sand, rocks and vegetation.

Applying and analysing

3 Study Figure G3.5.9. Write a paragraph outlining how inselbergs are formed.

G3.6 Desertification

Causes of desertification

Since the early 1970s, deserts have been increasing in size. Semi-arid areas on the edges of deserts are getting drier and becoming deserts. This process is called **desertification**.

There are two main theories about the causes of desertification: either it is due to natural processes or it is a result of human behaviour. Figure G3.6.1 shows the natural and human causes of land degradation (when soil loses fertility and structure).

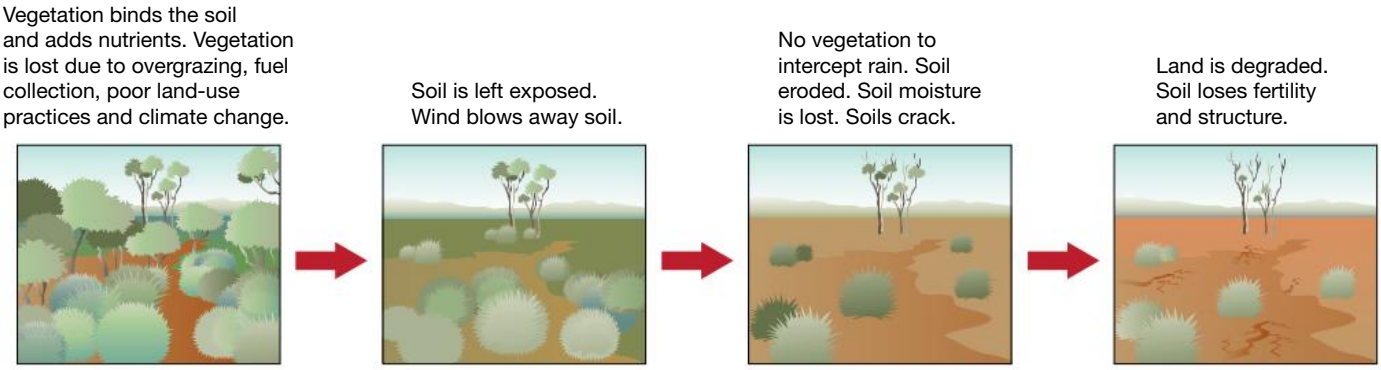
Natural causes

In some locations, natural variations in the climate over time have reduced the amount of rainfall and shortened the wet season. As a result, vegetation dies, soil is blown away and the land becomes degraded.

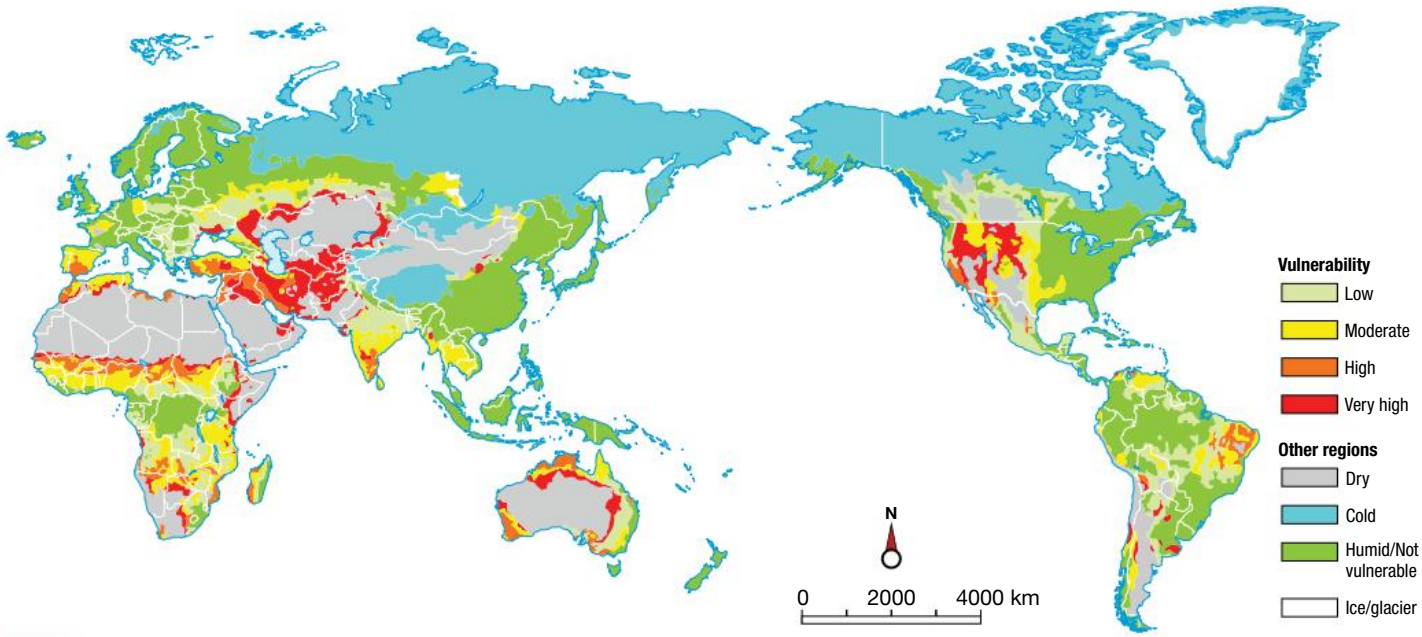
Human causes

Deserts and semi-desert lands have become degraded because of poorly managed land use on the edges of deserts. In these areas, too many cattle graze the land, crops are grown on land that is not really suited to agriculture, and people cut down trees to use as fuel for cooking and providing warmth.

Some scientists argue that desertification is caused by a combination of both natural and human factors and may also be linked to the process of global warming.



G3.6.1 The process of land degradation



G3.6.2 Global vulnerability to desertification

Impacts of desertification

When land becomes degraded, fewer crops are able to be grown and fewer animals can be grazed. An estimated 8.1 million square kilometres worldwide—an area the size of Brazil in South America—have been affected by desertification in the last 50 years (see Figure G3.6.2). If this continues, the wellbeing of at least 1.2 billion people could be threatened.

Responding to desertification

The most effective way to slow desertification is to drastically reduce overgrazing, deforestation and excessive cultivation. Reforestation (tree-planting) programs will help to bind the soil and hold water while slowing the process of desertification.

The Green Wall of China

The Green Wall of China is a massive environmental project that involves creating a series of human-planted forests to prevent the expansion of the Gobi Desert. By 2050, the project will feature a 4500-kilometre forested strip that will increase forest cover in northern China from 5 to 15 per cent.

The Chinese have used aerial seeding to promote tree growth over this vast area. They have also offered cash to farmers to plant trees.



G3.6.3 China now has more than 2.62 million square kilometres of land affected by desertification, twice the amount of its total available farmland.

The Green Wall of China involves the planting of sand-tolerant vegetation in a chequerboard pattern. The aim is to stabilise the developing sand dunes and reduce sandstorms by planting windbreaks.



G3.6.4 Massive tree-planting programs aim to halt desertification on the edges of the Gobi. Here, workers use hay to create grid patterns that stabilise sand dunes.

Activities

Remembering and understanding

1. Define the term 'desertification' and outline the two theories about why desertification is occurring.
2. State how much land has been affected by desertification worldwide in the last 50 years.

Applying and analysing

3. Study Figure G3.6.2.
   - a. With the aid of an atlas, outline the location of places that are under threat of desertification.
   - b. Describe the location of the areas that are not under threat of desertification.
   - c. Describe the location of the areas in Australia that are under threat of desertification.
4. Explain how the process of desertification can be slowed.
5. Explain the Green Wall of China.

LS G2C/D



Urbanisation

9

The world has never before experienced urbanisation—the process by which an increasing proportion of a population lives in towns and cities—at the scale and speed that we see now.

In this chapter we look at the process of urbanisation and its causes and consequences. We also look at the economic, environmental and social advantages and disadvantages of living in large cities.

In addition, we examine the reasons for, and the effects of, internal migration in Australia and China, and international migration to Australia.

OVERVIEW QUESTIONS

9A What are the causes and consequences of urbanisation in Australia, the United States of America and China?

9B What are the economic, environmental and social advantages and disadvantages of living in large cities?

9C What are the reasons for, and the effects of, internal migration in Australia and China?

9D What are the reasons for, and the effects of, international migration to Australia?

LS Before you begin

9.0.1 Istanbul, Turkey

GLOSSARY

developing world the poor and middle-income countries of the world

global economy a world economy in which there are few restrictions on the free movement of goods, services and labour across borders

gross domestic product (GDP) the monetary value of a country's goods and services produced per year

hukou system a Chinese household registration system that entitles the holder to a range of services such as health care and education; used to regulate the movement of people in China

infrastructure physical structures such as buildings, roads, water pipelines, sewers, electricity distribution systems, railways and airports

internal migration the movement of people within a country

international migration the movement of people between countries on a permanent or semi-permanent basis

involuntary migration the forced movement of people between countries on a permanent or semi-permanent basis due to war, civil unrest, drought and famine

megacity a city with more than 10 million people

population density the number of people living per square kilometre

push and pull factors the factors that cause people to leave the places where they live and the factors that draw people to places

quality of life the happiness, wellbeing and satisfaction that a person experiences

regional centre a rural city that supports smaller surrounding towns with services

sea change a relocation from the city to the coast

standard of living a measure of the economic wellbeing of people

tree change a relocation from the city to a rural or regional area

urban sprawl the outward spread of a city and its suburbs as they grow

urbanisation the process by which an increasing proportion of a population lives in towns and cities

urbanised society a society in which the majority of the population live in towns and cities

9.1 Urbanisation: Growth and impacts

Growth

In 2017, 3.2 billion people lived in cities; this number will rise to nearly 5 billion by 2030, when three out of five people will live in cities. Current urban population statistics are shown in Table 9.1.1. In the future, it is estimated that 93 per cent of urban growth will occur in developing nations, with 80 per cent occurring in Asia and Africa. The types of urban environments where people live are very different. Nearly half the world's population live in settlements of less than 500 000 people, and one in eight live in one of the world's megacities. In 1950, there were 83 cities with populations over one million; by 2008, this number had risen to 468. Figure 9.1.2 shows the increases in urban populations for different world regions, both historical and predicted. Nearly 37 per cent of this predicted growth will come from three countries—India, China and Nigeria.

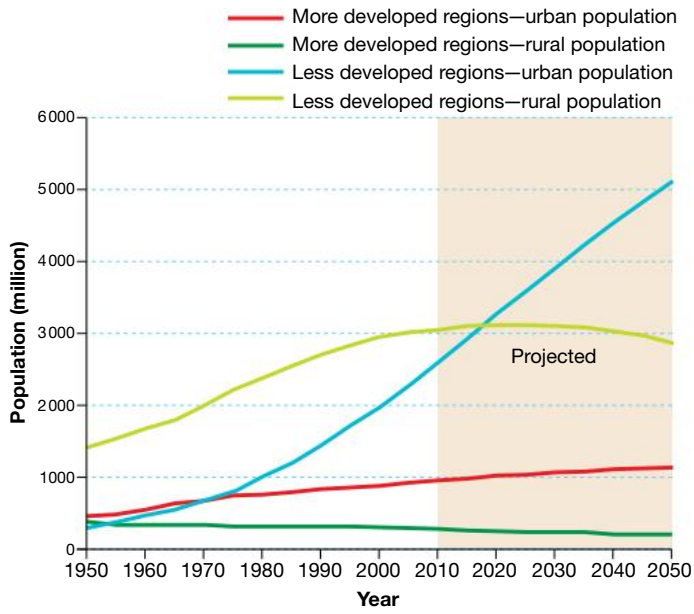
Urbanisation

Urbanisation is the movement of people from rural areas to large cities, and occurs because of a number of **push and pull factors** (see Figure 9.1.3). The highest rates of urbanisation are found in developing countries. The world pattern of urbanisation is shown in Figure 9.1.4.

9.1.1 The percentage of people living in urban areas

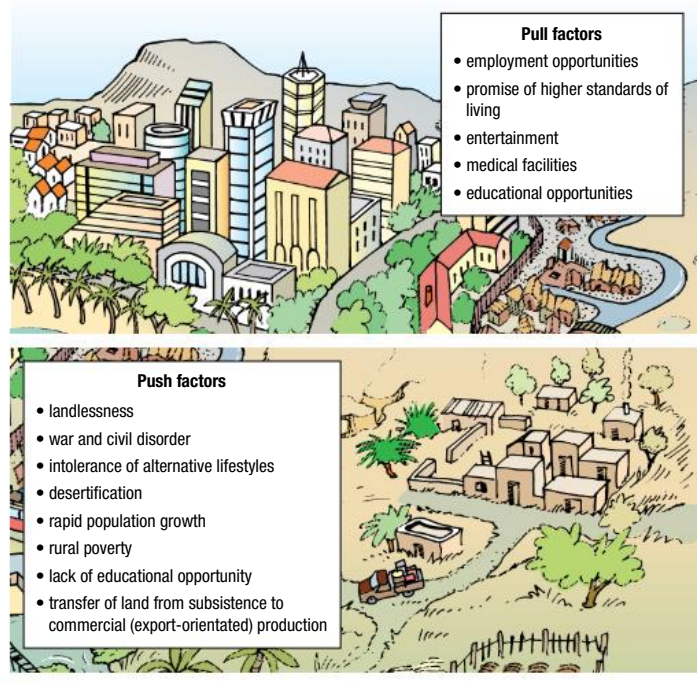
Area	Percentage of people living in urban areas	
	2011	2017
Africa	39	41
North America	80	81
Latin America and the Caribbean	80	80
Asia	44	49
Europe	71	73
Oceania	66	71
World	51	54
Developed countries	75	78
Less developed countries	46	49
Least developed countries	28	32

Source: Population Reference Bureau World Population Data Sheet, 2017

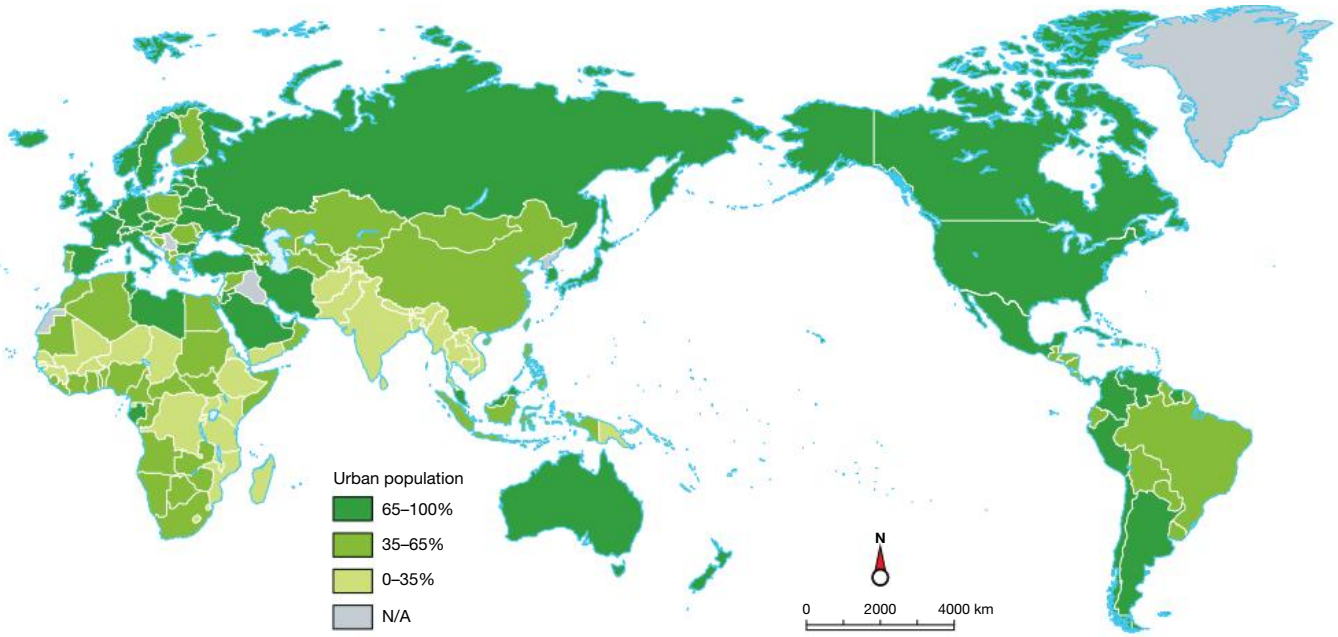


Source: World Urbanization Prospects, The 2011 Revision

9.1.2 Urban and rural populations, 1950–2050



9.1.3 The decision to move to large cities often involves both push and pull factors.



Source: World Urbanization Prospects, The 2014 Revision

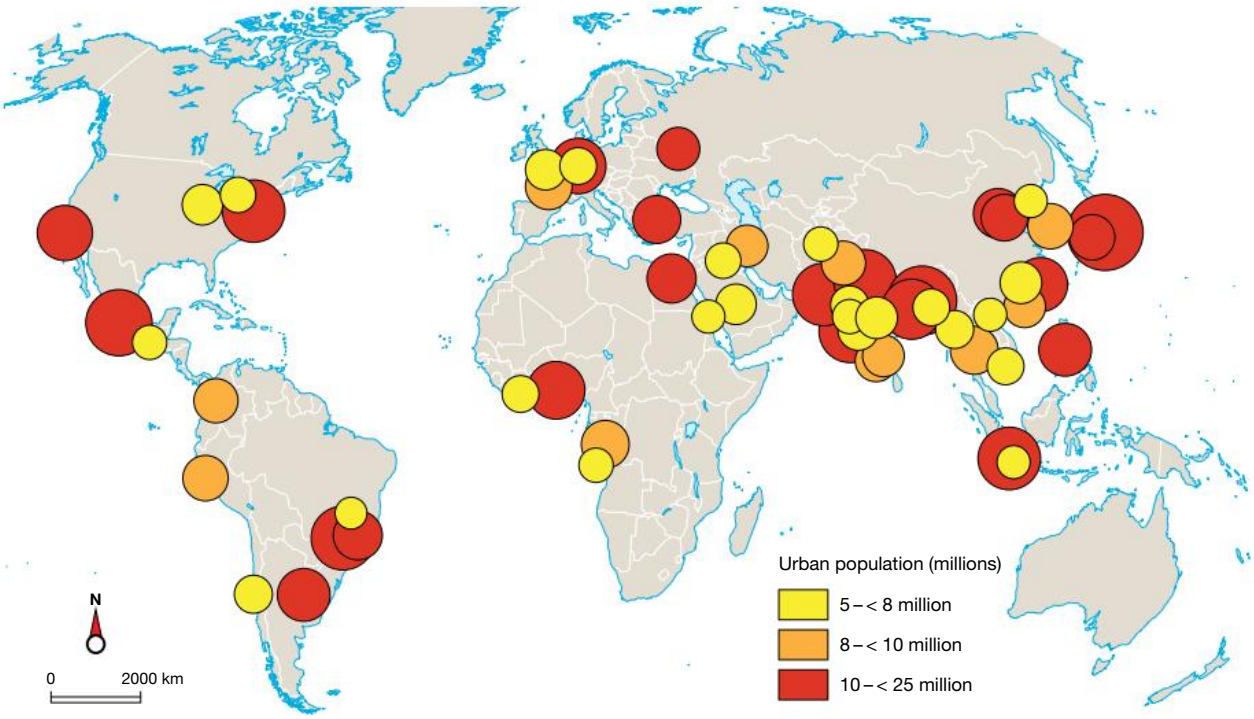
9.1.4 Percentage of people living in urban areas, 2014

Megacities

A **megacity** is a city with more than 10 million people. In 1950 there was just one megacity, New York; by 2011, there were twenty-three. Of the ten largest megacities, seven are in Asia (Tokyo, Delhi, Shanghai, Mumbai, Beijing, Dhaka and Kolkata), one is in South America (São Paulo) and one is in Central America (Mexico City). New York City is the only megacity in the developed world in the top ten. The distribution of the world's largest cities is shown in Figure 9.1.5.

World cities

A city that has developed into a centre of global importance is called a world city. These cities have a level of economic and cultural control that extends beyond their countries. Decisions made in these cities affect the wellbeing of people throughout the world. The most important of these cities are New York, London, Paris and Tokyo. Sydney is also classified as a world city.



9.1.5 The distribution of the world's largest cities. The biggest concentration of world cities is found in southern and eastern Asia.

Impacts on rural areas

When people move from rural areas to the city there are consequences in rural areas.

More developed countries

In more developed countries, such as Australia, it is usually young people and people with young families who move to the cities. There can be severe effects on rural areas when families move to the cities. These effects include primary school closures because there are not enough students to keep the schools open, and shop closures because the remaining population is too small to support them.

Less developed countries

In less developed countries it is usually men between the ages of 15 and 45 who migrate to the cities. If their families go too, their loss can have an even more severe effect on the area they leave. Often the elderly are left in the countryside—those who are least able to look after themselves and tend the land.

Environmental impacts

Carbon emissions

Cities cover 3 per cent of the land's surface but are responsible for 70–75 per cent of carbon dioxide emissions from burning fossil fuels, as shown in Figure 9.1.6. Megacities are the biggest contributors to human-induced carbon emissions. Populations in cities are increasing and carbon emissions are increasing faster than population growth. The World Bank forecasts that, in the **developing world**, megacities will grow by 4 per cent, while their carbon emissions will grow by 10 per cent in the next 20 years. People living in cities on average use 5–10 times more energy than people living in rural areas.

Urban heat island effect

The heat island effect occurs when cities are warmer than the surrounding areas. The heat comes from built surfaces such as roads and buildings, which absorb heat during the day and slowly release it at night.

Water consumption

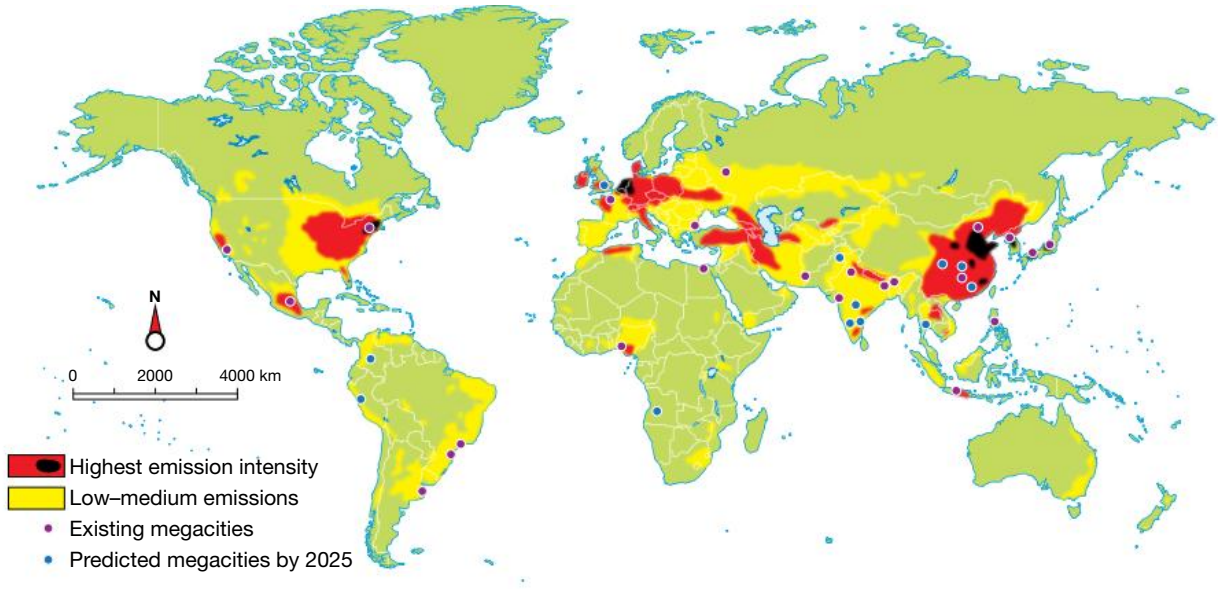
Cities use large amounts of water and produce large quantities of wastewater. As cities increase in size by population and area, there is increased pressure on access to safe water, proper sanitation (toilets), and stormwater and wastewater disposal.

Impacts on cities in the developing world

The problems of large cities in the developing world are outlined in Table 9.1.7.

Quality of life and standard of living

The happiness, wellbeing and satisfaction of a person is referred to as their **quality of life**. Among the many factors that influence a person's quality of life are their family, health, income and access to services. A person's **standard of living** is usually measured in terms of their possessions, such as a house or a car. While these indicate a high standard of living, they cannot guarantee a high quality of life.



Source: NASA

9.1.6 The areas responsible for 70 per cent of fossil-fuel carbon dioxide emissions

High unemployment The number of settlers from rural areas is often larger than the number of jobs available. Many people cope by working in the informal economy—for example, as street vendors.	**Too little water; water is often contaminated** The increased demand for water can exceed (be larger than) the capacity or available amount of existing sources. Groundwater sources and local waterways are often polluted by untreated sewage and toxic industrial wastes.
Poverty Lack of (not enough) access to employment results in poverty. Many people are forced to make a living by sorting waste for recyclables, begging in the streets or turning to crime.	**Overcrowded education and health facilities** Hospitals and schools find it difficult to cope with the increased demands placed on them by the new urban dwellers. Building new facilities is expensive.
Poor-quality, overcrowded housing Lack of affordable housing forces people to crowd into slums or squatter settlements—illegal, self-built housing on unused land. These areas often lack even the most basic services (water, sewerage systems, electricity).	**Environmental issues** Rubbish dumped in streets and waterways often remains uncollected. Open space in urban areas is lost to squatter settlements; trees are chopped down for firewood.
Inadequate infrastructure The existing urban infrastructure is unable to cope with increased usage, resulting in failing transport, water supply and sewerage systems.	**Governance** Corruption (i.e. illegal behaviour by people in positions of power) is common, resulting in the loss of funds for new infrastructure and housing. Laws protecting the environment and public health are not properly enforced.

Activities

LS 9A

Remembering and understanding

1 State where the rates of urbanisation are greatest. What problems does this create?

2 Outline the impact of urbanisation in rural areas in 'more developed' and 'less developed' countries.

3 Explain the difference between quality of life and standard of living.

Geographical skills

4 Study Figure 9.1.4. With the aid of an atlas, do the following tasks.
   - **a** List the countries with more than 65 per cent of their population living in urban areas.
   - **b** Name ten countries in which 0 to 35 per cent of the population live in urban areas. Where are the majority of such countries located?

5 Study Figures 9.1.5 and 9.1.6, and explain the following statement: 'There is a strong link between the location of megacities and increased carbon dioxide emissions.'

Applying and analysing

6 Study Table 9.1.7. Draw up a table with three columns labelled 'Economic', 'Social' and 'Environmental'. Place each problem in the correct column. Note: a problem may be listed in more than one column.

Evaluating and creating

7 Investigate the challenges faced by a large city in the developing world. Find out about the solutions to the problems experienced. Develop a multimedia presentation to communicate your research.
   - **a** Select a city and provide the following information about its people:
     - population size, growth rate and age levels
     - literacy levels (male and female)
     - levels of education
     - unemployment
     - access to medical care and hospitals
     - access to clean water and sanitation.
   - **b** Copy and complete the following table.

City:		
Issue	**Outline the issue**	**Solutions proposed**
High unemployment		
Poverty		
Poor-quality, overcrowded housing		
Inadequate infrastructure		
Too little water; water is often contaminated		
Overcrowded education and health facilities		
Environmental issues		
Governance		

9.2 People and large cities

Living in a city

In a city, large numbers of people live in a relatively small area. Many people are happy living so close together and thrive on all that is on offer around them. However, the fast pace of city life does not appeal to everyone and some residents find it difficult to cope with the challenges of living in a city.

Social attractions

People who find city living a rewarding experience enjoy their contact with others and take advantage of the opportunities available. These include the following:

- *social interaction*—with so many living in cities, there are more opportunities to socialise and make friends. People can also take advantage of the ethnic, community and lifestyle diversity that large cities have to offer. Some areas become popular within particular demographic groups, for example young professionals or tourist populations. Other neighbourhoods may become identified with particular ethnicities.
- *cultural enrichment*—the bright lights and excitement of cities attract people. There is a broader range of activities for people to choose from. People are able to go shopping, visit galleries and museums, go to the theatre and attend sporting events.

Social disadvantages

Some people find living among so many others threatening and difficult, for the following reasons:

- *stress*—the fast pace of city life is not for everyone. Many people become frustrated when they are held up by traffic or unable to find a parking spot. Much of the stress associated with city living is financial. With house prices and rents so high, people have to live in tiny apartments close to where they work, which may not be what they would prefer. Other people who choose to live further out face long journeys, with tolls to pay and higher transport costs.
- *crime*—many people do not feel safe in large cities. The large number of people, properties and retail outlets mean more opportunities for crime.
- *isolation*—people in large cities can be anonymous, and can suffer from isolation and loneliness. People are not always interested in helping those they do not know and contributing to communities they may belong to only briefly.

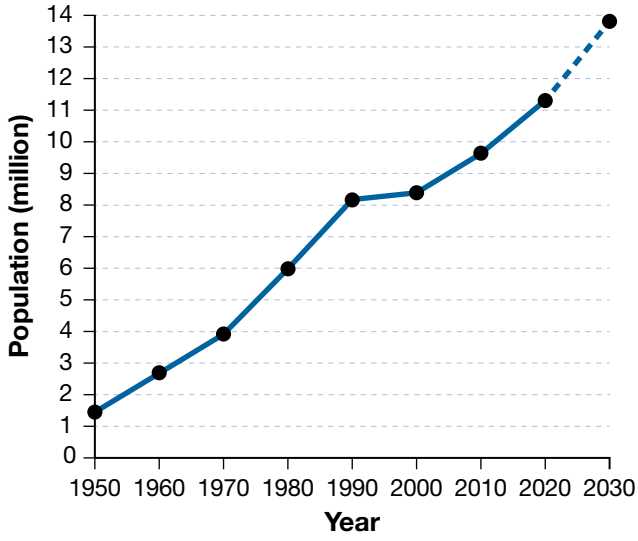
Spotlight

Living in Jakarta, Indonesia

Jakarta is the capital of Indonesia and the largest city. In 2018, approximately 10.8 million people lived in the city; in 1950, there were 1.4 million people. The population is expected to continue to grow as shown in Figure 9.2.1. The official census only counts legal residents of the city; the actual number of residents is much higher. The metropolitan area of the city has grown to include areas surrounding the city. The area has its own name, Jabodetabek, which is taken from the first two to three letters of the city names of Jakarta, Bogor, Depok, Tangerang and Bekasi (see Figure 9.2.2). The population of Jabodetabek is over 30 million people.

People were drawn to Jakarta for the opportunities available, especially for work and the better pay when compared to the countryside and other cities. The population increases have meant the city does not have enough resources and infrastructure for the people who live there.

Many of the people who moved to the city for new opportunities have been forced to live in slums. The slums do not have proper infrastructure; for example, there is no waste collection, no safe access to water and no sanitation. However, many people feel a strong belonging to the slums and there is a sense of community. Families have lived in the area for generations and do not want to move to high-rise apartment living.



Source: Central Bureau of Statistics, Indonesia

9.2.1 The population of Jakarta



9.2.2 Jabodetabek (Jakarta, Bogor, Depok, Tangerang and Bekasi)

Traffic congestion and transport are major problems in the city. Travelling around the city can take a long time due to the amount of traffic. A 20-kilometre trip to the airport can take nearly 4 hours, and a driver spends on average 22 days in traffic jams a year. The traffic jams cost the city US$5 billion a year in lost business. In response, the government has built new roads, introduced toll roads and begun construction on a new rail metro line called Mass Rapid Transit (MRT). For most people, the quickest way around the city is by motorbike.

Jakarta's biggest challenge is that the city is sinking at a rate of 1–25 centimetres per year. The city is expected to be below sea level by 2030. The causes of the sinking include the weight of new construction, but the main cause is the use of water wells. Because only around 40 per cent of homes have access to water through pipes, the rest rely on groundwater drawn or pumped from private wells. Due to the increase in population, the number of wells and the amount of water removed from the ground also increased. As a result, the groundwater level has dropped and people are digging deeper wells to find water. As more water is taken, the ground is subsiding (sinking) at the same time as sea levels are rising. This has meant that the city floods often, and the situation is getting worse.



9.2.3 Jakarta is sinking. A giant sea wall is being built to protect low-lying areas from flooding.

Solutions to the sinking problem include:

- limiting the number of wells
- reducing or banning all groundwater extraction
- fewer new buildings to reduce construction weight on the sinking ground
- moving people to higher areas outside the city.

For now, the government has started to build a 'Giant Sea Wall', which will be over 500 kilometres long and cost US$37 billion when finished. This wall is meant to protect the low-lying areas from flooding. Fishermen who live on the coast do not want the wall because it will make it difficult for them to access the sea, their source of income.

Activities

LS 9B

Remembering and understanding

1 Describe the positive social aspects of city living.
2 Explain how the city environment can make some people happy, while others are lonely.

Applying and analysing

3 The advantages of living in a big city outweigh the disadvantages. Discuss.
4 Prepare a T-chart identifying the advantages and disadvantages of living in a small apartment near the centre of a city.
5 Discuss where you would prefer to live and explain why.

Evaluating and creating

6 Investigate one of the challenges in Jakarta—water, housing, transport, sinking. Outline the issue in detail, including the different solutions to the problem.

9.3 Australia's population distribution

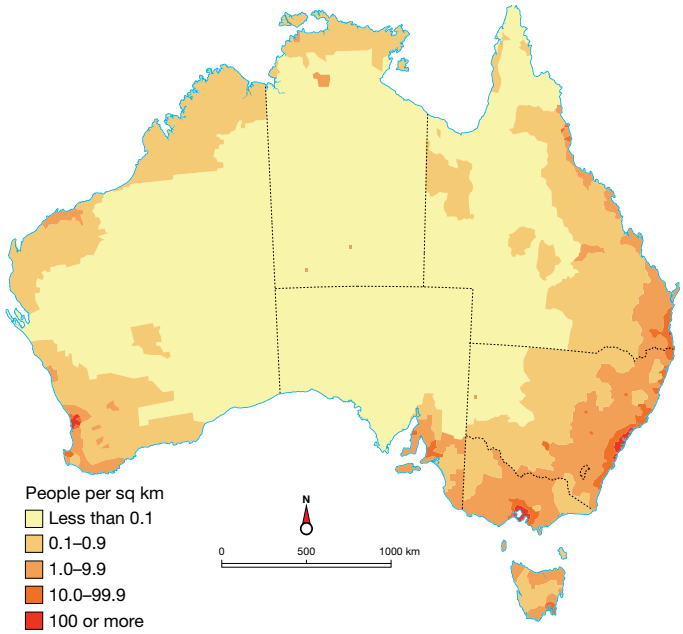
Population density

Population density is the number of people living per square kilometre. In Australia, the population density is linked to different land uses.

- The closely settled coastal strip contains almost all the major cities and most of the large industries and businesses.
- The moderately settled zone is dominated by agriculture and some small-scale industries.
- The sparsely settled zone is dominated by extensive grazing and scattered mining activities.

More than 86 per cent of the population, or 19.6 million people, live in urban centres. Fifty-four per cent of the population, or 12.3 million, live in Brisbane, Sydney, Melbourne and Adelaide. This is why Australia is often described as the most **urbanised society** on Earth.

Australia's average population density is 2.9 people per square kilometre. This is the lowest of any of the continents, except for Antarctica. The highest population densities are found in the south-east corner of the continent. The uneven distribution of the Australian population is shown in Figure 9.3.1.



Source: Australian Bureau of Statistics, June 2013

9.3.1 Most of Australia's population is concentrated in two widely separated coastal regions—the south-east and east, and the south-west.

Changing distribution

The distribution of Australia's population is changing. The proportion of the population living in rural areas is declining. As a result, many small rural communities are struggling to survive.

There are regional variations in population growth rates. During the 1950s and 1960s, the fastest growing areas were the state capitals—in particular Sydney and Melbourne—partly due to the expansion of industry, the arrival of immigrants and the decision of governments to expand cities.

The fastest growing areas of Australia today are the areas surrounding the large cities. In the 2010s, the capital cities of the mining-rich states of Queensland (Brisbane) and Western Australia (Perth) had the fast-growing populations; Melbourne is now the fastest growing city. Most of the non–capital-city growth has occurred along the coast of New South Wales and south-east Queensland.

Factors affecting distribution

A variety of physical, historical and economic factors have worked together to influence population density in Australia.

Physical factors

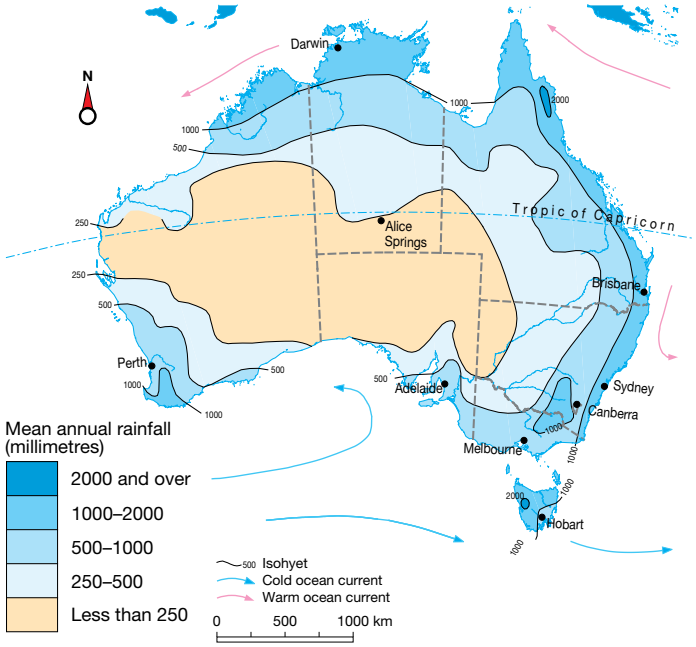
Australia's harsh climate, scarce (few) water resources, low rainfall (see Figure 9.3.2) and poor soils limit the area of the continent that is suitable for food production and settlement. Early European settlement was limited to the areas that could support the agricultural systems the settlers knew from their experiences in Europe.

Historical factors

In most cases, Australian's major urban centres developed on the sites first settled by European settlers. This gave them the advantage of early growth.

Australia was formed from six separate colonies in 1901. This is significant in explaining the present distribution of population. In each state and territory, the capital city is the largest city and is surrounded by rural settlements.

Most state and territory governments centralise administrative functions in the capitals. This has reinforced the dominance of the capital cities. Generally, government departments and agencies are based in the capitals. However, since the 2000s some state governments have moved agencies to regional areas. For example, in Victoria, the Transport Accident Commission was moved to Geelong.



9.3.2 Australian rainfall

Economic factors

Due to their reliance on maritime (sea) trade, the first European settlements were located on the coast. In each case, the settlement's port facilities became central to the colony's economic wellbeing. For many years, life was sustained by goods imported from Europe. Gradually, the colonies developed their own economic activities, but their reliance on Europe continued; it was the major market for goods produced in the colonies.

For the first 100 years of European settlement, coastal shipping was the main means of communication because land routes were difficult to build and slow to travel across. When rail and road networks were developed, they only served to reinforce the dominance of the large coastal cities. Usually they spread out from the capital. Their function was to transport commodities (goods for sale) to the ports, from where they could be exported to the world.

Industry, business and manufacturing

Due to the colonies' reliance on trade, most of the large financial institutions, including the banks, established their headquarters in these large port cities. Industry too was attracted to these centres. They provided easy access to transport, resources and markets, both local and international. Traditionally, employers have always found it easier to attract workers to coastal locations.

The location of manufacturing growth after 1945 reinforced the dominance of the large urban centres. There was a ready supply of workers and a market for the goods produced by manufacturers. Locations close to the major ports allowed for easier access to raw materials and export of goods.

More recently, the ageing of the population has contributed to the development of coastal resort and retirement centres, such as the Gold Coast in Queensland and Port Macquarie in New South Wales.

Urban concentrations

There is a range of advantages and disadvantages associated with large urban concentrations.

Advantages

Due to the number of people living in a specific area, it is less costly for governments to meet needs in cities. The advantages of urban areas are:

- better **infrastructure** (water, electricity, broadband, sewerage and public transport)
- better services (education, health care)
- a more diverse range of cultural and sporting activities
- a wide variety of restaurants, nightclubs and other forms of entertainment
- economic advantages (more businesses supplying all sorts of goods and services)
- more shops and competition
- more jobs and a variety of work.

Disadvantages

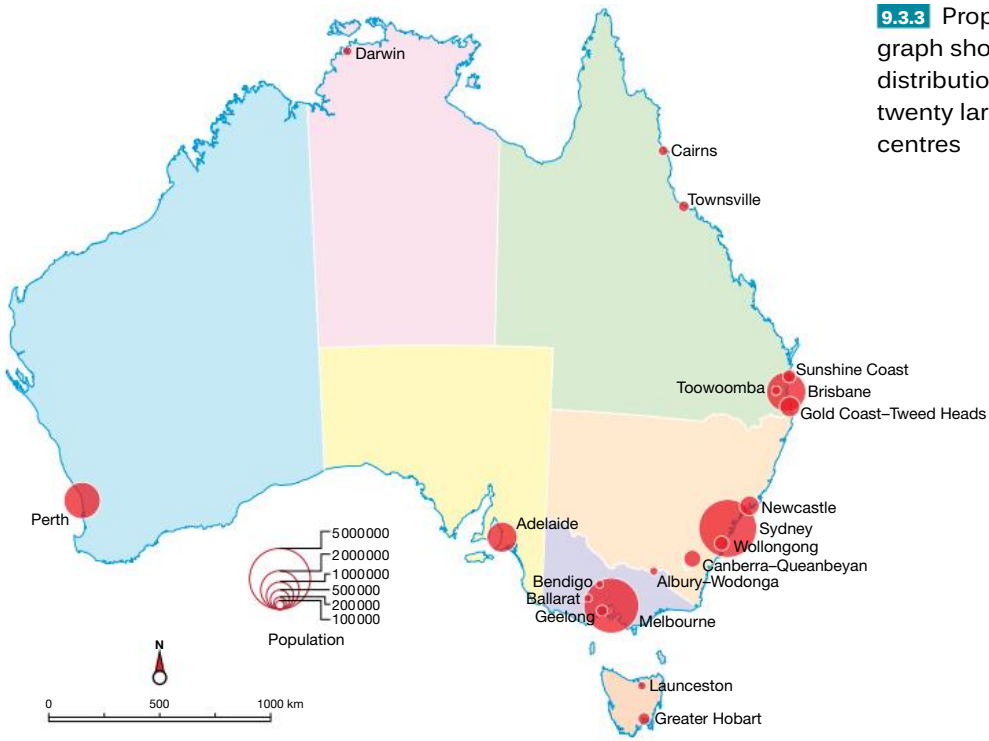
The disadvantages of urban areas are:

- traffic congestion
- air pollution
- polluted rivers and creeks
- expensive housing
- a lack of a sense of community
- higher levels of crime.

Urbanisation in Australia

The growth of the state capitals

In 1910, fewer than 40 per cent of Australians lived in the six state capitals. In the 2010s, 64 per cent of the population lives in state capitals. A common characteristic of these cities is **urban sprawl**. Sydney and Melbourne, Australia's two largest cities, sprawl over an area four times larger than European cities with a similar population, consume more than double the amount of fuel for transport and generate three times the amount of greenhouse gases.



9.3.3 Proportional circle graph showing the distribution of Australia's twenty largest urban centres

9.3.4 Australia's twenty largest significant urban areas, 2016

Rank	Urban area	Population (2016)	Average annual growth rate 2015–16 (%)
1	Sydney	5029768	1.7
2	Melbourne	4725316	2.4
3	Brisbane	2360241	1.5
4	Perth	2022044	1.4
5	Adelaide	1324279	0.9
6	Gold Coast–Tweed Heads	646983	1.8
7	Newcastle–Maitland	436171	0.9
8	Canberra–Queanbeyan	435019	0.7
9	Sunshine Coast	317404	1.6
10	Central Coast	307742	0.7
11	Wollongong	295669	1.2
12	Hobart	224462	0.8
13	Geelong	192393	1.8
14	Townsville	178864	1.0
15	Cairns	150041	0.9
16	Darwin	145916	1.6
17	Toowoomba	114024	0.9
18	Ballarat	101588	1.4
19	Bendigo	95587	1.2
20	Albury–Wodonga	90576	1.3

Source: Australian Bureau of Statistics

The continued growth of these cities threatens the quality of the water from their surrounding catchments, the quality of air and the cleanliness of the oceans. Figure 9.3.3 shows Australia's major urban concentrations.

Non-capital cities

Australia's non-capital cities are much smaller than the capital cities. The largest of these are the industrial cities of Newcastle, Wollongong and Geelong, and tourist centres such as the Gold Coast.

There are also **regional centres**, or large cities and towns such as Tamworth, Dubbo, Ballarat, Townsville, Alice Springs and Launceston. Each of these centres exists to supply goods and services to its surrounding area, or hinterland, on the edges of the town or city. They have large shops, educational centres, professional services (such as lawyers and specialist doctors), and regional government and business offices.

Did you know?

Melbourne's population is expected to be larger than Sydney's by 2028.

Most of these regional centres continue to grow, but often at the expense of smaller rural communities. In smaller rural communities, populations are declining and levels of unemployment and welfare dependency are rising. Some shops, banks and businesses in these communities have been forced to close and some government services have been withdrawn or are now delivered by new technologies.

Recent trends

The fastest urban growth is now taking place in Melbourne (see Table 9.3.4). Sydney and Brisbane are also experiencing high rates of growth.

Regional centres throughout Australia are growing. Karratha in Western Australia, Singleton in the Hunter Valley, and Gladstone and Mackay in Queensland experienced rapid population growth during the mining boom. Queensland's coastal areas are popular locations for retirees and families, who are leaving the large cities for a **sea change**, or more relaxed lifestyle, in the smaller coastal communities.

Another trend is the **tree change**, or movement of people from suburban areas to communities just beyond the fringes of large cities. Many of these people commute to the city for work, meaning that they travel regularly between home and work.

Activities

Remembering and understanding

1 Outline the relationship between land use and population distribution.
2 List the changes taking place in the distribution of the Australian population.
3 Outline the factors affecting the distribution of the Australian population.
4 Explain why Australia is described as one of the world's most urbanised countries.
5 Identify the factors that distinguish Australian cities from those in Europe.
6 Describe the impact of the continued growth of the capital cities on the environment.

Applying and analysing

7 Brainstorm and list the advantages and disadvantages of urban concentrations. Construct a mind map summarising the key points.
8 As regional centres grow, smaller communities decline. What effect does this have on the smaller community?
9 Your advertising firm has been asked to prepare a campaign to attract people and investment to a major regional centre. In groups, develop your ideas for promoting the city. Use the following questions to guide your discussion.
   a What does the city have to offer?
   b Who should the campaign target?
   c What would be the most effective way of promoting the city?
10 Working in groups, develop a concept map featuring the advantages and disadvantages of a sea change or tree change. Share your group's findings with the rest of the class.

Geographical skills

11 Study Figure 9.3.1. With the aid of an atlas, describe the distribution of Australia's population.
12 Study Figures 9.3.1 and 9.3.2. Describe the relationship between rainfall and population distribution in Australia.
13 Study Figure 9.3.3. Describe the distribution of Australia's major urban concentrations. What is the relationship between this pattern and Australia's political divisions and history?
14 Study Table 9.3.4 and do the following tasks.
   a Identify the capital cities with the highest and lowest rates of growth. Suggest reasons for this variation.
   b Identify the fastest growing non-capital urban centres. Speculate on the factors responsible for this growth.

9.4 USA's urban settlement pattern

US cities

The United States of America, like Australia, is among the most urbanised societies in the world. About 82 per cent of the population live in urban areas (see Figure 9.4.1). These areas occupy just 2 per cent of the country's land surface. The majority of urbanised residents are suburbanites; inner-city residents make up about 30 per cent of the urbanised population (about 60 million out of 210 million).

The distribution of urban concentrations in the United States is quite different from that in Australia. The United States has a significant number of large, inland cities. Other than Canberra, Australia has none. The reasons for this have to do with the differences in topography (the shape of the land) and climate.

The rise of the US city

At the time of the American Revolution (1775–83), only one person in twenty lived in a place with a population greater than 2500. Throughout the nineteenth century, however, the landscape was transformed by the process of urbanisation. Compared with Britain (and Australia), the United States has always been less urban.

In contrast to Britain and Europe, the US city system never developed a single, extra large, dominant city. It developed a more spread-out network of large cities. Many of these new cities were a product of the building of the railway system. Most of the cities west of the Mississippi River were established as the railways spread to the west. While five of the ten largest cities in the United States had been established before the coming of the railways, most of the national urban network of cities was built during the era of rail transportation.

Other factors also played a role in the development of the network of cities. The development of the mining industry was one of these. Denver, for example, provided important urban services to its ranching hinterland (surrounding areas). This, when combined with mining on the eastern slopes of the Rockies, explains its rapid growth in the 1870s, even though the area was too dry for non-irrigated agriculture.

Location of cities

In addition to the age of rail, a range of factors explain the existing pattern of urban concentration in the United States.



9.4.1 Distribution of North American cities that have million-plus populations, 2010 and 2025

Climate and land use

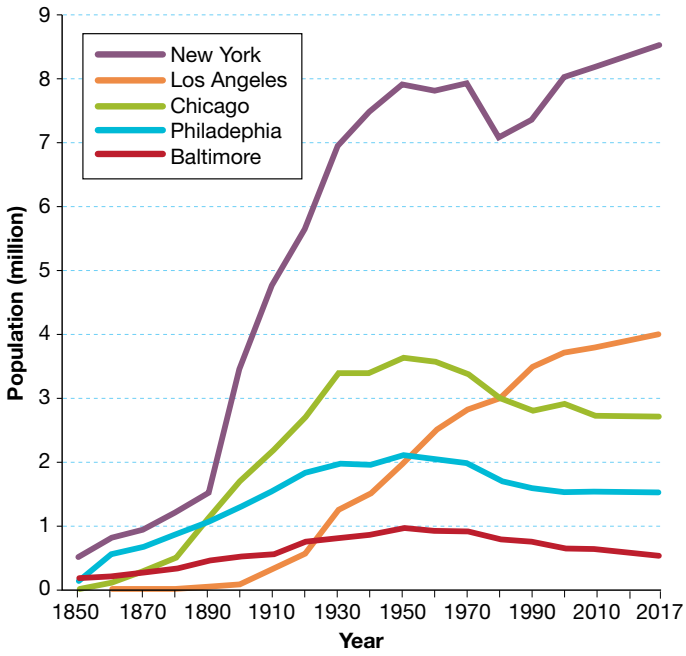
More of the United States is suitable for agriculture than is the case in Australia. While the Great Plains—which lie west of the Mississippi River and east of the Rocky Mountains—are classified as semi-arid prairie grasslands, they are capable of supporting ranching and irrigation-based agriculture. The climate is one of extremes. Very cold and harsh winters are followed by very hot and humid summers. East of the Mississippi River, population densities and rainfall increase. In the south, the climate is milder, but hot and humid in summer. In the north, winters are harsh. Precipitation is high enough to support more intensive forms of farming.

Geography

The United States has rivers that can be navigated by boat, allowing ocean-going vessels to travel some distance inland. These rivers include the St Lawrence River, which links the Great Lakes to the Atlantic Ocean, and the Mississippi River. Cities such as Detroit and Cleveland succeeded as a result of their access to the Atlantic Ocean via the St Lawrence River.

History

The largest concentration of large urban centres is in the north-east of the country—the original focus of European settlement. This region remains the most densely settled part of the United States.



Source: United States Census Bureau, 2012

9.4.2 While US coastal cities have continued to grow, inland cities, especially those traditionally associated with manufacturing, have experienced declining populations.

Governance

The United States consists of fifty states, each with its own capital city complete with all the administrative functions associated with government. This approach to government has contributed to the distribution of relatively large urban centres across the United States.

Changing urban populations

The urban population pattern of the United States is undergoing change. The country's industrial cities are losing population while the service-based cities are expanding. Figure 9.4.2 shows that while cities such as New York and Los Angeles are growing, others, including Chicago and Philadelphia, are declining. Baltimore, a city in decline, has recently experienced a small increase in population. One of the main reasons for this expansion has been the city encouraging immigration by Hispanics (immigrants from Central and South America).

Since the 1960s, Americans have migrated to the south and west to a group of states known as the 'sun belt', which includes Florida, Nevada, Arizona, Utah, Colorado and New Mexico. People are looking for jobs, a warmer climate and sometimes a lower cost of living. Hundreds of thousands of retirees have also settled there.

Activities

Remembering and understanding

1. State how the pattern of urban concentration in the USA differs from that of Australia.
2. Outline how the urbanisation process in the USA differed from the European experience.
3. Explain the role that railways played in developing the USA's pattern of urban concentration.
4. Outline how climate, land use and geography have influenced the distribution of urban concentration in the USA.
5. Explain how the US system of governance has affected the urban pattern of the country.

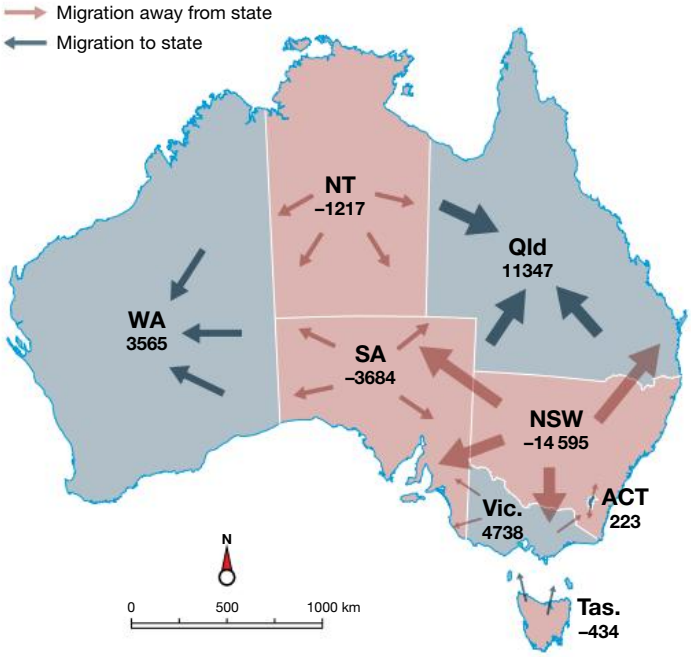
Geographical skills

6. Study Figure 9.4.1 and do the following tasks.
   - a. Identify the overall settlement pattern.
   - b. List the possible reasons for this distribution.
7. Study Figure 9.4.2. Using data from the graph, outline the trends in urban populations for New York, Los Angeles, Chicago, Philadelphia and Baltimore.

9.5 Australia's internal migrations

Internal migration

Internal migration occurs when people move to other places within their own country. Four of the five fastest growing regions in Australia are now found in Queensland. These are Brisbane, the Gold Coast, Moreton Bay and the Sunshine Coast. All are located in the south-east corner of Queensland. Figure 9.5.1 shows average net interstate migration, from 2006–07 to 2015–16.



Source: Australian Bureau of Statistics

9.5.1 Net interstate migration, annual average movement, 2007–07 to 2015–16. Net interstate migration refers to the population gain (positive number) or loss (negative number) through the movement of people; that is, people arriving in and leaving a state.

Economic migration

There are many different reasons for internal migration. Employment opportunities can attract people to certain areas. For example, there has been significant migration to north Queensland and parts of Western Australia due to the mining boom, because people can earn higher incomes.

Economic migration can bring about significant change within communities. The increase in the population can be so sudden that local communities can struggle. Important infrastructure, such as roads, utilities (water and electricity supply), schools and hospitals, and a range of community services, are quickly overstretched. There can be many economic benefits to local communities of internal migration. For example, local shops may do better because there are more customers. But sometimes, where the population grows very quickly, the impact on local economies can be negative. For example, housing shortages are common in such a situation and this means that house prices and rents rise rapidly.

Lifestyle and retirement migration

Another group of internal migrants are the retirees and people who choose to move out of the cities for lifestyle reasons. Moving to be closer to family is another key factor in internal migrations.

There is also a significant movement of people within states. For decades, populations have been declining in many of Australia's smaller country towns. The people who once populated these towns have moved to the large cities on the coasts or to the larger rural centres.

Tree and sea changes

Over the last 15 to 20 years there has been an increase in the number of people moving away from cities to rural or coastal areas.

The terms 'counter-urbanisation' and 'exurbanisation' are used to describe the process of people moving away from cities but maintaining important links with the city, such as work. For example, in South Australia many people have moved from Adelaide to the Adelaide Hills. Here they have access to a rural lifestyle, but because the Adelaide Hills are relatively close to Adelaide they are able to continue to work in the city.

Tree changers are people who move from the city to inland areas, such as from Melbourne to Woodend in Victoria, and from Sydney to Newcastle and Wollongong in New South Wales. Such regions offer larger blocks of land suitable for small farms and large gardens, smaller communities, and a cleaner and greener environment.

Sea changers make their move from the city to the coast. The most popular coastal areas are those relatively close to the big cities.

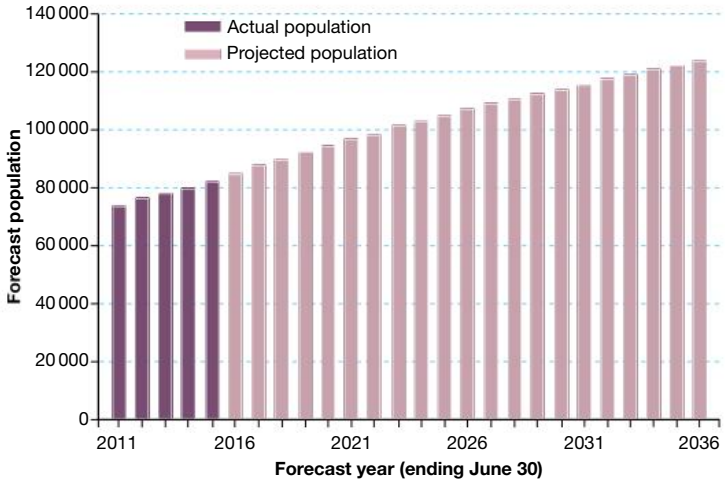
Spotlight

Mandurah, Western Australia

Located just 73 kilometres from Perth, Mandurah has become a popular sea change destination for Western Australians. It has a population of more than 80 000 people, and is expected to increase significantly in the next decade (see Figure 9.5.2). This makes Mandurah Western Australia's fastest growing region. Mandurah is linked to Perth by a freeway and a railway, which opened in 2007. The opening of the railway made Mandurah a more popular destination. A significant proportion of the population, about 20–25 per cent, are expected to be aged over 65. This presents some challenges for the city, especially in terms of providing the health and other services needed by an older population.

As Mandurah has grown, it has ceased to be the small, quiet fishing village it once was. Large shopping malls and housing estates now dominate much of the city. Some long-term residents fear that their town has lost some of its unique character. However, others welcome the increased population and the services and opportunities that this brings.

There are also concerns about the local environment. For example, there are currently 22 kilometres of canals in the city. These canals are carved out of the natural wetland and mudflats that form along the Mandurah Estuary, as shown in Figure 9.5.3.



Source: Forecast.id® website

9.5.2 The projected population increase in Mandurah



9.5.3 A canal housing development in Mandurah

Activities

Remembering and understanding

1. Write your own definition of the term 'internal migration'.
2. Outline some of the main reasons for internal migration.
3. Describe how internal migration can become a problem for local communities.

Applying and analysing

4. If you could migrate to anywhere in Australia, where would you go? Why?
5. Evaluate the short-, medium- and long-term impacts of the opening of the railway line to Mandurah.

Geographical skills

6. Study Figure 9.5.1 and list the states (from highest to lowest) that have experienced population gains and losses from internal migration.

9.6 Indigenous Australians

The traditional Indigenous way of life

Aboriginal and Torres Strait Islander peoples have successfully lived throughout Australia. Indigenous people lived in shelters, houses and villages before the arrival of white settlers. They developed villages near a secure food source and could live there for up to a year. For example, in western Victoria, Indigenous people built circular stone walls with roofs for living in; and in south-west Victoria the Gunditjmara built a complex of traps in waterways to catch eels.

Movement across the land

Aboriginal people were at times nomadic hunters and gatherers who moved across their traditional lands, but were not constantly on the move. They had such an intimate knowledge of their environment that, in most areas, they could obtain sufficient food and raw materials for shelter, clothing and ceremonies in just a few hours. They were excellent observers of the condition of their country and would move on when resources showed signs of declining, enabling the resources to replenish (increase again).

The extent to which Indigenous people moved across the land was determined by how much food the land produced. This was reflected in population densities over the continent. In the coastal areas, where there was plenty of food and water, they might spend months or years in one location and rarely move very far. In the arid areas, they had to walk long distances between waterholes and food sources, which were spread over a much wider range.

Indigenous people also moved across the land to take advantage of seasonal foods and resources. They followed the breeding and movement of animals and fish, as well as the cycles of flowering and fruiting plants. Their knowledge of such regular patterns was very deep and had been built up over thousands of years of careful observation.

Ceremonies, social exchange and trade

There were also annual migrations over great distances for spiritual purposes. The Snowy Mountains, for example, were of special significance. Aboriginal people were summer visitors to the highest peaks, coming from many directions and walking hundreds of kilometres to gather peacefully for trade, ceremonies and marriages. While in the mountains, they feasted on the Bogong moths that were readily available and considered a great delicacy.



9.6.1 The tracks used by Aboriginal people were well-known paths through their country. Songlines joined places of ceremonial significance. By singing songs in an appropriate sequence, Aboriginal people could navigate their way over hundreds of kilometres.

Spotlight

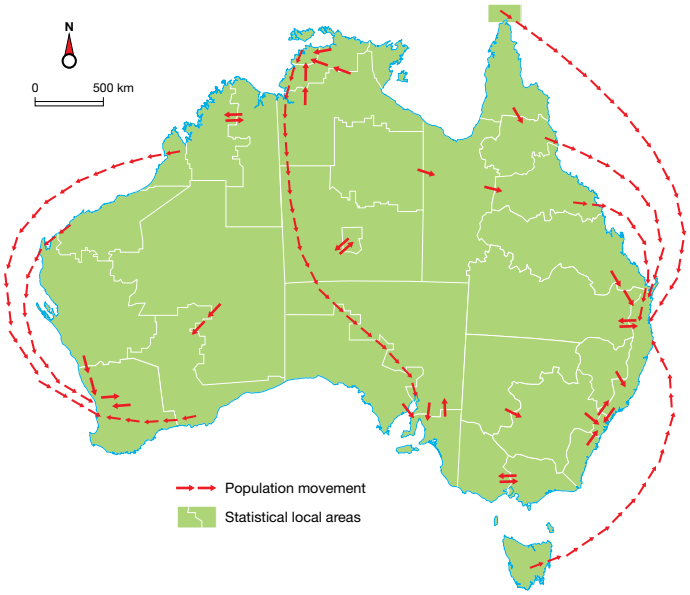
Central Victoria

Hanging Rock was a significant landmark on the boundary of three different groups—the Wurundjeri, Taungurong and Djadja Wurrung. It was an important inter-tribal ceremonial meeting place for large gatherings, initiations, trade and marriage ceremonies. Aboriginal people did not climb the rock, believing that harmful spirits lived in the rock crevices.

At Mount William, near Lancefield, there was an important greenstone quarry. The Woiwurrung called it *Wil-im-ee Moor-ring*, meaning 'tomahawk place'. The quarry was on Wurundjeri land and they mined the valuable stone. This stone was valued for its sharp edges and was used to make hatchets or axes. The area was the centre of an important trading network in which the greenstone axe heads travelled over 700 kilometres into central Australia and western Queensland. The trading network created strong bonds between different social groups.

Mobility of Indigenous people today

Indigenous people are highly mobile, as is shown in Figure 9.6.2. They travel for the usual reasons of education, employment, health services and sport. There has, however, been an overall pattern of migration from remote areas to cities. Despite this mobility there remains a strong attachment to place and kin (family).



9.6.2 The most common destinations for Indigenous people in Australia

The significance of place

Indigenous people are very attached to the place in which they or their ancestors were born. Many are very conscious of their own local territory, possessing a detailed knowledge of its geography and sacred histories. They retain family stories and memories of their country, which make it significant to them. If they move away, they feel that they must periodically return to their birthplace because of their attachment to place.

Maintaining kin relationships

The kinship system is central to Aboriginal social organisation. Family relationships by blood ties and marriage define the kinship system. 'Family visits' are not just about enjoying social occasions. They fulfil obligations that are essential in Aboriginal society. This pattern of movement is more common in rural and remote areas, particularly in northern Australia.

'Aboriginal people will, at no notice, join a vehicle travelling hundreds of kilometres away, taking with them no money and few provisions, and will have no idea of when or how they will return ...' Such travel is made possible by knowing that the vehicle is in the charge of a relative and secondly that relatives can be found at the end-destination and intermediate stops along the way who would accept unannounced visits and provide support for visiting kin.

9.6.3 A reflection on Aboriginal people in central Australia, from A. Hamilton, 'Coming and going: Aboriginal mobility in north-west South Australia, 1970–71' in *Records of the South Australia Museum*, Vol. 20, pp. 47–57

Activities

Remembering and understanding

1. Explain how Aboriginal people were able to live off the land over much of the Australian continent.
2. Describe how songlines assisted Aboriginal people to find their way.
3. Explain why Indigenous people are so mobile today.

Applying and analysing

4. Study Figure 9.6.2. Describe the pattern of movements between states.

Evaluating and creating

5. Investigate the Aboriginal trade in ochre that existed before European settlement.
   - a. Using a map of Australia, label and annotate the sources of ochre and the trade routes.
   - b. Explain how the ochre was gathered.
   - c. What did the Aboriginal people use to trade for the ochre?
   - d. Outline how the ochre was used.
   - e. Were there any other main trade items? Explain.

LS 9C

9.7 China's internal migrations

Economic transformation

China's economic change has caused one of the largest population movements in human history, as shown in Figure 9.7.1. The country's economic success has led to a rapidly rising standard of living. The main cause of urban growth has been rural–urban migration.

Between 2010 and 2025, the population of China's cities will grow by 350 million people, which is equal to today's population of the United States. One billion people will live in Chinese cities by 2030. The number of cities with more than one million people will reach 221 by 2030. Europe has only thirty-five today. In response to the population movements, the following infrastructure will be required.

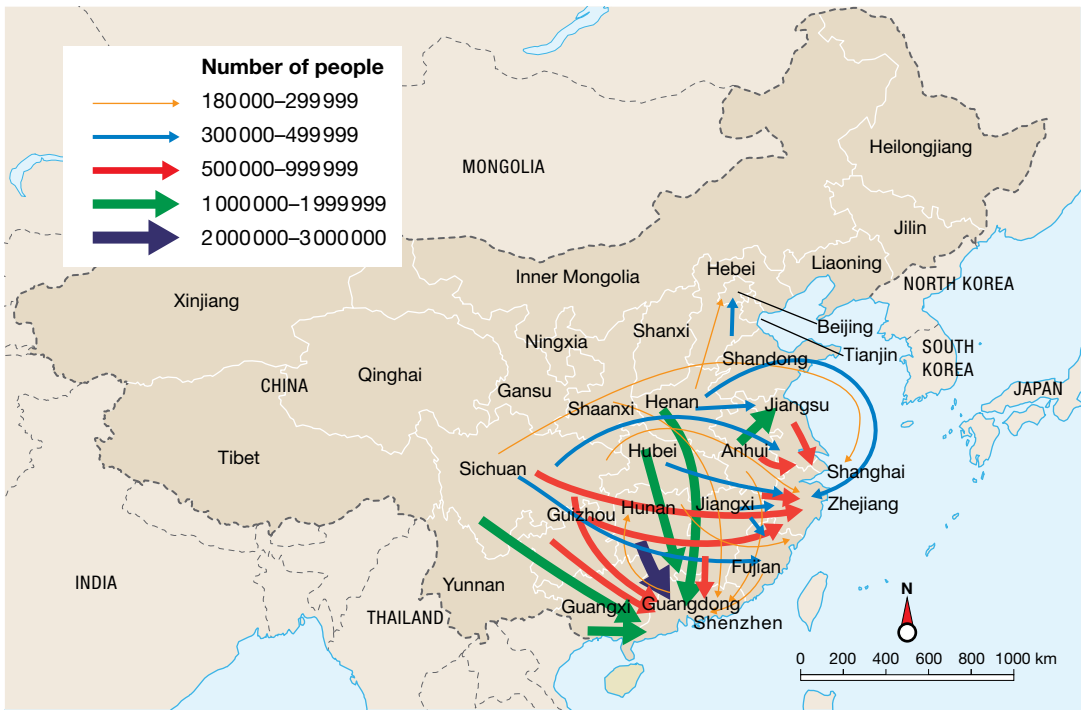
- Five billion square metres of roads will need to be paved.
- Forty billion square metres of floor space will need to be built in five million buildings. Fifty thousand of these buildings will be skyscrapers.
- One hundred and seventy-five new mass-transit systems (public transport networks) will need to be built.

Population mobility

Until the end of the 1970s, 80 per cent of the Chinese population lived in rural areas and it was almost impossible for them to leave their villages. Under the **hukou system**, a person was registered in a household and identified as a resident of a particular area. People were required by law to stay in their district and they were not permitted to move elsewhere looking for work. People could get coupons for food or receive medical treatment only in their own hukou, and so the government services that people needed to survive were tied to where they were registered. This kept the people in the countryside for decades.

A shift in government policy

After 1978, economic reforms were introduced by the government and some of the rules of the hukou system were changed. People no longer required coupons to buy food, and a worker without an urban hukou could work in the city, because the government no longer allocated jobs to people. However, some rules did not change. People who moved to the city for work but were still registered in rural areas were not able to get services such as health care, free education for their children and subsidised (cheaper) housing. Despite these remaining rules, the changes to the hukou system were enough for urbanisation to begin. China's policy shift to accept and promote migration to urban areas was designed to create the pool of workers necessary for economic growth.



9.7.1 Internal migration in China, 2000 to 2005

The hukou system today

The hukou remains one of the most valuable documents in China today. Migrant workers without an urban hukou still have trouble finding decent housing and education for their children. They are also denied a range of government benefits. It is especially hard to gain admission to university without having an urban hukou.

There has been a push to reform the hukou system. Shanghai, Guangzhou and Shenzhen have relaxed the rules. The local hukou can be obtained if the migrant invests in the city or buys property. However, in crowded cities such as Beijing, where one third of the residents are without the hukou, the government is hesitant to abolish the system, fearing that it would result in a surge of migrants to the city. They fear that such an influx would overwhelm the city's infrastructure and lead to even more overcrowding.

Internal migration

China's economic reforms involved its integration into the **global economy**. China quickly became the world's largest exporter of manufactured goods and a major importer of resources. Once-sleepy coastal fishing villages were suddenly transformed into major ports and manufacturing centres. The fastest growth occurred in large cities in the coastal provinces, where the export industries boomed. Guangdong was known as the 'world's factory' due to the high number of factories and factory jobs there.

As the economy grew, it created new jobs, and many people left the countryside for the towns and cities in search of jobs and higher wages. These migrants were employed in factories, on construction sites and in services (as security guards, cleaners, couriers and domestic workers). Most of the migrants were young people who did not want to stay in the rural villages, which offered little in the way of career options.



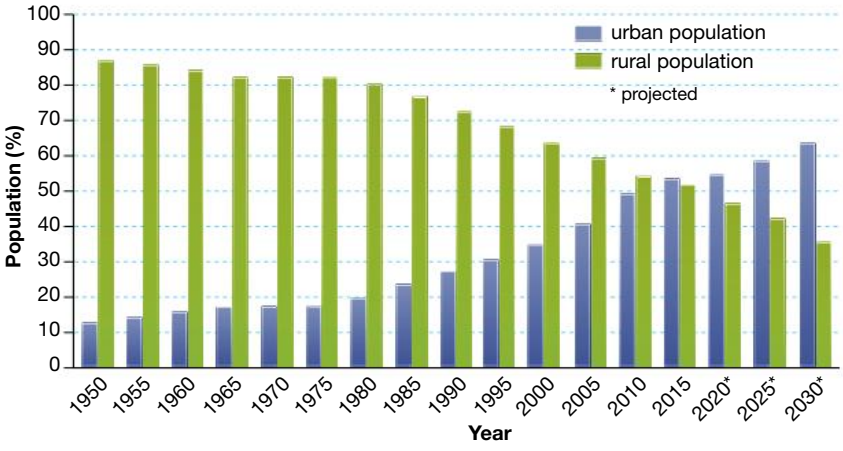
9.7.2 Migrants on the move, seeking jobs in the cities

Lives of internal migrants

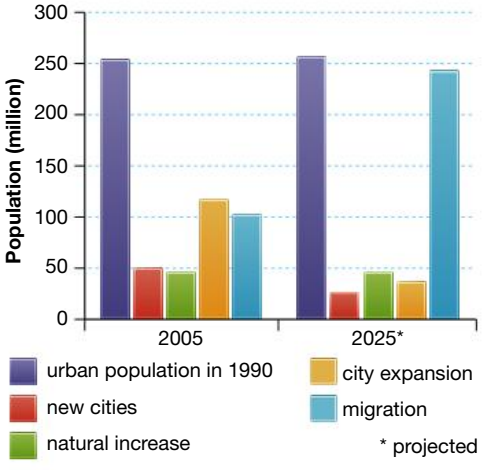
Migrant workers from rural areas make up approximately half of China's urban workforce and make half of the country's **gross domestic product (GDP)**, but suffer from discrimination. The migrants are denied access to public services in the cities, due to the hukou system, and often experience exclusion and abuse.

The future

In 2012, the number of people living in urban areas was greater than the rural population for the first time, after 21 million people were added to the population of urban areas in just one year (see Figure 9.7.3). Between 1990 and 2005, 103 million people migrated from rural areas to urban areas, and in the next 20 years another 243 million are expected to move to urban areas (see Figure 9.7.4).



9.7.3 China's rural and urban population growth, 1950–2030



Source: McKinsey Global Institute, China All City Model

9.7.4 Sources of urban population increase in China between 1990 and 2025

China's urban economy is expected to generate over 90 per cent of GDP. China's economic goals are closely tied to continued urbanisation. The government is committed to quadrupling per capita GDP by 2020 (from the 2000 level), meaning that GPD per person will be four times bigger. This goal suggests the continued growth of towns and cities, where the wealth is generated. This growth will create employment—a major pull factor—and internal migrations will continue to impact on China's cities and rural areas.

Impact on Chinese cities

Rapid urban development

China is becoming an urban nation at a rate and on a scale never before seen. In just two decades, the lives of millions of Chinese people have been changed. With increasing concentrations of people in industrial cities, the environment has become a casualty of the rural–urban migration. Huge areas of the countryside have become part of the rapidly advancing urban sprawl.

In China's eastern provinces are six of the world's top twelve economic 'hot spots': Shanghai, Beijing, Tianjin, Chongqing, Nanjing and Guangzhou. These cities are the favoured destinations of migrant workers. China's cities make up about 40 per cent of the global growth in the demand for residential and commercial floor space.

The government has built over a million new housing units in cities throughout China to deal with the rapid urbanisation. It has also provided assistance to workers to set up savings plans to purchase these units. The skylines of cities and the countryside are filled with construction cranes as high-rise apartments are built. Urban sprawl is consuming the east coast of China.

Impact on urban dwellers

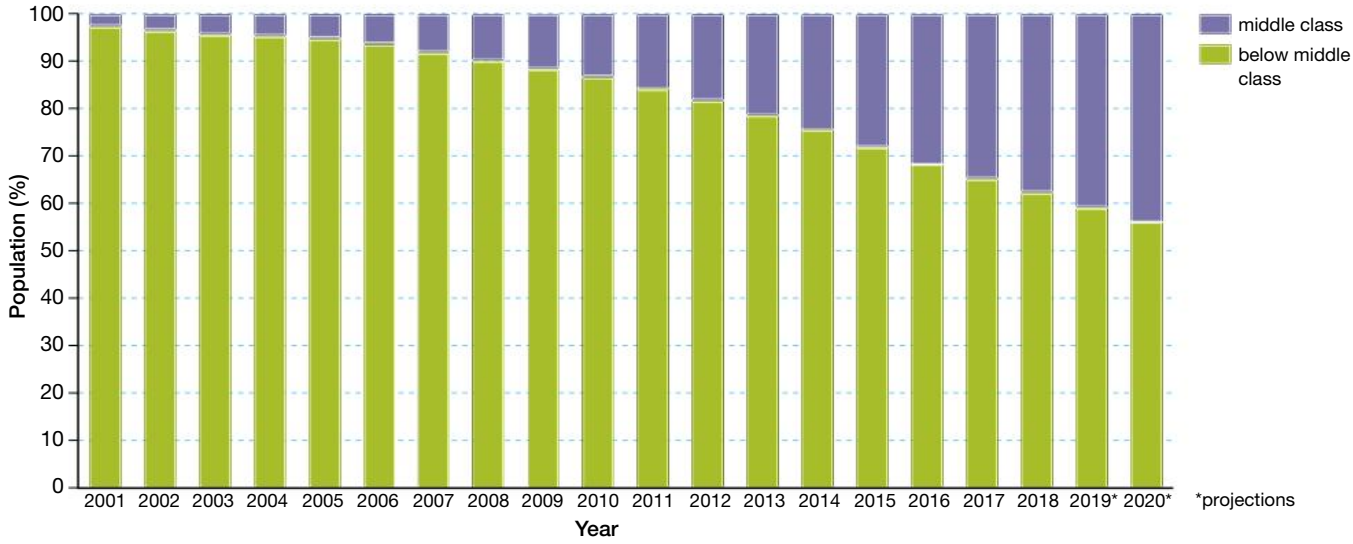
Economic growth has delivered greater prosperity to urban dwellers. People living in Guangzhou in 2010 were earning four times the income that people earned in 1993. Urban residents also receive more benefits and social services from the government, such as health insurance, pensions and education. As city dwellers become more educated, they enter high-skilled jobs, where they earn even higher incomes. As a result, a middle class of wealthy consumers has emerged, and the numbers involved will lead to further economic growth. Figure 9.7.5 shows the rise in China's middle class.

Middle class

The increasingly wealthy middle class provides a huge market for consumer goods. Between 2000 and 2014, the number of automobiles per 100 urban households rose from less than one to about 26, the number of computers from 8 to 87, the number of mobile phones from 16 to over 200, and the number of microwave ovens from 16 to 73.

Did you know?

If current patterns continue, the number of middle-class Chinese will soar to 607 million by 2020, and spending by China's middle class will rival that of the United States.



9.7.5 The growth in China's middle class

Inequalities within cities

Migration has led to greater inequalities within cities. The incoming rural migrants are generally uneducated and low skilled, and find it difficult to get well-paid jobs. This has led to tension between the rich and the poor. Over one-third of urban crimes have been linked to young migrants. There has also been a disturbing number of suicides among young migrant workers unhappy with their wages and working conditions.

Environmental effects

As urban expansion continues to accelerate in China, the environmental consequences are alarming. A toxic, grey cloud often hangs over many of China's cities. Industrial wastewater and household sewage have contaminated rivers and coastlines. Water shortages and water pollution are becoming real threats. Air pollution has the potential to become the main cause of death in China. Heavy smog from factory emissions and car pollution can cause lung cancer and cardiovascular diseases.

Some government initiatives to develop clean energy sources are underway. However, imposing controls on pollution would slow the economic growth to which the government is heavily committed.

Activities

Remembering and understanding

1 Explain what the hukou system is. How did it restrict population movements?
2 Describe and account for change in China's population movement policy. What was the impact of the change?
3 Outline the urban population projections for China into the future.
4 Compare the opportunities for those who have an urban hukou and those new migrants who do not.
5 Describe where the most rapid urban development in China has occurred and will continue to occur.
6 Outline how the government has assisted with housing.

Applying and analysing

7 Study Figure 9.7.3 and answer the following questions.
   a In which year did China have the highest percentage of rural dwellers?
   b When did the rate of urbanisation start to accelerate?
   c What percentage of the population is expected to be urban dwellers by 2030?
8 Study Figure 9.7.4 and answer the following questions.
   a By 2025, how many people will migration have added to China's cities since 1990?
   b Of the total increase in urban population between 1990 and 2025, what percentage will have been migrants?
9 Create a PMI chart of the outcomes of China's urban expansion.
10 Write a short response to the following topic: 'The greatest achievement of China has become its biggest burden.' In your response, consider the difficulty in balancing economic growth with environmental quality.

Evaluating and creating

11 Investigate the environmental issues of Chinese cities. Prepare an annotated visual display for a city of your choice, entitled 'Choking in growth'. You should include:
   - a map of the city
   - an overview of the city—population size, demographics (e.g. age and gender structure of the population), main industries, growth rates
   - an outline of the main causes of the pollution
   - current solutions to the pollution problem. For example, have policies been introduced? Are they working? Why or why not? Provide alternative solutions.

9.8 International migration

Migration

Migration is defined as the movement of people. Movement within a country—for example, people moving from rural areas to the city—is called internal migration. Movement between countries is called **international migration**.

Who migrates

Each migrant decides to move for their own reasons. For some people the choice is voluntary and is made for lifestyle or economic reasons. For others there is no choice: natural disaster, war or a range of other issues force them to move.

There are five categories of migrants: settlers, contract workers, professionals, undocumented workers, and refugees and asylum seekers.

Settlers

Settlers choose to move permanently to a new country. These people need to apply and then be accepted into their new country, usually by passing some type of test.

Contract workers

Contract workers are accepted for a short time into a country, usually for a set type of employment. For example, ski instructors may be permitted into Canada for the ski season.

Professionals

As the world economy grows and companies become more global, the need for company employees to travel increases. Many of these transnational corporations move their staff around the world. These migrants are often referred to as expatriates and are usually short-term (2–3 years) migrants.

Undocumented workers

Undocumented workers are usually referred to as illegal immigrants. Many people in this category are smuggled into host nations. For example, there are an estimated six million illegal immigrants in the United States, mostly from Mexico. Other illegal immigrants may arrive in a country legally, usually as tourists, but then overstay.

Refugees and asylum seekers

Refugees and asylum seekers flee their homes because of fear. If the authorities in the countries to which they flee confirm that they are in danger, they are entitled to protection and perhaps even resettling in a new country. Asylum seekers are people who seek to have a government accept them. This type of migration is often referred to as **involuntary migration** because the migrants are forced to move. Figure 9.8.1 shows Rohingya refugees fleeing from violence in Myanmar.



9.8.1 Rohingya refugees fleeing to Bangladesh from violence in Myanmar

Why migrate

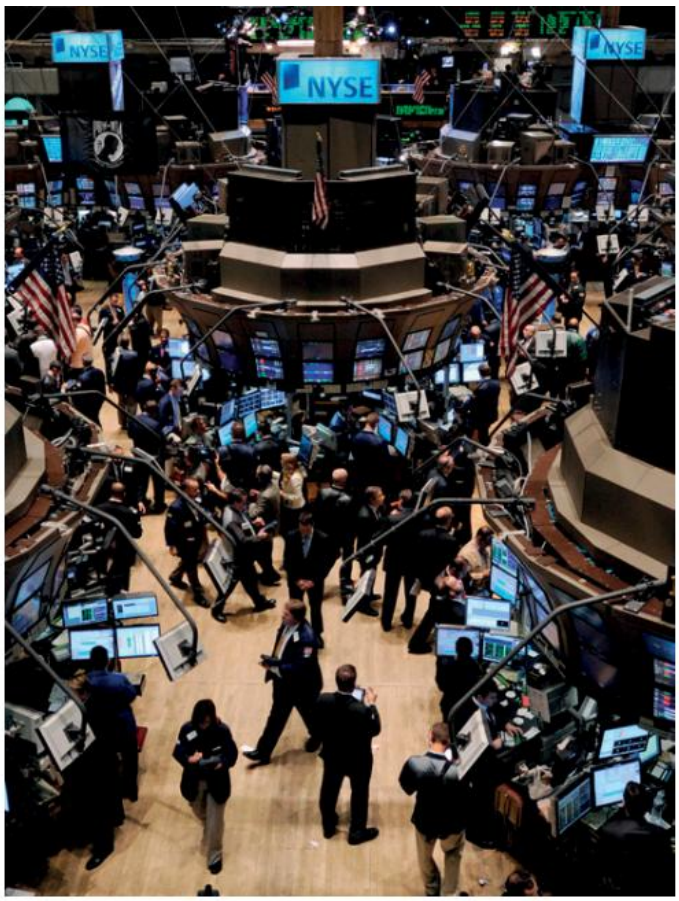
The reasons for migration are complex and differ from person to person. However, there are three main reasons why a person would want to move to another location. They are pull, push and network factors.

Pull factors

These are often called demand factors. They are the reasons that make a person want to go to a new location. Better employment opportunities and higher wages are typical pull factors (see Figure 9.8.2). Social factors, such as the wish to be reunited with family members, are also pull factors.

Push factors

These are often called supply factors. They are the reasons that make a person want to leave a place. Unemployment, low wages, natural disasters—for example, drought or famine—and war are common push factors. When people flee conflict they often have to leave most of their possessions behind them. Many spend years in camps, relying on aid from international organisations.



9.8.2 The New York Stock Exchange in Wall Street. Large financial hubs such as New York and London attract people from around the world.

Network factors

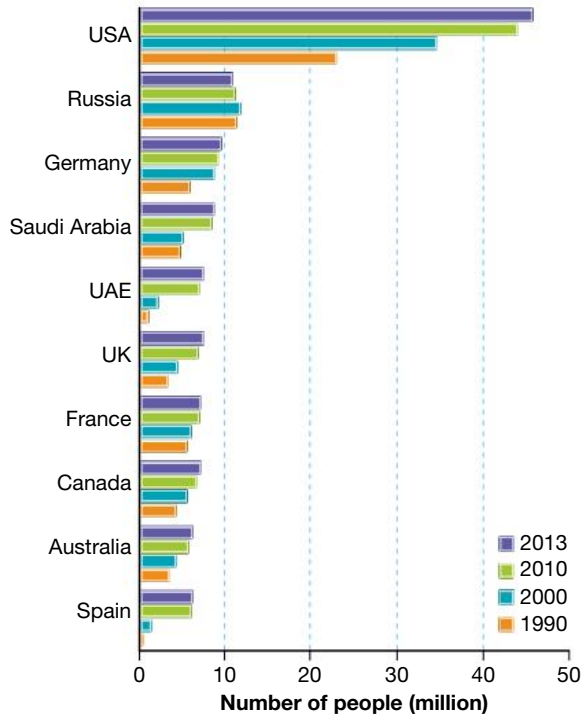
These factors include the desire for a new experience or moving as a result of a company restructure.

Migration has taken place for thousands of years. Globalisation, however, has made it easier for people to move. Work and education have become more international and many people spend some of their lives in countries other than their own.

Many migration patterns reflect traditional links. For example, many migrants to Great Britain come from Pakistan and India. Pakistan and India are former dominions (colonies) of Britain and so have historical links with Britain, and British influences in their cultures. Changes in government policies—such as ending the White Australia policy, which restricted non-white immigration to Australia from 1901 to 1973—have enabled more global migration patterns.

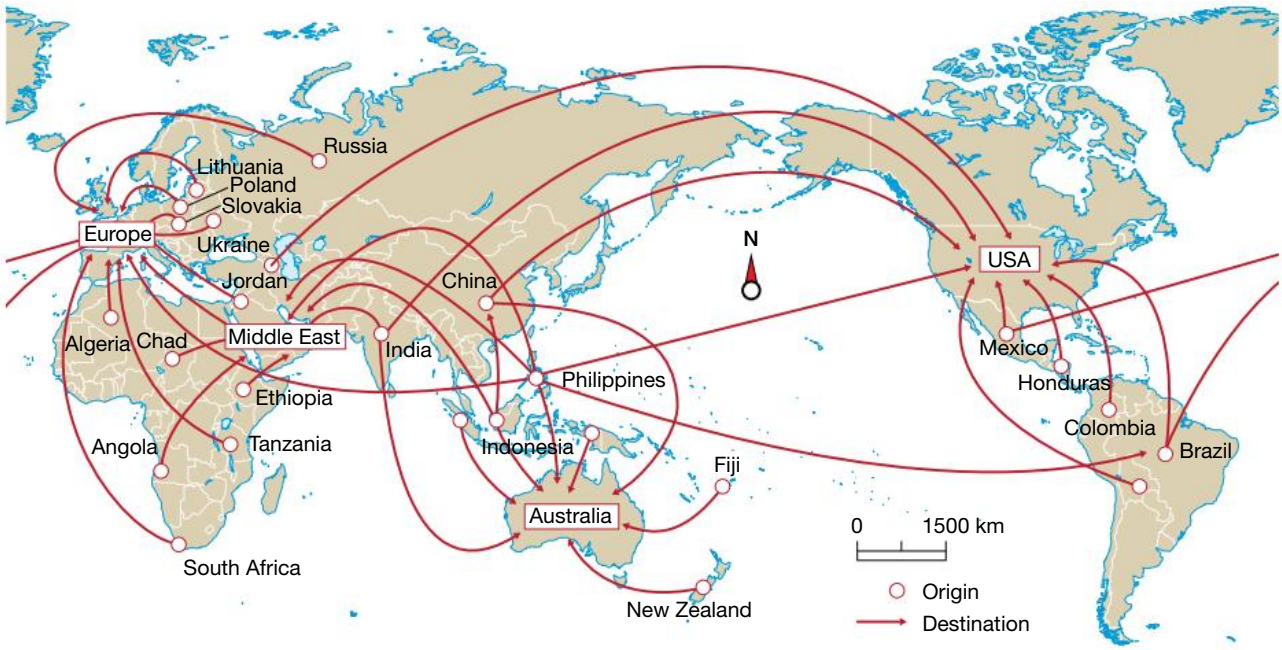
Migrant destinations

There are many countries around the world that have large overseas-born populations. These countries often offer opportunities for work, for example the United States, Canada and Germany, as shown in Figure 9.8.3.



Source: Migration Policy Institute

9.8.3 The top ten countries with the largest migrant populations, 1990, 2000, 2010, 2013



Source: *Financial Times*

9.8.4 Major movements of people for work

Figure 9.8.4 shows some of the main flows of people for work around the world. This map shows that the most common pattern of movement is from less developed countries to more developed economies. For example, there are large flows of people from Mexico and South America to the United States; some of these people work on farms harvesting crops, as shown in Figure 9.8.5. There are also large numbers of people moving from North Africa and Eastern Europe to the more prosperous and developed Western Europe.

Guest workers

Some countries have a large population of temporary migrants. For example, Saudi Arabia has a very large number of guest workers. These are people who move to a country for a short time for work. These guest workers do not have the full rights of other residents and usually do work that local people do not want to do.

In Saudi Arabia, guest workers commonly do construction work, domestic work and other manual labour. In Hong Kong, an estimated 100 000 Philippine guest workers work as maids. These guest workers—all women—send the money they earn back to the Philippines, to help their families.

Guest workers are not common in Australia, although in recent years there has been some movement of people to fill skilled vacancies in the mining industry. It is more common in Australia that people migrate permanently, or at least for long periods of time. Australia also has a large number of migrants from New Zealand. Australia and New Zealand have a special arrangement that allows the citizens of one country to work freely in the other for an unlimited period of time.

Did you know?

In 2017, there were an estimated 11 million foreign or guest workers in Saudi Arabia. They worked as maids, drivers, nannies, cooks and gardeners. They came from over 100 countries.



9.8.5 Migrant workers harvesting lettuce in Salinas, California

Spotlight

People trafficking

Unfortunately, not all migration is undertaken willingly. Human trafficking occurs when people are taken against their will from one country to another. In most cases this involves people being kidnapped or tricked into travelling to other countries for work, in many cases in the illegal sex industry. The United Nations estimates that up to 800 000 people are trafficked across borders illegally each year.

Research shows that there are an estimated 700 000 victims of trafficking currently in the United States. This includes a large number of labourers who are forced into working in terrible conditions on farms and in small factories. Other countries in which there are large numbers of people-trafficking victims are Britain, Nigeria, Brazil, France, Saudi Arabia, the Netherlands and Japan.

In Australia between 2014 and 2015, there were 119 victims of trafficking who were identified to police. Of these cases:

- 29 per cent were young women who were trafficked into Australia to work in the sex industry
- 28 per cent was about labour exploitation (forcing people to work for very low wages and in poor or unsafe conditions)
- 28 per cent related to forced marriages
- 15 per cent involved other forms of slavery or trafficking.

People-trafficking victims nearly always come from developing nations. Common source countries are in central Africa, South-East Asia and Eastern Europe.



9.8.6 This advertising campaign was run in the United States to highlight the problem of human trafficking.

Activities

Remembering and understanding

1. Distinguish between internal and international migration.
2. Explain what a refugee is. How does a refugee differ from other types of migrants?
3. Outline the push and pull factors for migration.
4. Describe the meaning of the term 'people trafficking'.

Applying and analysing

5. Select one of the types of migration discussed in the text. Take the perspective (viewpoint) of a migrant and write a letter to a family member about your migration experience and the reasons you migrated to your new country. Consider both push and pull factors.
6. In many countries, guest workers are open to exploitation. In a small group, discuss why you think this is the case. Share your ideas with the class.

Geographical skills

7. Study Figure 9.8.3 and answer the following questions.
   a. How many migrants were living in the United States in 2013?
   b. Calculate the approximate increase in the number of migrants living in Germany between 1990 and 2013.
8. Study Figure 9.8.4. Write a short report outlining some of the major flows of workers shown on the map. Explain why you think these flows exist.

9.9 Australian migration

Multicultural Australia

In the first half of the twentieth century, the White Australia policy meant that migrants to Australia were white Europeans. After World War II, this policy began to change. More and more migrants, first from southern Europe, particularly Greece and Italy, and then from Asia and finally the Middle East, came to Australia.

Australia is now one of the most multicultural countries in the world. More than 200 different languages are spoken. Almost a quarter of all people living in Australia were born in another country. This is one of the highest percentages of any country. For example, only about 10 per cent of people in the United States were born outside the country.



9.9.1 Australia is now one of the most culturally diverse countries in the world.

Origin of settlers

Australia accepts migrants from around the world. The top ten source countries for migrants to Australia in 2016–17 are shown in Table 9.9.2. As can been seen in the table, most migrants to Australia now come from less developed countries. This is a significant change. In the past, migrants mostly came from countries that were ethnically and culturally similar to Australia, such as the United Kingdom and Ireland.

Types of migrants

Under Australia's permanent migration program, the largest category of new settlers is skilled migrants—approximately 68 per cent, with the remaining 32 per cent admitted through the Family Stream. For the 12 months between July 2013 and June 2014, 128 550 people migrated to Australia under the skilled migration program. This special program is designed to encourage migrants who have skills that Australia needs. For example, 6418 accountants, 5764 cooks, 2359 software engineers, 1972 registered nurses and 1235 developer programmers from around the world were allowed to migrate to Australia in 2013–14. These are all areas in which Australia has a skills shortage. Employers can sponsor skilled migrants, and individuals can apply to become skilled migrants. State governments can also nominate skilled migrants for visas in areas where they have a skills shortage.

Destination of settlers

Australia's large capital cities are the destination of most migrants when they arrive in Australia. More than 80 per cent of newly arrived migrants first settle in Sydney, Melbourne, Brisbane, Perth or Adelaide. More than 30 per cent of migrants settle in Sydney and about 25 per cent make their home in Melbourne. This reflects the fact that these large cities provide better employment prospects, especially for skilled migrants. The large cities also tend to have better access to support networks for migrants, such as intensive English language schools.

9.9.2 The number of people migrating to Australia from selected countries between 2015–16 and 2016–17. Migration currently accounts for much of Australia's population growth.

Citizenship	2015–16	2016–17
India	40145	38854
People's Republic of China	29008	28293
United Kingdom	18950	17038
Philippines	11917	12209
Pakistan	6708	6556
Vietnam	5341	5493
South Africa	4337	5489
Nepal	5095	4290
Malaysia	4265	4049
Ireland	4903	3855

Source: Australian Department of Home Affairs, *Migration Program Reports*

Spotlight

Humanitarian migration

An important part of Australian migration is the humanitarian program. This program supports refugees. Refugees are people who need the protection of another country because they can no longer live in safety in their own country. In 2015–16, people accepted into Australia under this program were typically fleeing war and persecution in their homelands, such as Myanmar, Afghanistan, Iraq and Syria.

9.9.3 Humanitarian program grants by category, from 2011–12 to 2015–16

Category	2011–12	2012–13	2013–14	2014–15	2015–16
Refugee	5993	11 980	6491	5994	8284
Special Humanitarian Program	714	503	4505	5007	7268
Onshore	7037	7505	2751	2747	2003
Total	13 744	19 988	13 747	13 748	17 555

Source: Australian Department of Home Affairs

9.9.4 The top ten countries of birth of refugees accepted into Australia in 2015–16, under the offshore humanitarian program

Source country	Number
Iraq	4358
Syria	4261
Myanmar	1951
Afghanistan	1714
Democratic Republic of Congo	657
Bhutan	515
Somalia	437
Iran	337
Ethiopia	337
Eritrea	291
Other countries combined	694
TOTAL	15 552

Source: Australian Department of Home Affairs

Activities

Remembering and understanding

1 Describe how Australia's approach to migration changed throughout the twentieth century.
2 What is a skilled migrant?
3 Why do you think Australia has a focus on skilled migration?
4 Outline Australia's humanitarian migration program.
5 List the main destinations of migrants once they arrive in Australia.

Applying and analysing

6 Study Table 9.9.2. Write a short report outlining the major sources of migrants to Australia.
7 Study the data in Table 9.9.4 and do the following tasks.
   a Describe the region/s from which the majority of refugees come.
   b Construct a column graph to summarise this data.

Evaluating and creating

8 Select one of the countries shown in Figure 9.9.4. Use the internet and library resources to conduct research and prepare a short digital presentation on why refugees would be leaving this country. Present your presentation to the class. Include in your presentation:
   - a map of the country and an overview of the population (for example size and ethnic diversity)
   - the history behind the reason people are fleeing and the current situation.

LS 9D

9.10 Australia's cultural diversity

A nation of migrants

Immigration has played an important role in Australia's population growth and cultural diversity. The first arrivals were the ancestors of Indigenous Australians, who moved down from the islands of the Indonesian archipelago and New Guinea over 65 000 years ago.

European settlement

From the 1600s, during the great European voyages of discovery, there were a number of coastal landings, mainly on the arid western side of the Australian continent. The British first sailed along the well-watered east coast in 1770, and the first permanent European settlement, the British Crown Colony of New South Wales, was established in 1788. At the beginning it was a convict colony; free settlers started moving in from the early 1790s. The gold rush attracted many people, including the Chinese. Following Federation in 1901, the government introduced the White Australia policy, which stopped non-white immigrants. By 1945, the Australian population had reached seven million and was mainly Anglo-Celtic.

After World War II

After World War II (1939–45), Australia began a huge immigration program, based on the belief that it must 'populate or perish', following the near invasion by the Japanese during the war. As a result of the program, hundreds of thousands of people left war-torn Europe and migrated to Australia.

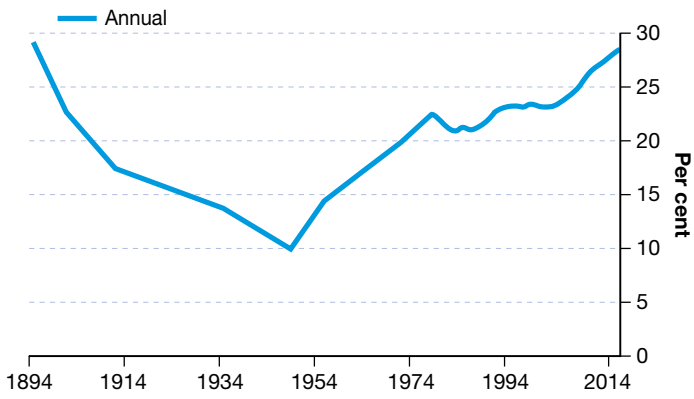
Between 1945 and 1972, over a million British people immigrated under the 'Ten Pound Poms' scheme, whereby British people—favoured by the Australian government—could migrate to Australia cheaply.

From the 1970s, millions of migrants and refugees arrived in Australia, looking for a life free from war, persecution and poverty. Waves of migrants came from the Asia–Pacific region, Africa and the Middle East.

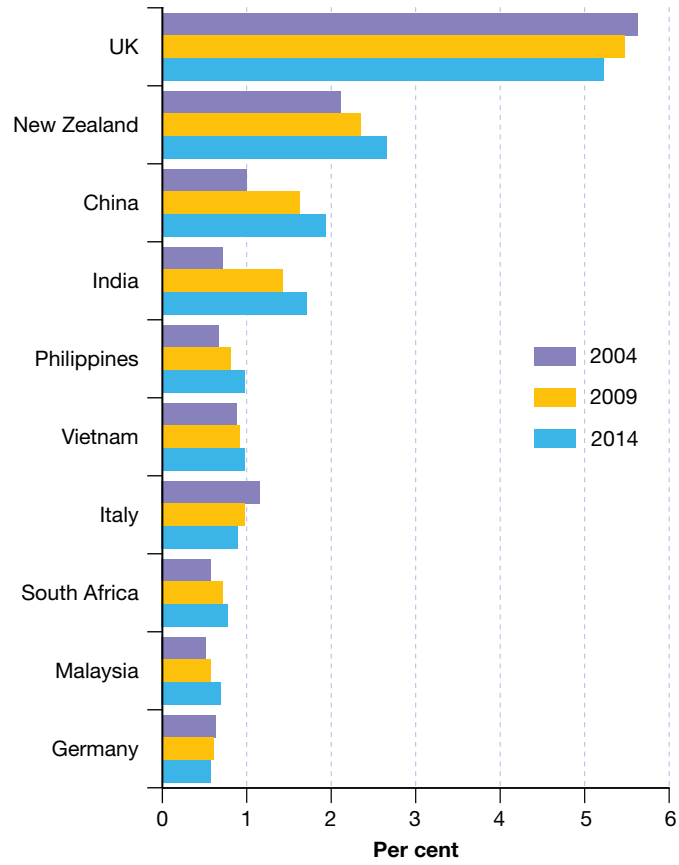
In total, more than 6.5 million migrants and 675 000 refugees have settled in Australia since 1945.

Multiculturalism

Multiculturalism is a social policy based on the ideas of inclusion, recognition and tolerance. It recognises the right of all Australians to enjoy their cultural heritage and to receive equal treatment and opportunities regardless of their background. It carries with it a responsibility to respect Australian values.



9.10.1 Proportion of Australia's population born overseas, 1894–2014



Source: Australian Bureau of Statistics

9.10.2 The top ten countries of birth for Australian residents 2004, 2009, 2014



9.10.3 Many different cultures are recognised and celebrated in Australia.

People and culture

Australia's language and cultural diversity reflects the long history of migration to the continent. The cultural traditions of Indigenous Australians are among the oldest in the world, and Australia's migrants have brought their cultural traditions from over 200 countries.

Migrants have enriched the Australian way of life in many ways, as shown in Figure 9.10.3. They have, for example:

- introduced new cultural celebrations such as Chinese New Year and St Patrick's Day
- contributed to the creative and performing arts, for example the Borovansky Ballet Company
- added colour and interest to Australian cities, for example in Lygon Street in Melbourne and Chinatown in Sydney
- introduced new sports and recreational pastimes, such as futsal and taekwondo
- introduced architectural styles, for example with joss houses, mosques and synagogues
- enriched school curricula through the addition of languages such as Mandarin and Arabic
- greatly expanded the range of foods eaten by Australians, for example pizza, sushi and burritos.

Activities

Remembering and understanding

1 Draw a timeline of Australian migration starting in 1788.

2 Define the term 'multiculturalism'.

Geographical skills

3 Study Figure 9.10.1 and list reasons for the trend that it shows.

4 Study Figure 9.10.2 and do the following tasks.

- **a** In 2014, what percentage of Australia's population had been born in the United Kingdom (UK)?
- **b** What is the next largest population born overseas after people from the UK?
- **c** Name the fastest growing group of overseas-born Australians since 2004.
- **d** Prepare a mind map demonstrating the ways in which migrants have enriched the Australian way of life. Use examples different from those listed above.

9.11 International migration and urban lifestyles

Migration and urban concentration

Immigration has helped to shape the urban lifestyles of Australia since the first European settlement was established at Sydney Cove in 1788. Today, the lifestyles of people living in Australian cities reflect the growing ethnic and cultural diversity of the Australian population.

After the end of World War II, there was an increase in the number of Australians living in cities, and this trend has continued. This pattern can be clearly seen in migrant populations. In 1947, approximately 14 per cent of people living in Australian cities were born overseas; in 2016 this number had increased to over 30 per cent. Figure 9.11.1 shows the country of birth between 2001 and 2011.

The number of Australian-born Australians living in:

- large cities grew from 50 per cent to 64 per cent
- rural areas decreased from 32 per cent to 14 per cent.

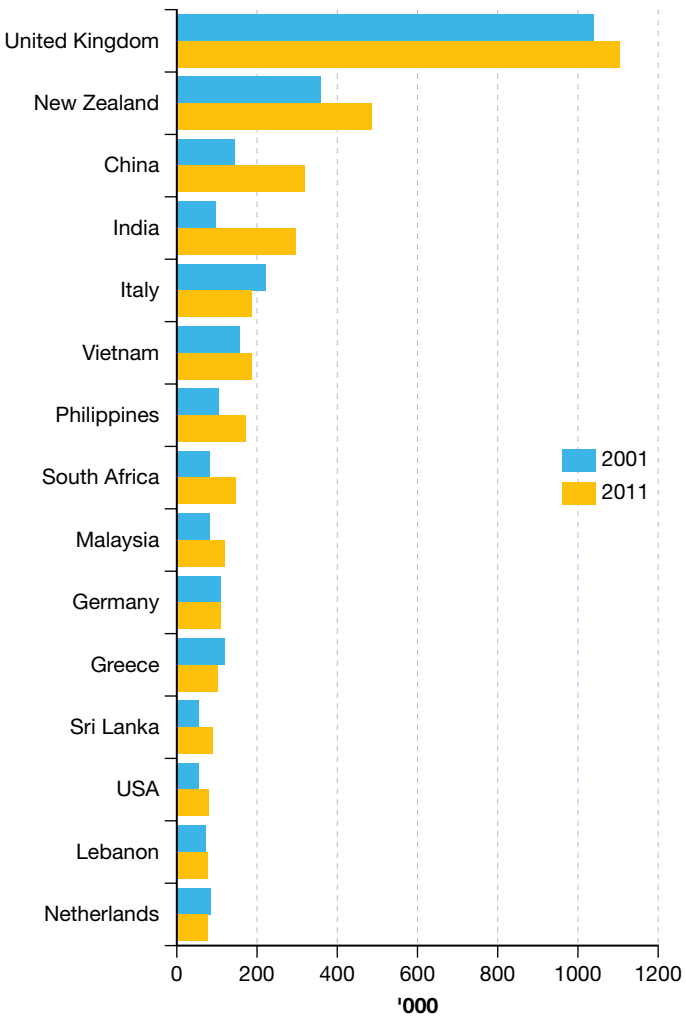
The number of overseas-born Australians living in:

- large cities grew from 62 per cent to 85 per cent
- rural areas decreased from 25 per cent to just 6 per cent.

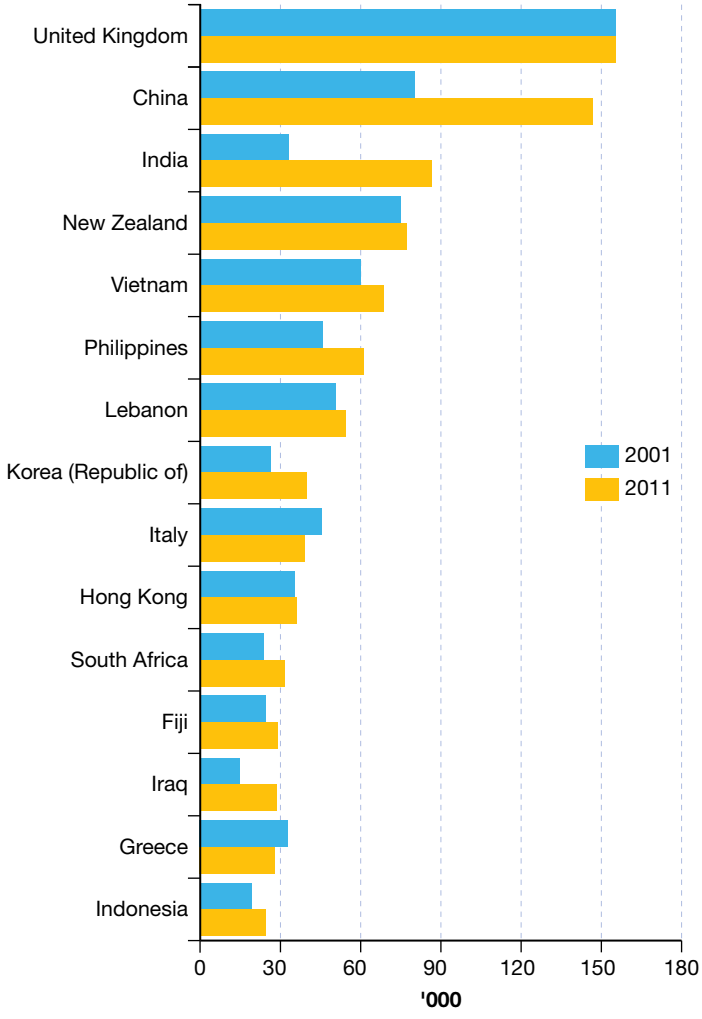
The majority of migrants to Australia have settled in the capital cities, particularly migrants from non–English speaking countries.

Sydney and Melbourne

The majority of post–World War II migrants decided to live in Sydney and Melbourne. As a result, these cities have the most international or cosmopolitan lifestyles.



9.11.1 Migrants in Australia, by country of birth, 2001 and 2011



9.11.2 Migrants in Sydney, by country of birth, 2001 and 2011

In 2014, Sydney and Melbourne's share of the nation's overseas-born population was almost 55 per cent. While Sydney remains the most important centre of immigrant settlement (see Figure 9.11.2), there is some evidence of a shift, as people move from Sydney to the other capitals. There is also evidence of increased settlement beyond the capital cities.

Ethnic and cultural influences

The diversity of Australia's cities has been influenced by waves of migration, each characterised by a different mix of birthplace groups. These waves reflect changes in Australia's immigration policy and the changing national and global economic and political situation.

Migrant settlement patterns

Patterns of settlement vary among migrant groups. New South Wales, for example, has 75 per cent of Australia's Lebanese-born population, 63 per cent of the Iraqi-born, 63 per cent of the South-Korean-born, 60 per cent of the Fijian-born and 60 per cent of the Chinese-born. Victoria has 51 per cent of Australia's Sri-Lankan-born population, 50 per cent of the Turkish-born, 49 per cent of the Greek-born and 42 per cent of the Italian-born. Western Australia, the state with the highest foreign-born proportion of population, attracts 30 per cent of all Singapore-born Australian residents, and is narrowly behind New South Wales in having the largest population of British-born. Queensland has attracted the greatest proportion of people born in Papua New Guinea (52 per cent) and New Zealand (38 per cent).



9.11.3 Melbourne's cafe culture is a lifestyle-related outcome of Australia's ethnic diversity.

Impact on urban lifestyles

The cosmopolitan lifestyle enjoyed by residents of cities such as Sydney and Melbourne owes much to the cultural and ethnic diversity of their migrant populations. Some urban neighbourhoods have, over time, become associated with particular ethnic groups. These ethnic precincts are essentially clusters of immigrant entrepreneurs and service providers. These, in turn, attract the people who rely on these providers.

One of the most obvious outcomes of this process is the concentration of restaurants representative of different cultures. European, Middle Eastern and Asian cuisines are now an important part of our urban lifestyle. There are clearly defined restaurant and cafe areas in both Sydney and Melbourne. These are good examples of how different ethnic groups can enrich a culture. Residents of both cities have also embraced the European-inspired tradition of outdoor eating. Most cafes now have tables and chairs on the footpath, and some have outdoor areas to match those seen in Italy and France. The practice of eating out at restaurants and relaxing at pavement cafes is now common everywhere, and Australian's obsession with espresso coffee (introduced into Australia by southern Europeans) is central to the country's cafe culture.

Activities

Remembering and understanding

1. Explain why Sydney and Melbourne have the most international, or cosmopolitan, lifestyles.
2. Outline how the pattern of settlement arrivals has changed since World War II.
3. Identify some of the important differences in migrant settlement patterns.
4. Outline the impacts of migration on urban lifestyles.

Applying and analysing

5. List the ways in which your town or neighbourhood has been influenced by migration. Use the information collected to produce a whiteboard or pinboard-mounted mind map.
6. Draw on the ethnic diversity of your community to explore reasons why people chose to settle in Australia. Identify the ways in which different cultures have enriched your community.


HERALD SUN

Managing urbanisation

10

The growth of cities needs to be carefully managed if we are to minimise their environmental impact while improving their liveability. A more even distribution of Australia's population would be one solution. However, this would require a large expansion of existing regional centres, or the building of new cities at great cost to house increasing numbers of people. Careful planning can make our cities more sustainable.

In this chapter we examine the ways in which urban centres can be managed to achieve sustainability and improve liveability.

OVERVIEW QUESTIONS

10A What are the environmental impacts of large cities?

10B How can the growth of cities be managed?

10C How can the environmental sustainability and liveability of Australia's urban places be improved?

10D How can individuals and communities contribute to a sustainable urban future?

LS Before you begin

GLOSSARY

greenfield site an area of land that has not been developed

infrastructure physical structures such as buildings, roads, water pipelines, sewers, electricity distribution systems, railways and airports

population pyramid a graphical illustration that shows the spread of different age groups in a population; the shape forms a pyramid when the population is growing

suburbanisation the process in which people and businesses move out from the central areas of cities and into the suburbs

urban consolidation increased population densities in existing urban areas

urban decay the deterioration of the built environment; urban infrastructure falls into a state of disrepair and buildings are left empty for long periods of time

urban renewal the process in which an unused area of urban land such as an industrial site is restored, redeveloped and improved

urban sprawl the outward spread of a city and its suburbs as they grow

urbanisation the process by which an increasing proportion of a population lives in towns and cities

10.0.1 Events such as the Night Noodle Market at Birrarung Marr in Melbourne encourage people to visit the city and, in doing so, promote liveability.

10.1 Environment and large cities

Environmental impacts of large cities

The environmental impact of **urbanisation** raises many concerns. Large cities use land and resources, returning their wastes (sewage and rubbish) and pollutants (air and water) to the environment they depend on. However, some experts believe that urbanisation is actually advantageous to the environment.

Cities impact on the land they cover with buildings and roads. Cities also use resources beyond their boundaries. As large cities grow, their impact on the natural world increases, as Figure 10.1.1 shows.

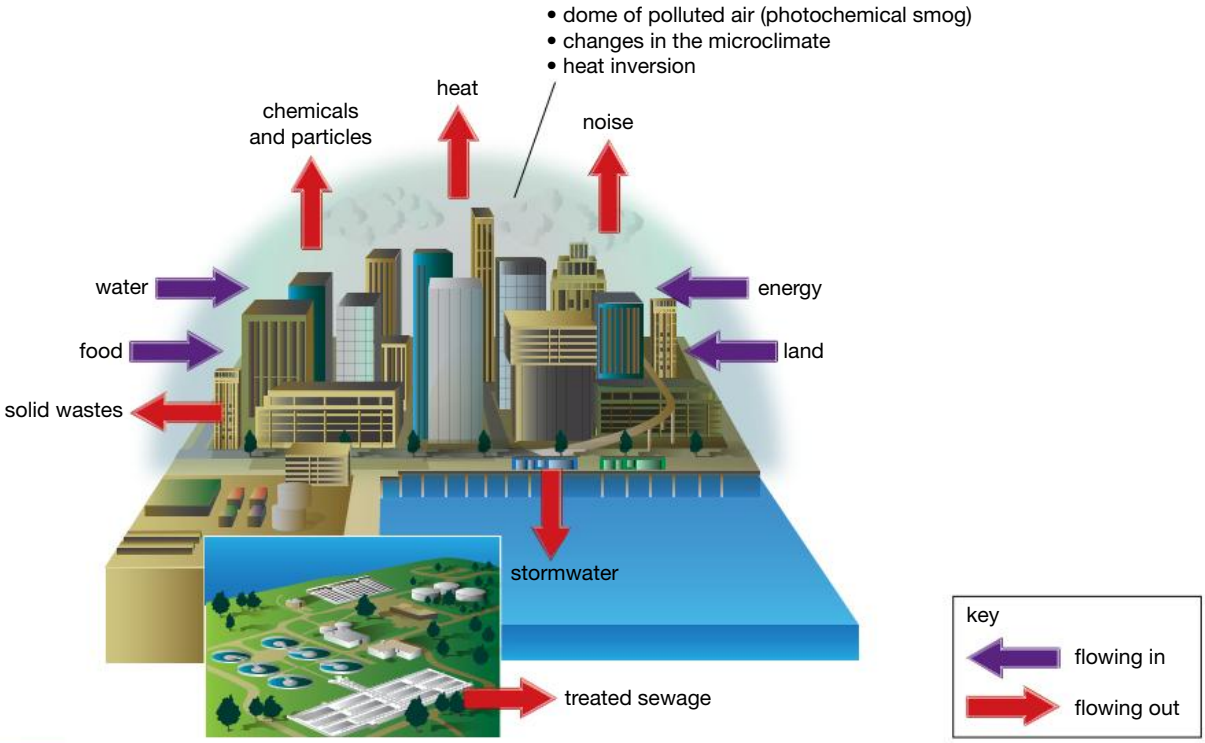
Loss of habitat and agricultural land

With the pressure of population growth, cities push past their outer limits into the countryside beyond. This outward growth of cities is known as **urban sprawl**. When urban sprawl occurs, market gardens (small farms that grow vegetables and fruit for sale) just outside the city disappear and any remaining natural vegetation is cleared to make way for development and new housing.

Australian Bureau of Statistics (ABS) data showed that agricultural land decreased from 60 per cent in 1992 to 52 per cent in 2012, due in part to urban sprawl. Approximately two thirds of Australia's perishable fruit and vegetables (delicate and unpreserved, such as tomatoes and spinach) are grown on the outskirts of cities and these areas are under threat from urban sprawl.



10.1.2 Market gardens in Werribee, Melbourne



10.1.1 Cities depend on the environment and they also impact heavily on it.

Air and water pollution

Large cities have an impact on air and water quality. Pollutants from cars and factories produce photochemical smog, which can affect people's health. Waste materials are difficult and expensive to manage, especially those that are toxic, and landfill sites are needed to dispose of household and business waste.

In Melbourne, the Western Treatment Plant at Werribee treats the majority of the city's sewage. Waste is treated before it is released into Port Phillip Bay. During the treatment process, water is held in a series of lagoons (ponds). Some of these have become important bird habitats.



10.1.3 Western Treatment Plant, Werribee

Rethinking cities

In China, a 1.3-square-kilometre 'Great City' has been proposed. It will be a large development that is completely sustainable and affordable. The city, planned for 80 000 people, will be centred on a mass transit centre, with all destinations within a few minutes' walk, reducing the need for cars.

The city will be surrounded by forests, valleys and lakes that are incorporated into the city. Fifteen per cent of the land within the city will be parks and green spaces. Sixty per cent will be reserved for construction. The remaining 25 per cent will be used for roads and walkways.



10.1.4 China's pedestrian-focused city of the future

Benefits of concentration

Some experts believe that concentrating growing populations in large cities can actually help to save the environment.

Energy efficiencies

If more high-rise buildings were built in urban environments, the resulting higher population densities would improve energy efficiency and lower emissions per capita. New York is one of the most energy-efficient cities in the United States of America, as more than half of its households use public transport rather than own a car.

Funding for environmental projects

Cities generate wealth that could be used to fund projects to protect the environment elsewhere. For example, money could be used to save endangered species and conserve habitats. Investment could be made in new technologies or **infrastructure** to reduce people's environmental impact. One example of this is the increasing number of bike paths being built in Australian cities, which help reduce traffic congestion and emissions from cars by encouraging people to ride their bikes.

Activities

Remembering and understanding

1. Describe the impacts of urban sprawl.
2. Explain how the growth of cities causes pollution.
3. List the benefits of bigger cities.

Evaluating and creating

4. Choose one of the following topics:
   - photochemical smog
   - changes in the urban microclimate
   - heat inversion.

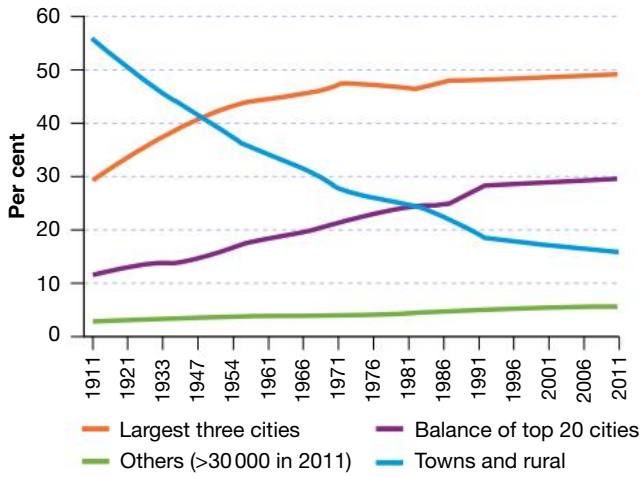
   With the aid of a diagram, prepare a multimedia presentation, explaining how it occurs and the impact it has on the city environment and its residents.

10.2 Impacts of large cities

Australia

When the population of a city grows, it becomes like a giant magnet, drawing in more and more people from the places around it, as is shown in Figure 10.2.1.

In Australia, the urban population is evenly spread, with five large cities—Sydney, Melbourne, Brisbane, Perth and Adelaide. However, the growth of these large cities is having a big impact on regional areas. When a city's population grows, it draws in businesses attracted by the growing population. This then begins a cycle that leads to regional areas losing population, jobs and services to cities, as outlined in Figure 10.2.2.



10.2.1 Population proportion by settlement type, 1911–2011. Note: the largest three cities are Sydney, Melbourne and Brisbane.



10.2.2 Growing cities attract population and employment from regional areas.

Spotlight

Doctors in regional Australia

In many parts of regional Australia, there are not enough doctors. This is having an impact on the health of those living there. Table 10.2.3 shows the number of doctors per 100 000 people in different parts of Australia.

The table shows that there are many more doctors per 100 000 people in major cities than in regional areas. For example, in Sydney there are 343.8 doctors for every 100 000 people, compared to just 115.2 doctors in remote parts of the state. In other words, in Sydney, doctors make up about 0.34 per cent of the population but in remote areas of New South Wales they make up just 0.11 per cent of the population.

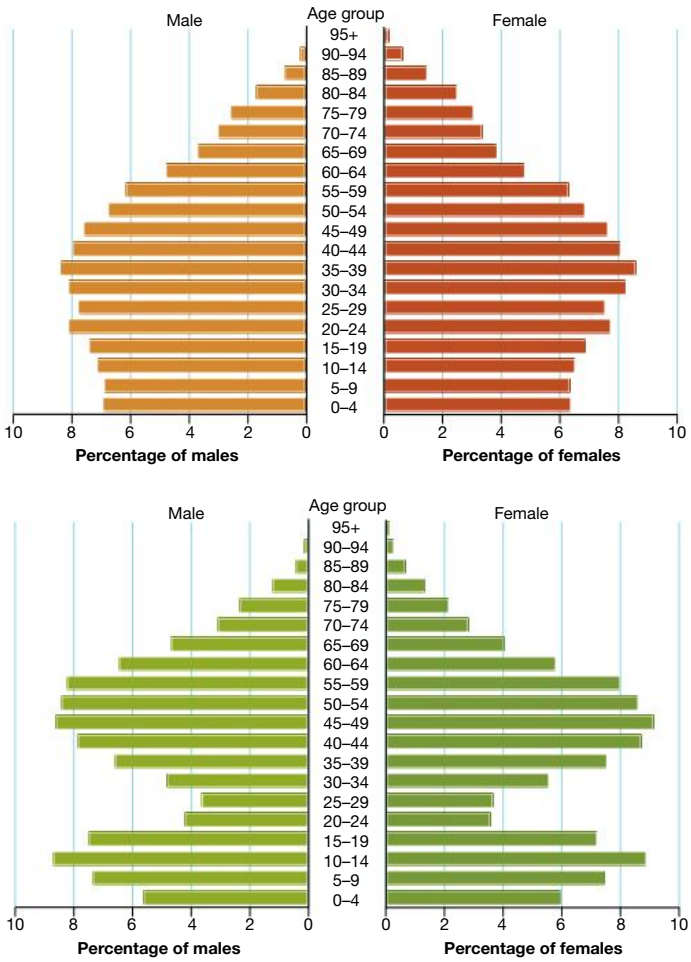
10.2.3 The number of doctors per 100 000 people

Remoteness area	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Major city	343.8	366.1	394.6	422.8	382.6			472.7	372.1
Inner regional	202.6	196.4	188.7	147.5	163.3	457.9			212.1
Outer regional	118.8	106.9	236.6	127.8	193.4	178.3	433.8		188.0
Remote/Very remote	115.2	265.3	161.8	126.1	221.1	101.6	385.8		216.4
Total	308.6	332.7	334.6	353.9	336.7	366.4	442.9	474.2	331.4

Source: Australian Medical Association, 2012

Rural Australia

The depopulation or the decreasing population among certain age groups in regional areas is shown in Figure 10.2.4. The two **population pyramids** show the age distribution of people living in Melbourne and regional Victoria. These pyramids show that while Melbourne has a fairly even distribution of population, in regional Victoria there is a reduction in the percentages of people aged between 20 and 39 years. This is important because it shows that people of this age group have left regional Victoria. Most of those leaving are looking for jobs in Melbourne. A similar pattern can be found throughout Australia, the one exception being those regional areas that have a major mining industry, such as northern Western Australia and central Queensland.



10.2.4 Population pyramids for Melbourne (above) and regional Victoria (below)

Did you know?

In rural areas (151 local government regions) across Australia, migrants and refugees are stopping the decline in rural areas. In most states there are projects encouraging migrants and refugees to move to rural areas.

Activities

Remembering and understanding

1 Explain the difference in access to doctors for people living in cities compared with people living in other places in Australia.

2 List the reasons why people might want to move to a city.

3 Explain what occurs when a region is depopulated.

Applying and analysing

4 Adopt the perspective of a young adult who lives in a regional part of Australia but is moving to a large city. Write a letter to a friend explaining your reasons for wanting to leave your town. Include in your response the economic and social reasons for your decision.

Geographical skills

5 Study Figure 10.2.1 and describe the changes in population by settlement type.

6 Study Figure 10.2.2 and write a short report explaining how cities can have an impact on the population of other places.

7 Study Figure 10.2.4 and do the following tasks.

- **a** What is the total percentage of males and females aged 20–24 living in:
  - regional Victoria?
  - Melbourne?
- **b** Use the information in these graphs to write a paragraph comparing the age structure of the populations of regional Victoria and Melbourne. Be sure to look for similarities and differences.

LS 10A

10.3 Managing growth of cities

Australian cities

Sydney and Melbourne now have populations of more than four million. Brisbane and Perth have more than two millon. The population of the capital cities is outlined in Table 10.3.1. The fastest growing areas in Australia are also located in cities (see Table 10.3.2).

In Australia, 75 per cent of the population live in just eighteen cities, each of which has a population of at least 100 000 people. Almost 75 per cent of all jobs in the country and about 80 per cent of all economic activity are located in these eighteen cities. With so many people and jobs and so much wealth in our cities, governments around the country recognise the importance of carefully managing them.

Key issues to managing cities include:

- providing employment opportunities
- providing important infrastructure, such as public transport, sewerage systems and roads
- providing enough affordable housing
- reducing traffic congestion
- making our cities more sustainable by reducing consumption and dealing better with waste.

Planning for housing

The need for housing increases as Australia's cities grow. The most common strategy used to increase the amount of new housing has been to develop housing estates on the edges of our cities. This is called **suburbanisation**. All Australia's cities and large towns now have large suburban areas.

Economic costs

Suburbanisation continues to provide most new housing needed in Australia. Building new suburbs requires very detailed planning. Building the actual houses is the easy part. Complex infrastructure such as sewerage, electricity, gas, telephone and internet lines, roads and public transport systems also needs to be developed. There must also be plans for schools, shopping centres and other important community services such as parks, libraries and childcare centres.

10.3.1 Australia's capital cities population and growth, 2006–16

State/Capital city		Population		
		2006	2016	Change 2006–16 (%)
NSW	Greater Sydney	4256161	5029768	18.2
	Rest of NSW	2486529	2709506	9.0
Vic.	Greater Melbourne	3760760	4725316	25.6
	Rest of Vic.	1300506	1453933	11.8
Qld	Greater Brisbane	1908265	2360241	23.7
	Rest of Qld	2099727	2488636	18.5
SA	Greater Adelaide	1189243	1324279	11.4
	Rest of SA	363286	388775	7.0
WA	Greater Perth	1576912	2022044	28.2
	Rest of WA	473669	536907	13.4
Tas.	Greater Hobart	204753	224462	9.6
	Rest of Tas.	284549	293126	3.0
NT	Greater Darwin	113461	145916	28.6
	Rest of NT	95596	99824	4.4
ACT		335170	403468	20.4
Australia	Greater capital cities	13344725	16235494	21.7
	Rest of Australia	7103862	7970707	12.2

Source: Australian Bureau of Statistics, 2016

10.3.2 Local areas with the largest population growth, 2006–16

National rank	Location	2006	2016	Change 2006–16 (%)
1 Tarneit	Greater Melbourne	7740	36532	372.0
2 Baldivis	Greater Perth	6936	34287	394.3
3 Melbourne	Greater Melbourne	15249	41473	172.0
4 Ellenbrook	Greater Perth	13671	37251	172.5
5 Cranbourne East	Greater Melbourne	4230	26826	534.2
6 Parklea – Kellyville Ridge	Greater Sydney	11498	33702	193.1
7 North Lakes – Mango Hill	Greater Brisbane	9157	31141	240.1
8 Truganina	Greater Melbourne	3128	24977	698.5
9 Doreen	Greater Melbourne	2733	21904	701.5
10 Forrestdale – Harrisdale – Piara Waters	Greater Perth	1276	20111	1476.1

Source: Australian Bureau of Statistics, 2016

Environmental costs

The development of new suburbs generally involves clearing land that has been used for other purposes, such as agriculture or bushland. Geographers often call these areas **greenfield sites**, because they are undeveloped green zones.



10.3.3 Construction has begun at the Palmview greenfield site at Caloundra South, Queensland.

Spotlight

Sydney's NorthConnex

As Sydney's population continues to grow, so does the need for transport infrastructure. NorthConnex is a massive $3 billion road tunnel project that will link the M2 and M7 motorways with the M1 Pacific Motorway. The 9-kilometre tunnel will create a ring around Sydney, allowing motorists to travel from south to north on freeways. It is estimated that more than 5000 trucks will use the tunnel daily, reducing impacts on local communities along Pennant Hills Road, the current route. However, there are many residents who are concerned about exhaust stacks from the tunnels that are being built in residential areas, highlighting the tensions between infrastructure development and local communities. The tunnel is expected to open in 2019.



10.3.4 The NorthConnex tunnel project and a similar project called WestConnex in Sydney's inner west have created controversy, as residents have concerns about the location of the tunnels' exhaust stacks near their homes.

Spotlight

Urban renewal at Fishermans Bend

Fishermans Bend is a huge **urban renewal** project in inner Melbourne, not far from the city centre. The area covers approximately 455 hectares. At the end of the project in 2050, it will be home to over 80 000 people. There are also plans for businesses and industries in the area, and it is projected that about 60 000 people will work there.

Enormous developments such as Fishermans Bend reduce the pressure on cities to expand by adding new suburbs on the fringes. Some people have expressed concerns that the density of Fishermans Bend may cause overcrowding. Urban planners, however, point to the inclusion of recreational spaces, with open parks, shared cultural facilities and other initiatives as ways to ensure liveability at Fishermans Bend. Liveability will be improved by the introduction of maximum building heights in specific areas.



10.3.5 Fishermans Bend, Melbourne

Greenfield sites

In their natural, or near-natural state, greenfield areas are important habitats for native animals. These animals are displaced by suburban development. Suburban development also increases rates of water pollution; for example, oil and rubbish left on roads can be washed into stormwater drains. Introduced species of plants can result in weed infestations. Feral animals either kill native animals or compete with them for food.

Social costs

When our cities continue to grow bigger in area, more and more people are forced to travel greater distances to work. In many of our cities, hundreds of thousands of people commute (travel) very long distances from outer suburbs every day. In many cases these suburbs are not well supplied with public transport, so huge motorway systems are needed. Traffic congestion has become a major issue for Australia's large cities.

Commuting long distances has important social consequences: it affects people's health, as they spend so much time sitting in cars; it reduces the time they can spend with family and friends; and it costs families money to run a car. Traffic congestion also has environmental consequences. About 75 per cent of all Australians living in capital cities commute to work in cars, most commonly on their own. Cars are major contributors to air pollution in our cities. They also contribute significantly to greenhouse gas emissions, the cause of climate change.

Reducing urban sprawl

Urban consolidation involves the re-use of land in cities for housing. Land that was once used for industrial purposes is redeveloped for housing or business. The Docklands redevelopment in Melbourne is a large residential and commercial building project built on waterside land that is no longer needed for its original purpose. The changes can be seen in Figure 10.3.6. This type of development is often called 'infilling' because it fills in gaps in the city that have been created by land no longer being used.

Another type of urban consolidation is to increase the density of housing in a residential area. Building density means the number of houses that occupy an area. Increasing building density involves building a few townhouses (medium-density housing) or even a multistorey apartment block (high-density housing) on a large block of land.

Urban consolidation means that more people can live in cities, reducing the need to build new suburbs further away from the city centre. Urban consolidation does mean, however, that some suburbs will change, and this can create tensions. For example, residents can become distressed when large apartment blocks are built where single-storey houses once stood.



10.3.6 Melbourne Docklands, early 1900s (left) and 2010 (right)

Reducing traffic congestion

Building better infrastructure

Public transport infrastructure is extremely expensive to build but reduces traffic congestion more than building new roads or tunnels. A freeway can carry 2500 cars per hour, while a train can carry 50 000 people in the same time.

Motorways can cost billions of dollars and can cause problems when their construction requires the demolition of homes or the loss of bushland. Tolls are now widely used to pay for road infrastructure. Railways are even more expensive to build.

Using public transport

One of the big issues is encouraging people to use public transport rather than their cars. Public transport needs to be accessible, convenient, relatively cheap, safe and clean. Providing car parks at railway stations is one way to encourage the use of public transport. Increasing the cost of parking is a way of discouraging the use of cars.

Public opinion is often divided on how best to meet the transport needs for people in cities, especially when the amount of money to build infrastructure is limited. Some argue that public transport should be the priority. Others argue that more motorways are the answer.

Did you know?

Some cities around the world are limiting on-street parking to encourage people to take public transport and use their car less. For example, since 2003, Paris has eliminated over 15 000 on-street parking spaces.

Activities

Remembering and understanding

1 Outline the key points to consider when managing cities.
2 Define the term 'suburbanisation'.
3 State what a greenfield site is.
4 Explain the process of urban consolidation.

Applying and analysing

5 Create a PMI chart about suburbanisation.
6 Discuss the advantages and disadvantages of urban consolidation.
7 Produce a campaign plan to encourage people to use public transport rather than drive.

Geographical skills

8 Study Table 10.3.1 and answer the following questions.
   a Which areas experienced the greatest increase in population between 2006 and 2016?
   b What was the approximate increase in population between 2006 and 2016 in Perth?
9 Study Figure 10.3.6 and list the major changes you observe.

LS 10B

10.4 Sustainable cities

Learning to live with nature

Bushland is a feature of all of Australia's large cities. Many suburbs are found close to the bush and have important bushland reserves, and even national parks, within them. When cities grow, the surrounding bushland is often removed for housing. Domesticated animals, especially cats, are introduced to the bush from surrounding suburbs and hunt native animals. The Yarra Ranges Council, east of Melbourne, has a cat curfew aimed at protecting native animals such as the lyrebird. The 24-hour cat curfew requires all residents to keep their cats within their property boundary at all times.

Garden plants escape into the bush, taking over from native flora. Therefore, it is important to protect remaining bushland reserves and to carefully manage the impact of our cities on them, including the flora and fauna that live there.



10.4.1 A lyrebird in the Dandenong Ranges National Park

Spotlight

Protecting Brisbane's squirrel gliders

The squirrel glider is a native species whose natural habitat extends along the east coast of Australia from the Victoria–NSW border to far north Queensland. The glider is found in many locations throughout Brisbane, and the Brisbane City Council has developed an action plan to help protect it.

Loss of its natural habitat, as the suburbs of Brisbane continue to expand, is one of the main threats to the glider. There are also insufficient nesting sites. The glider nests in tree hollows but competition from introduced species, such as the common myna bird, is reducing the number of hollows available. Domestic cats are another problem for the glider. Hunting by cats is common and is a major cause of death for gliders all along the eastern coast.

The Brisbane City Council is taking a number of steps to help protect the glider, including purchasing bushland where the glider is common and protecting it from development. The council has formed partnerships with other organisations to purchase more bushland. The council has also supported research to discover more about the glider, its habitat and its needs. This has helped in the creation of education programs for local residents, as well as the identification of bushland areas for protection.



10.4.2 Brisbane City Council is actively managing populations of squirrel gliders around the city.

Designing better houses

The way Australians live has a big impact on the environment. The average Australian household produces about 14 tonnes of greenhouse gas emissions each year. Australia's ecological footprint (a way of measuring the overall impact on the environment) is more than 2.8 times the world average.

The average size of new homes in Australia has increased by 40 per cent since the 1980s, making our homes now the largest in the world. During the same time, Australian families have become smaller. The average size of a new home in Australia is about 240 square metres; in Britain an average new home is less than 80 square metres. Such big homes use huge amounts of energy to heat in winter and cool in summer.

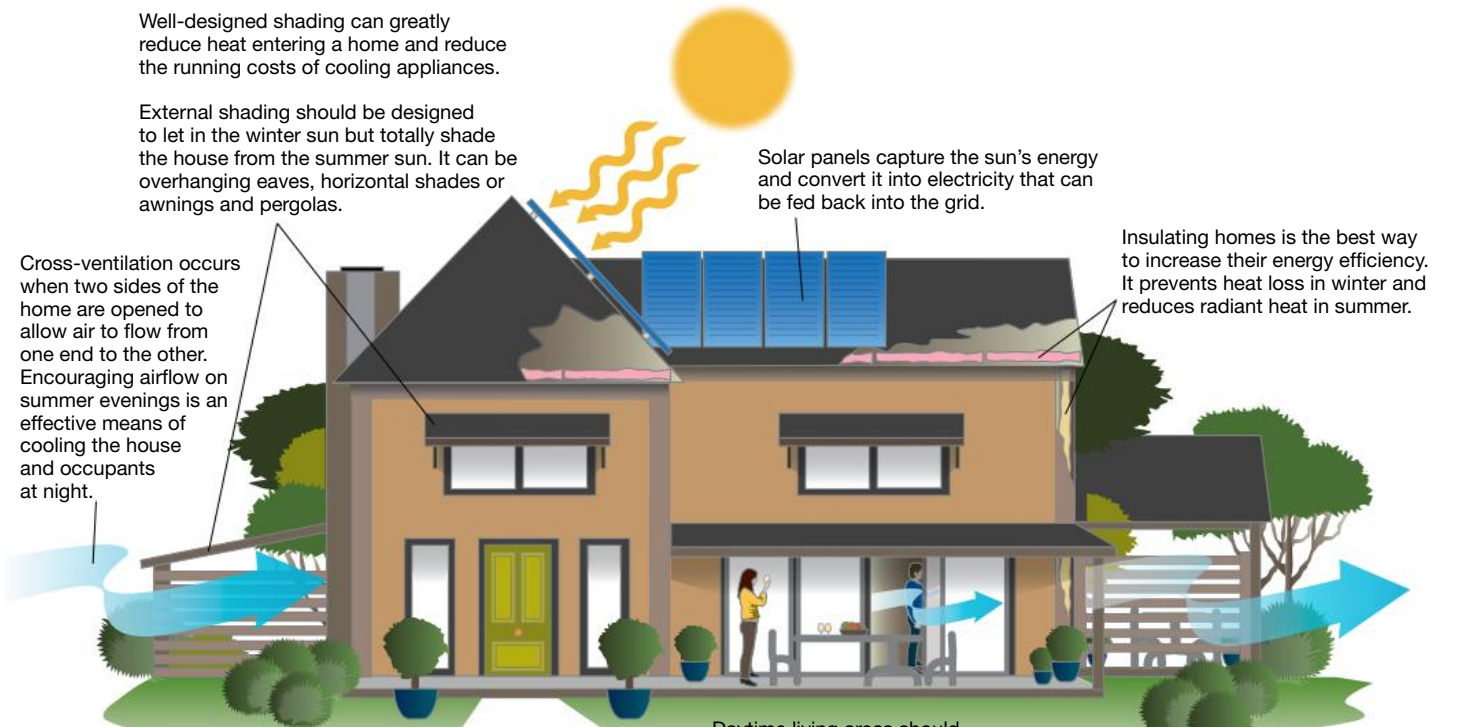
As energy prices rise, greater importance is being placed on more sustainable housing designs. A sustainably built house needs less energy (gas and electricity) and with a gradual shift towards smaller homes, will, over time, help to reduce the environmental impact of our housing.

Passive housing design

Passive design uses the natural climate to heat and cool homes. The orientation of the building is a key part of passive design. For example, if you live on the east coast, having large windows facing westwards means that the hot afternoon sun will heat up the house. This is ideal if you live in a cool climate.

Shade is also important. If you have large evergreen trees, such as gum trees, close to the house, you may need to use more energy to warm and light your home in winter. Vines that are deciduous (lose their leaves in winter) provide shade in the hot summer months but allow warming sunshine in during winter.

Dense materials such as concrete, bricks and stone are good insulators, which means that they are good for maintaining more even temperatures year round. Roof and wall insulation are also very important for maintaining comfortable temperatures. Installing skylights is a very effective strategy for reducing the amount of energy needed to light a home.



10.4.3 An energy-efficient home

Rooftop gardens

In parts of Europe and North America, grass has been grown on rooftops for many years. The grass rooftops provide excellent insulation as well as habitat for insects. Some architects are beginning to use rooftop gardens in their designs in Australia.



10.4.4 A rooftop garden on a home in Melbourne

Managing our water

Approximately 21 per cent of all water used in Australia is used in urban areas. The supply of water to our growing cities is one of the most significant urban management issues in Australia. During the first decade of the twenty-first century, Australia experienced one of the longest and most devastating droughts on record. Major cities were on severe water restrictions and, in some inland towns, water supplies went very close to running out. Scientists predict that climate change will mean that many parts of Australia will have even less water in the future.



10.4.5 Water-rating labels help consumers select water-efficient products such as washing machines.

Many cities have built or are planning to build desalinisation plants, which turn salt water from the sea into fresh drinking water. However, these plants are expensive to build and run, and use huge quantities of energy to treat the water. Being more efficient in our water usage is a far more cost-effective way to manage our growing water needs.

Spotlight

Cleaning up Hobart's stormwater

Every city has complex drainage systems to carry away stormwater after heavy rains. Even a small city such as Hobart has nearly 340 kilometres of major stormwater pipes, and many more smaller pipes. As stormwater flows through the city, it picks up pollutants that then make their way into creeks, rivers and eventually the sea. In the past, after heavy rain, Hobart's Derwent River would be littered with the rubbish that had flowed from the stormwater system.

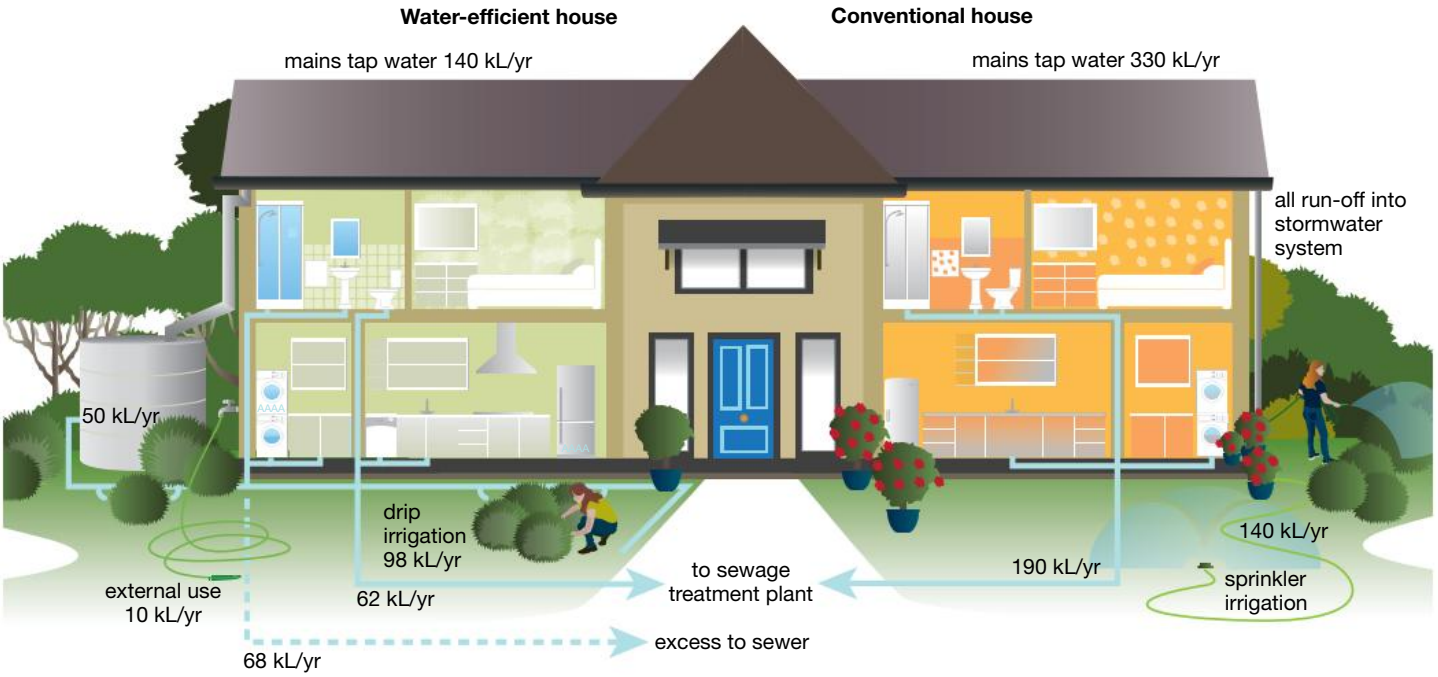
Hobart City Council has begun a program to install litter traps on major stormwater pipes. There are different types of traps, from simple socks that go over the end of pipes as they reach creeks and trap the rubbish, to more complex floating traps that are used in major stormwater drains. Since these measures have been introduced, the level of litter reaching the river has been substantially reduced, improving the water quality and reducing the impact on the aquatic environment.



10.4.6 A floating litter trap used on the Hobart Rivulet to stop litter entering the Derwent River

Appliances such as dishwashers and washing machines now come with water-rating labels to help consumers select products that use water in the most efficient way. Many local councils and state governments now also require new homes to have water tanks installed to capture rainwater, which can be used to water gardens, wash cars and even flush toilets.

Figure 10.4.7 shows the difference a water-efficient home can make. A conventional home typically uses about 330 kilolitres (330 000 litres) per year. This can be more than halved in a water-efficient home. Installing AAAA-rated appliances in the kitchen and laundry, and using water tanks, water-efficient showerheads and dual-flush toilets can make a huge difference to the amount of water used in our cities.



Source: ACT Government, www.thinkwater.act.gov.au/water_savingtips/visit.shtml

10.4.7 A comparison between a water-efficient and a conventional home

Activities

Remembering and understanding

1. Outline the ways in which our cities affect the environment.
2. Explain how bushland is threatened by our cities.
3. Describe how Brisbane's squirrel gliders are being affected by the growth of the city.
4. Outline the strategies being used in Brisbane to reduce the impact on the gliders.
5. Explain the concept of passive house design.
6. State why it is so important that water is carefully managed in Australian cities.
7. Describe the purpose of water-rating labels.
8. Outline how Hobart City Council is improving water quality from stormwater drains.

Applying and analysing

9. Consider your house. Prepare a list of the features that make it more sustainable and the things that make it less sustainable. What changes could you make to improve the sustainability of your house?

LS 10C/10D

10.5 Melbourne

Population growth

Over four million people live in Melbourne, making it home to almost 75 per cent of all Victorians and 17 per cent of Australians. In recent years, Melbourne has been the fastest growing capital city in Australia. During the first decade of the twenty-first century, 1500 people moved to the city every week. The Australian Bureau of Statistics (ABS) estimates that by 2061 Melbourne's population will grow to 8.6 million.

Melbourne's changing demographics

The population census figures by the ABS show how Melbourne's population has been growing since 2001:

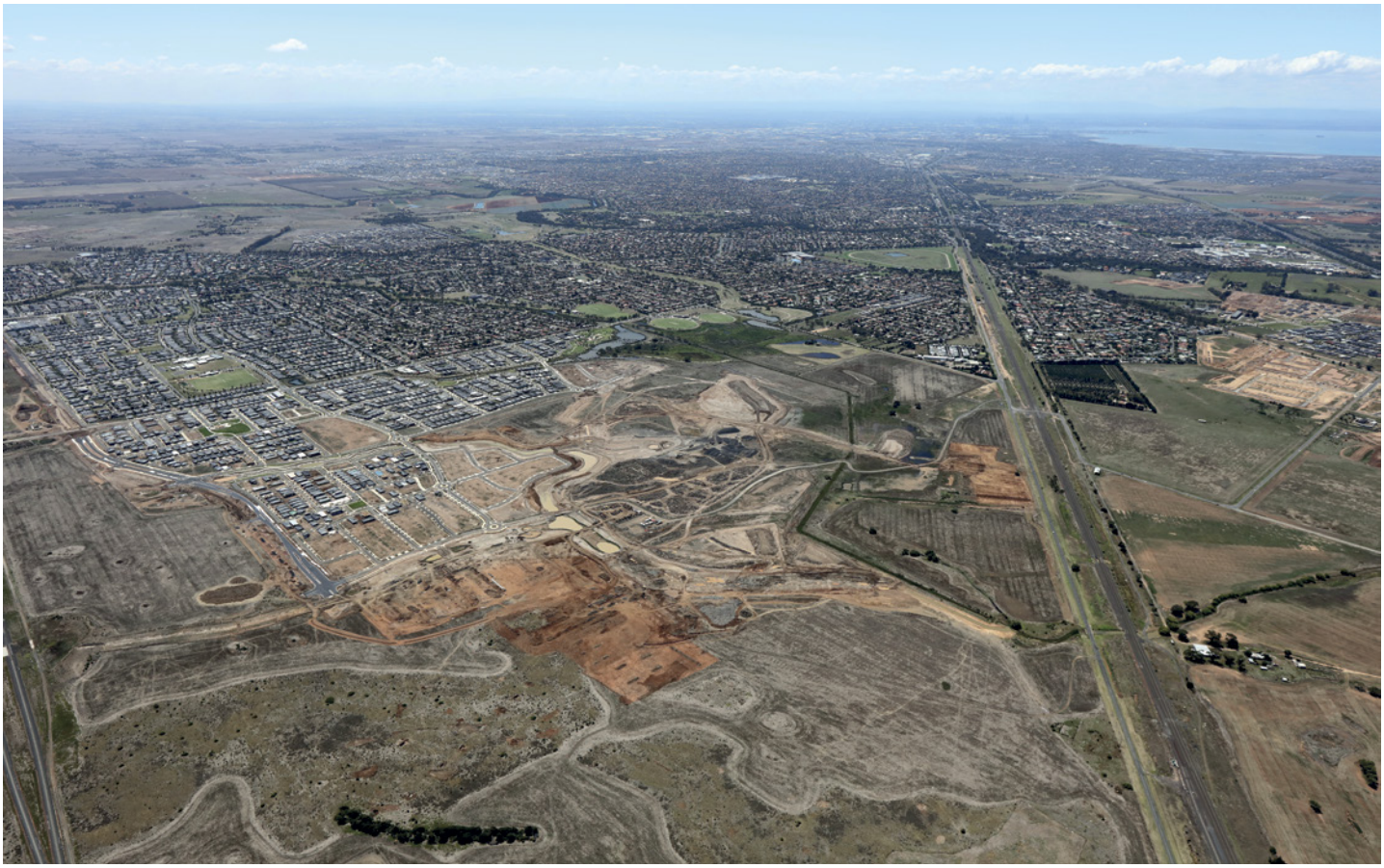
- 3 615 608 (in 2001)
- 3 646 200 (in 2006)
- 3 999 982 (in 2011)
- 4 458 685 (in 2016).

Table 10.5.1 shows the changing ethnicity (cultural background) of Melbourne between the four census counts. For example, in 2006, Indian people were not a major category, but by 2016 had become the second-largest group. This reflected a big increase in migration from India, especially students coming to study in Melbourne.

10.5.1 Percentage of Melbourne's population by birthplace, 2001, 2006, 2011 and 2016

Country of birth	2001 Census (%)	2006 Census (%)	2011 Census (%)	2016 Census (%)
Australia	66.0	64.2	63.3	59.8
India	0.9	1.4	2.7	3.6
China	1.1	1.5	2.3	3.5
England	4.7	3.5	3.4	3.0
Vietnam	1.6	1.6	1.7	1.8
New Zealand	1.4	1.5	1.7	1.8
Italy	2.4	2.1	1.7	1.4

Source: Australian Bureau of Statistics



10.5.2 The Werribee–Wyndham region, located on the outer fringe, is one of the fastest growing in Australia.

Melbourne's urban sprawl

Most of Melbourne's growth—about 1000 people a week—has taken place in the outer suburbs, where vast new housing estates have been developed over the last decade. For example, the population of Wyndham, shown in Figure 10.5.2, in the south-west of Melbourne, increased by 12 200 (7.8 per cent) from 2010 to 2011. Much of the growth in Melbourne's outer suburbs is driven by new arrivals to the city. About 60 per cent of new residents move to the outer suburbs.

Inner city growth

While most of Melbourne's growth has taken place in the outer suburbs, the inner city has also been growing. More than 74 000 people moved to inner Melbourne in the first decade of the 2000s. This represented a growth of about 30 per cent. The inner city is now dominated by large high-rise apartment buildings. This process of increasing population density in established urban areas is called urban consolidation.

The Docklands

Melbourne's Docklands, shown in Figure 10.5.3, is one of the major redevelopments that has taken place in the inner part of Melbourne. Docklands was once the city's port—an area dominated by wharves, railway marshalling yards and storage facilities. With new cargo-handling technologies (especially the introduction of shipping containers) and bigger ships, the docks fell into disuse and **urban decay** accelerated. Urban decay occurs when an urban area becomes derelict, meaning neglected and unused.

Beginning at the start of the twenty-first century, a major urban renewal program started to transform the area. Large apartment buildings, office towers, parklands and recreational facilities were built. In 2001, just 658 people lived in the area and 600 people worked there. By the end of 2012, 8000 people lived in Docklands and there were 30 000 working there. By 2037, this is expected to increase to 25 000 residents and more than 60 000 workers.



10.5.3 The Docklands redevelopment has created new housing areas close to Melbourne's CBD.

Infrastructure

With the increase in population, Melbourne's infrastructure and services have become strained. Residents complain about increasing traffic congestion and overcrowding on public transport. There are also concerns that important services such as hospitals and schools are being put under pressure as the city grows. In 2012, 68 per cent of Melbourne's population lived more than 20 kilometres from the city centre. As the city has grown outwards, the pressure on infrastructure has increased. Melbourne's tram system does not extend to the outer suburbs, which means that people must commute by car or travel in the overcrowded trains.

Metro Tunnel

In response to traffic congestion, the state government is building the Metro Tunnel. This new train tunnel will increase the number of trains and people the rail network can carry.

Activities

Remembering and understanding

1. Describe the growth of Melbourne's population since 2001.
2. State where most of the growth of Melbourne has taken place.
3. Outline some of the problems associated with the rapid growth of Melbourne's population.
4. Describe the growth of Melbourne's inner city.
5. Define the term 'urban renewal'.
6. Outline how urban renewal has transformed Melbourne's Docklands.

Applying and analysing

7. Prepare a list of the advantages and disadvantages of Melbourne's population growth. Examine your list and decide whether population growth is good or bad overall for Melbourne. Justify your decision.

Geographical skills

8. Study Figure 10.5.1 and do the following tasks.
   - a. Which country of birth has experienced the most rapid increase in population?
   - b. Which country of birth has declined the most as a percentage of population?
   - c. Construct a column graph comparing the data from 2001 and 2016.

10.6 Canberra

A planned city

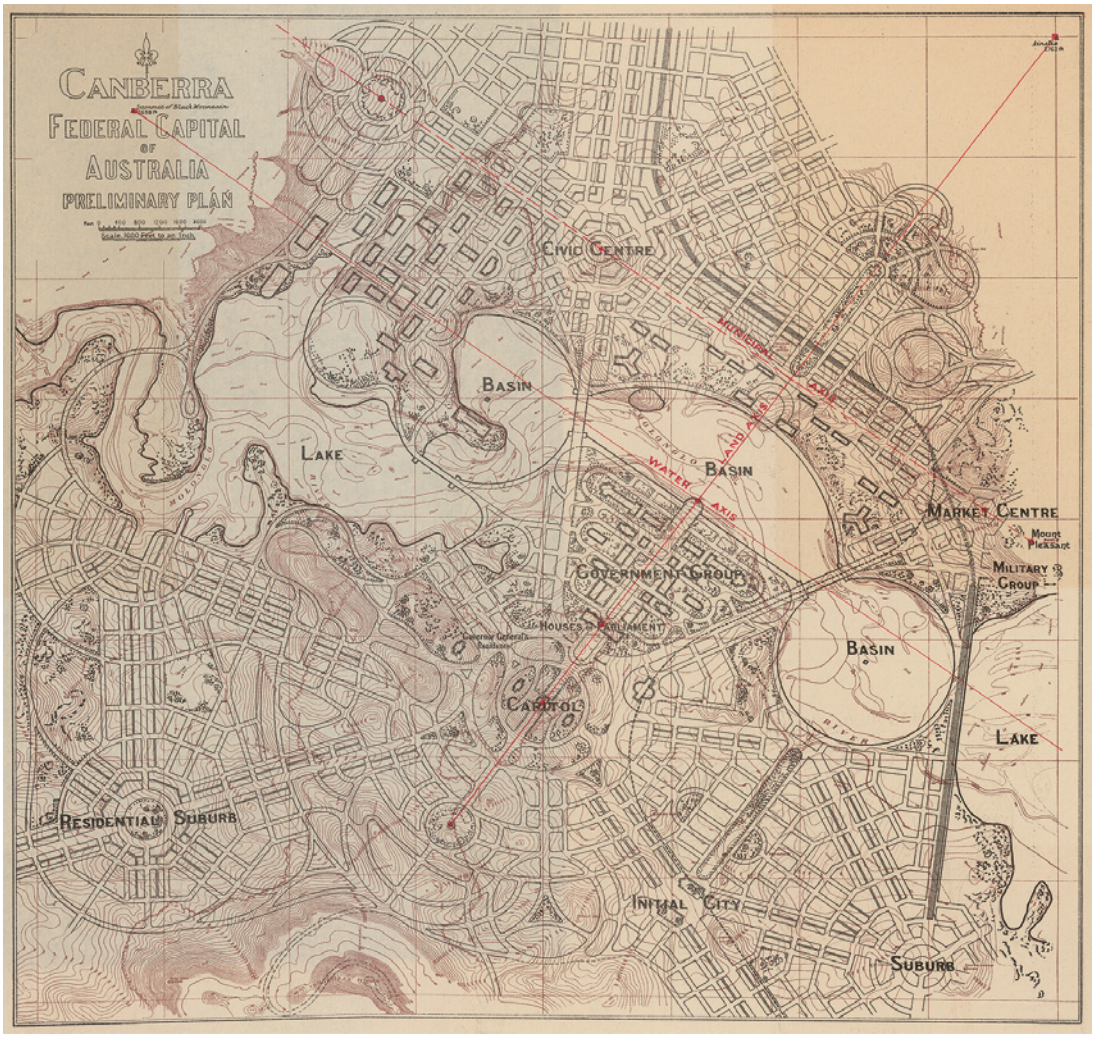
As a capital city, Canberra is a very different type of city. In many countries the largest city is also the country's capital. In the case of cities such as London, Paris, Tokyo and Jakarta, the capital city is also the country's main commercial centre. However, Canberra is a city that was planned and purpose-built as a capital city, similar to Washington, DC in the United States of America.

Canberra is the most thoroughly planned Australian city. At Federation, in 1901, it was decided to build a capital city approximately halfway between Sydney and Melbourne. Canberra is not a major commercial centre. It is dominated by government-related functions; its buildings include Parliament House and the headquarters of major government departments and agencies. Canberra is also home to the country's major national institutions, such as the Australian War Memorial, High Court, National Library, National Gallery and National Museum of Australia.

The current site was named the Australian Capital Territory (ACT) on 1 January 1911. An international competition was then held to find a design for the new capital. More than 130 architects from around the world submitted plans. American architect Walter Burley Griffin's design was ultimately successful, with his original plan for a city based on a series of 'zones' in a concentric (circular) design. The winning design is shown in Figure 10.6.1. Many elements of the original design can still be seen today in Canberra.

Functions

Parts of the city still have very clear functions. For example, the area around the Capitol in Griffin's original plan is where Parliament House is located, the Civic Centre contains the main shopping and commercial districts, and the area Griffin called the Government Group (now the Parliamentary Triangle) contains the headquarters of major government departments.



10.6.1 The original design drawing for Canberra by Walter Burley Griffin and Marion Mahony Griffin. The concentric design of unique zones is clearly evident.



10.6.2 There are many important national institutions in Canberra, including Parliament House.

Bush capital

Canberra is sometimes known as the 'bush capital' because of its location and because it is surrounded by farms and tree-covered mountains. Canberra takes up just 20 per cent of the ACT, and more than 50 per cent is designated (marked) as nature conservation areas. These areas are an important asset for the people of Canberra, providing them with recreational areas very close to the city. In 2003, these areas were also a cause of enormous tragedy when a massive firestorm that originated in bushland just outside Canberra engulfed several suburbs, killing four people and destroying more than 300 homes. A key part of the management of Canberra is now about planning for fires, as well as minimising the impact of the growing city on the important nature conservation areas that surround it.

Population challenges

Responding to a growing population is one of the key challenges in Canberra. During the first decade of the twenty-first century, the population grew by about 73 000, and by 2015 it had reached 390 800 people. Most of this growth has taken place in the northern part of the city, where new housing estates have been developed.

For example, in the suburb of Gungahlin, about 10 kilometres north of the city centre, the population has more than doubled in the last 10 years. As the population of the region has increased, there have been concerns that these new areas do not have enough infrastructure. The Gungahlin Community Council, for example, has called on the ACT government to consider building a new hospital in the area.

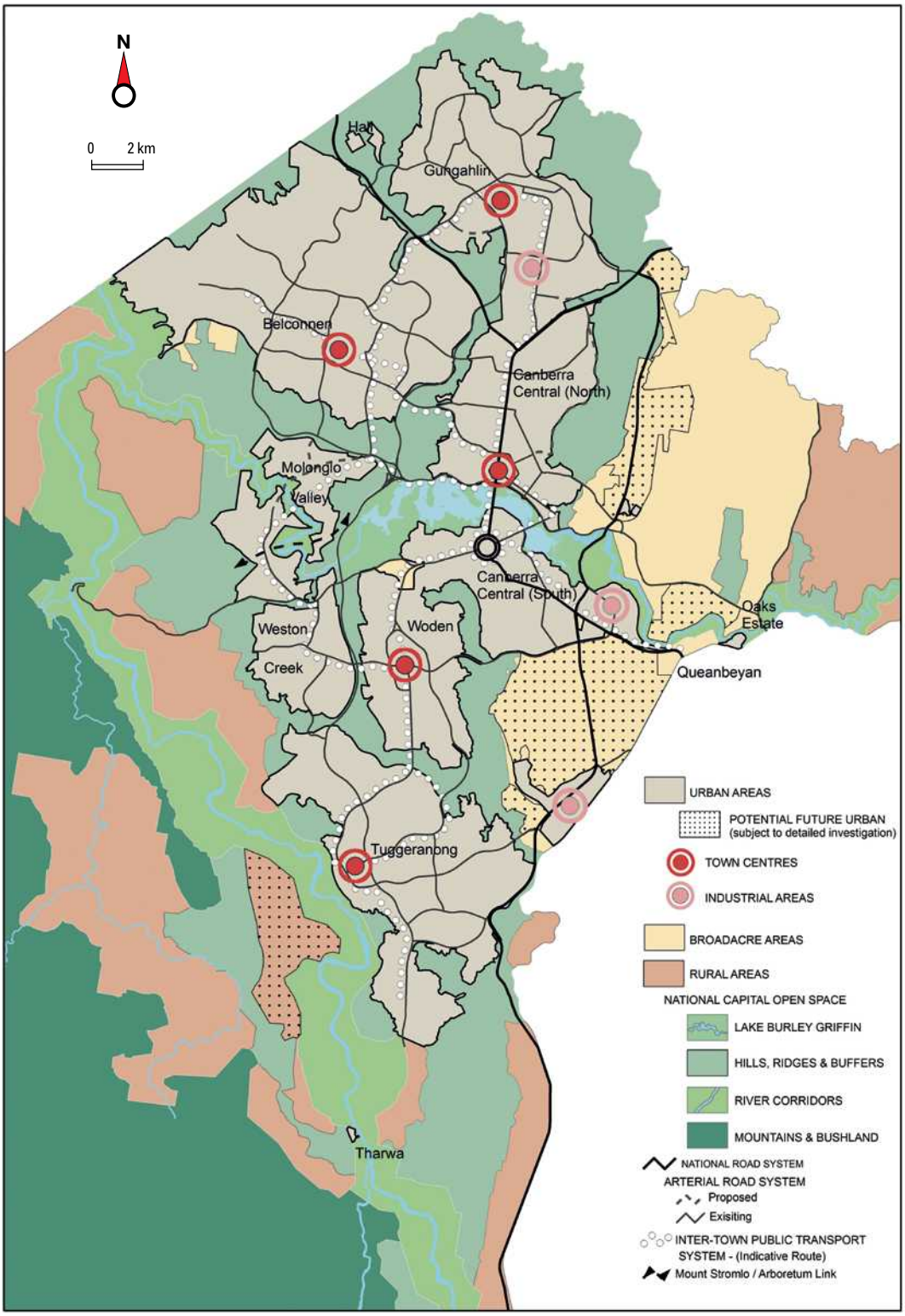


10.6.3 The population of Canberra suburb Gungahlin has more than doubled in the last 10 years.

Planning for the future

As the nation's capital, responsibility for urban planning and management is shared between the federal government and the ACT government. Over the years, there have been different plans developed for Canberra. The current plan is known as the National Capital Plan and sets out the future development of the city.

The National Capital Plan still includes the concentric design that Griffin developed. Another important feature is the natural bush spaces placed between the major urban areas. These areas, shown in pale green on the map, are not allowed to be developed for urban use. This land is sometimes set aside as nature conservation areas or may be used as parklands. These areas are an important way to manage the city's growth and to ensure that the character of Canberra as the 'bush capital' is retained.



10.6.4 Land use for Canberra under the National Capital Plan

Source: Image supplied courtesy of the National Capital Authority.
© Commonwealth Copyright. All rights reserved.

Spotlight

The Molonglo Valley development

The Molonglo Valley is located about 10 kilometres to the south-west of the Canberra city centre. It was one of the areas most badly affected by the 2003 bushfires. A new housing estate being developed (see Figure 10.6.5) includes the area where many houses were destroyed. The development is being designed to incorporate sustainability. The new suburbs of Wright and Coombs have both received eco-design certification from the Urban Development Institute of Australia.

One of the key aspects of the design of Wright is the use of a grid system. By placing the housing in grids, the suburb becomes far easier to walk around, minimising the need for cars. Nearly every house will be no further than 800 metres from a reliable and regular public transport service. There are areas for high-density housing, such as apartments, medium-density housing, such as townhouses, and low-density housing—freestanding houses.

This mix of housing caters for various types of families and means that the size of the suburb can be reduced. This helps to make the suburb more sustainable by reducing the impact on surrounding bush and farmland, and making the suburb more bike- and pedestrian-friendly.



10.6.5 The Molonglo Valley development

Activities

Remembering and understanding

1. Explain why Canberra is sometimes called the 'bush capital'.
2. Describe the population growth of Canberra in recent years.
3. Outline the main features of the National Capital Plan.
4. Explain how the urban design of the suburb of Wright helps to make it more sustainable.

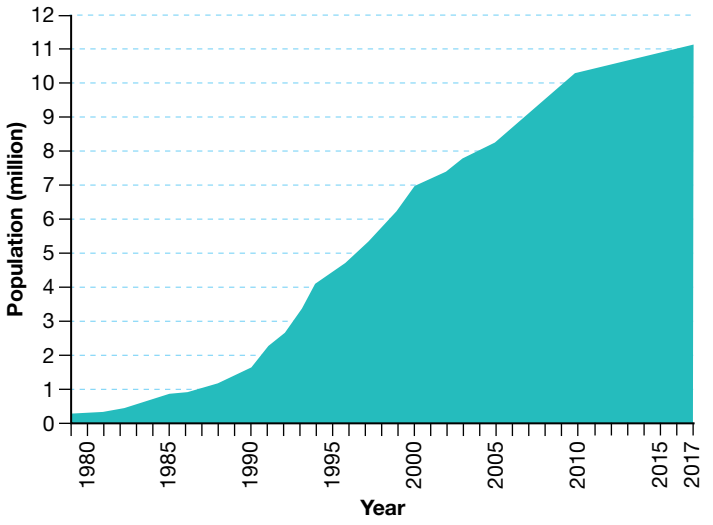
Applying and analysing

5. Study Figure 10.6.1—the original plan for Canberra developed by Walter Burley Griffin—and do the following tasks in groups.
   - **a** Describe the main features of his design.
   - **b** What features of his design do you think work best? Explain why.
   - **c** What features would your group do differently? Explain why.
   - **d** Examine the National Capital Plan in Figure 10.6.4. What similarities are there between this plan and that developed by Walter Burley Griffin?
6. Refer to Figures 10.6.1 and 10.6.4. Take on the role of an architect designing a capital city for a newly formed country in the Asia–Pacific region. Prepare a basic design for the main parts of the city. Along with your design, prepare a briefing sheet explaining your design decisions. You should describe the location of your city—near a river, on the coast or inland—and the shape of the land.

10.7 Shenzhen, China

Population growth

Since the 1980s, Shenzhen has become an economic powerhouse and one of the largest cities in China. Shenzhen's population began to grow rapidly after the area was made one of China's five special economic zones (SEZs) in 1979, mainly due to its location close to Hong Kong. At the time, just 300 000 people lived in the area. By 1990, there were 1.2 million and by 2000, 7.1 million. In 2017, Shenzhen's population exceeded 11.19 million, as shown in Figure 10.7.2. More than 6 million of the city's residents are migrant workers who return home on the weekends and live in factory dormitories during the week.



10.7.1 Shenzhen's population, 1979–2017
Source: National Bureau of Statistics, China

Economic growth

China's SEZs were established as an experiment in capitalism. Chinese and foreign businesses were attracted by generous trade and tax benefits, for example businesses that moved to the city paid less tax. This has resulted in business having invested huge amounts of money in local industry. Foreign businesses have invested more than US$30 billion. While most investment has been in manufacturing, an increasing amount is being used to develop service-based industries. Industries include biotechnology/pharmaceuticals, building/construction materials, chemicals production and processing, computer software, electronics assembly and manufacturing, instruments and industrial equipment production, medical equipment and supplies, research and development, and telecommunications equipment.

Did you know?

More than half of Shenzhen's population is under the age of 30 and is mostly female. This is because many young women from the countryside move to the city for work.

Urban structure

The city is divided into ten districts—four city districts, two suburban districts and four 'new management' districts. Each has its own distinctive character:

- Futian is the city's major commercial district.
- Luohu is a popular shopping destination.
- Nanshan, Yantian, Bao'an, Pingshan and Longhua are dominated by industry, especially consumer electronics.
- Guangming has a number of ecological technology industries.



10.7.2 Shenzhen, China

Economic specialisation

In Chinese cities there is a level of economic specialisation rarely found in the developed world. Datang, for example, makes 40 per cent of the world's socks; Songxia produces 350 million umbrellas each year; Wenzhou makes 70 per cent of the world's cigarette lighters; Qiaotou produces 70 per cent of the buttons used on clothing manufactured in China; and 40 per cent of the world's neckties are made in Shengzhou.

Spotlight

Foxconn's operations

Foxconn (the Taiwan-based Hon Hai Precision Industry Co. Ltd) is the world's largest maker of electronic components. It is also China's biggest exporter and the largest private-sector employer. In addition to China, Foxconn has factories elsewhere in Asia, in Europe and in Latin America, which together assemble about 40 per cent of the world's electronics products, including Apple.

Foxconn's largest factory is in the Longhua District of Shenzhen. Hundreds of thousands of workers (perhaps as many as 450 000) are employed at the Longhua Science and Technology Park, a walled facility sometimes referred to as 'Foxconn City'. Covering an area of 3 square kilometres, it includes fifteen factories and worker dormitories. While some workers live in surrounding towns and villages, many live and work inside the complex. It is not unusual for employees to work 12-hour shifts, 6 days a week.



10.7.3 Foxconn workers assemble about 40 per cent of the world's consumer electronics products.

Urban issues

The quality of life for people living in Shenzhen has been negatively affected by the population increase and factories. Traffic congestion and polluted air, rivers and waterways are major problems. Solutions to these problems include:

- using electric buses, which are quieter and less polluting compared with diesel buses
- introducing green-building standards
- preserving urban green spaces.



10.7.4 A pollution control misting truck uses a powerful cannon to spray mist for dust and smog control and prevention in Shenzhen, China.

Activities

Remembering and understanding

1. Explain the role of government in the growth of Shenzhen.
2. Outline the economic importance of Shenzhen.
3. Describe the role of migrant workers in the city's economy.
4. Identify the city's main industries.

Applying and analysing

5. Discuss the ways in which the Foxconn example highlights the differences between Chinese cities and cities of the developed world.
6. Study Figure 10.7.1. Using data from the graph, describe Shenzhen's population growth since 1979.


AUSTRALIA
COMMONWEALTH OF AUSTRALIA
Australian Citizenship Act 2007
Australian Citizenship
DANTE ISRAEL FLORES MEDINA
born on 20th May 1978
I, the Minister administering the Australian Citizenship Act 2007,
ive notice that the abovenamed is an Australian citizen and that
zenship was acquired on 26th January 2010.
MINISTER
FOR IMMIGRATION AND
CITIZENSHIP

Civics and citizenship toolkit 11

Australia is a multicultural society with a diverse population. We celebrate difference and promote tolerance. In studying civics and citizenship, you will come to understand your role and responsibility in Australia's democracy. Under this democracy everyone has the right to an opinion and the freedom to express it without fear. This is because Australia follows democratic processes and has a shared view of what is right and wrong. This system enables everyone to express their opinions and engage with the views of others. You will also investigate the role that the political and legal systems play in protecting our rights and shaping our society.

As a student of civics and citizenship, you will investigate issues that affect your community. You will develop key skills that help you to form your own opinion and reflect on it. You will practise engaging with others and debating from different perspectives. Finally, you will learn how to resolve differences of opinion fairly and thoughtfully.

OVERVIEW QUESTIONS

11A What skills do you need to be an active citizen?

11B How do active citizens build opinions based on evidence?

GLOSSARY

bias unfairly favouring one opinion or point of view

citizen a person who legally belongs to a country, and has the rights and protection of that country

citizenship the position or status of being a citizen of a country

civics the study of the rights, responsibilities and duties of citizens, and how the government works

democracy a form of government in which people choose leaders by voting, and in which everyone is treated equally and has equal rights

government the elected group of people who control and make decisions for a country or state

justify to support your argument or conclusion

mediate to negotiate in a dispute so that an agreement or reconciliation can be reached

member of parliament (MP) a person elected by the people, to represent their area in government

perspective a particular attitude or way of thinking; a point of view

reliability a consideration of how trustworthy or accurate the sources you are investigating are

source someone or something that provides information and evidence

stakeholder a person or group that is involved in an issue

11.0.1 Since 1949, more than 5 million people from nearly 200 countries have become citizens of Australia by completing a citizenship test and ceremony.

11.1 What skills do you need to be an active citizen?

Being an active citizen

To be active **citizens** we need to develop a range of skills that will help us consider different **perspectives** (points of view), build opinions based on evidence and recognise how our views are formed. This will help us express our arguments in a fair and respectful way. As a student of **civics** and **citizenship**, you should be curious and question the role you play in shaping Australian society, and this starts in your classroom.

This is your opportunity to investigate issues that are important to Australia. Ask questions, share and build your opinions, and consider the views of your peers. As you work through this process, you will build a 'virtual toolkit' of skills to help you find solutions to a range of problems. Your solutions must satisfy the needs and requirements of many people with differing opinions.

How to contribute in small ways

You can be involved in your community in these ways:

- discussing issues with your family, friends and neighbours
- joining community groups
- participating in local events such as fundraisers or working bees
- volunteering to help those in need
- being courteous to and considerate of others in society
- recycling and maintaining a safe and clean environment.



11.1.1 Asking complex and open-ended questions is a key skill for students of civics and citizenship.



11.1.2 Students of civics and citizenship will develop a toolkit of skills to form opinions, consider differing perspectives, and resolve differences of opinion fairly and thoughtfully.

How to contribute in larger ways

Some of the bigger ways you can contribute to your community are:

- joining social justice groups
- becoming a member of a political party
- speaking out against injustice and about issues in society
- joining demonstrations and signing petitions
- researching and understanding how Australia's political system functions
- understanding your rights and responsibilities in our democracy
- voting in local, state and federal elections, if you are aged over eighteen.

Every action you take, no matter how big or small, contributes in some way to your community. One of the main ways you can be an active citizen is to make sure you stay informed about what's happening in society and how you can contribute. A good way to do this is to read local, state and national newspapers, and watch the news to keep up to date with current affairs. When you are well informed, you are more ready and more confident to participate.

To be an active citizen you will need to develop a range of skills that will help you to consider different perspectives. This is so you can build opinions based on evidence. This knowledge will assist you in expressing your views in a fair and respectful way. As a student of civics and citizenship, you will probably be curious about, and question, the role you play in shaping Australian society. This interest starts in your classroom.

Active citizen skills

Skill 1

Pose complex and open-ended questions (this means questions that ask for a comment or an opinion, rather than a 'yes' or 'no' answer), and conduct research to investigate issues about Australia's citizenship, diversity and identity.

Skill 2

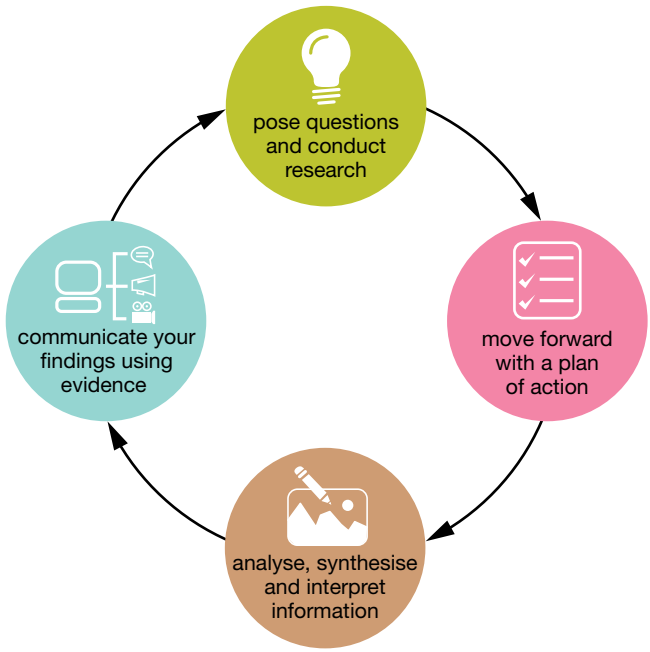
Analyse, synthesise (bring together) and interpret information from a range of **sources** to examine the language choices made for purpose, audience and **reliability** (trustworthiness and accuracy).

Skill 3

Solve problems considering your own and other people's point of view, and make decisions to move forward with a plan of action.

Skill 4

Communicate your findings using evidence and reflect on your role as a citizen in Australia's **democracy**.



11.1.3 Practise these skills to be an active citizen.

Activities

Remembering and understanding

1 Define 'civics' and 'citizenship' in your own words.
2 What key skills do you need to be an active citizen?

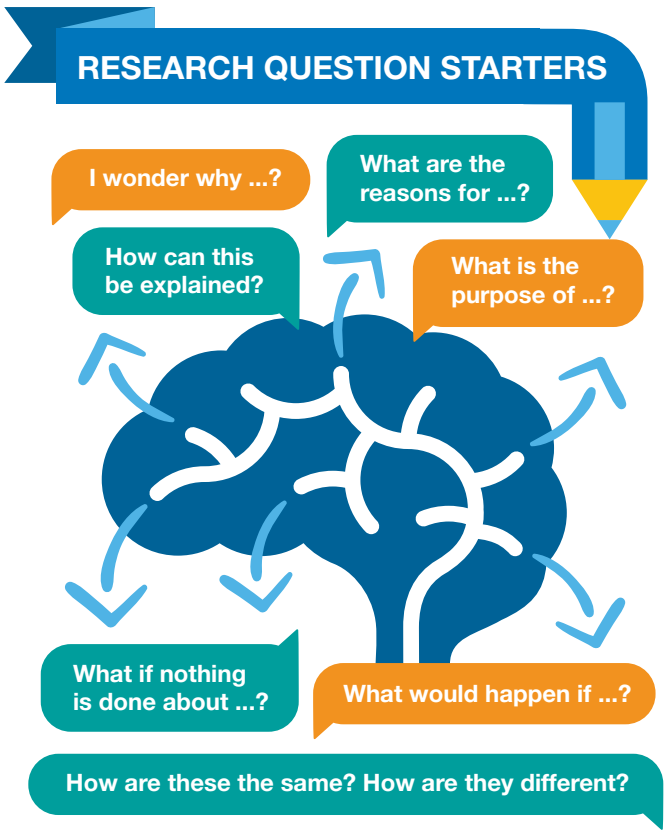
11.2 Posing questions and researching civics and citizenship issues

Developing research questions

We all have the right to express our opinions, but it is our responsibility to make sure our views are well researched and supported by evidence. One of the most important practices for a student of civics and citizenship is to ask a range of complex and open-ended (or open) questions to help us search for answers.

The inquiry questions students of civics and citizenship pose should be open questions because they encourage us to look at an issue more comprehensively. In contrast, closed questions that only give short or single-word answers limit inquiries.

An example of a good inquiry question is 'How does the **government** support citizens' rights and freedoms?' This is a good question because it is open-ended—it leads to other questions such as 'Who is a citizen?', 'What rights and freedoms do citizens have?', 'How does a government support citizens?'



11.2.1 These question starters will help you develop more detailed research. Think about some other question starters to add to this list to create a bank of questions before you begin your inquiry into civics and citizenship issues.

An example of a poor inquiry question is 'What system of government does Australia have?' This is not a good question because there is only one answer possible (democracy) and it leaves no room for further discussion.

Types of sources

To investigate any civics and citizenship issue we need to collate (collect and combine) and examine a range of sources. To do so, we need to know where to look and be aware of what forms sources may take. Sources come in various forms: they can be written, visual or audio. You will see these types of sources all around you, such as in newspapers, magazines, advertisements, billboards, letters, books and interviews. You'll also find them online in social media in tweets, Facebook posts, blogs and hashtags.

With so many types of sources available, it is difficult to know which is best. It is also difficult to know which sources are reliable and which contain **bias** (this will be covered in unit 11.3).

11.2.2 A range of different methods can be used to search for sources. Here are some tips on the best way to approach each research method.

Type of source	Do	Don't
Internet	• Use reliable websites such as those recommended by your teacher. Government and education sites are very useful. Hint: their URLs will end in '.gov.au' or '.edu.au'. • Use a search engine and type in keywords. • Take notes in your own words using dot points. Keep a bibliography of the sources you are using.	• Search sites with anonymous authors, or information that has no source, or can't be verified. • Type in a full sentence question. • Cut and paste information from websites because this is plagiarism (stealing another person's work).
Books	• Use your local or school library. • Use a book's contents page, index and page headings to guide your investigation.	• Randomly search bookshelves without seeking advice from librarians or teachers. • Flip through pages of a book without a plan or questions in mind.
Newspapers	• Look at the same issue in a range of newspapers to verify information and identify bias.	• Simply believe everything you read. • Just read the heading.
Social media	• Look at the bio of the person posting and consider if they are reliable. • Verify information before you use it.	• Forget that anyone can publish on social media. They can do so anonymously and without any expertise.
People	• Remember that in your community there are local **members of parliament (MPs)** and people with various expertise who can help you.	• Forget to make sure the person you are asking is trustworthy and reliable.



11.2.3 Who is your local MP? Visit the website for Parliament of Australia, and go to 'Senators and Members' to find them. Adam Bandt MP is the federal member for Melbourne. Adam has portfolio responsibilities for climate change, energy, employment and industrial relations, and science, research and innovation.

Activities

Remembering and understanding

1 Define the term 'open-ended question' in your own words.
2 List five types of sources.

Applying and analysing

3 Using Source 11.0.1 as a starting point, create five question starters that will help you investigate the source.
4 Discuss why it is important to collate multiple sources, rather than just using one.
5 Explain why it's important not to cut and paste information from the internet.

Evaluating and creating

6 There is a local election in your area. There are many candidates campaigning to be elected and your family is weighing up who is best. You have decided to consult different types of sources to get information about each candidate. Looking at Table 11.2.2, rank the types of sources in order from most to least useful for this process.

11.3 Analysing and interpreting sources

Engaging with sources

In civics and citizenship you need to critically engage with your sources. This means asking questions of a source and checking that it is reliable.

Investigation

Australian citizens are asked to vote in local, state and federal elections. In the lead-up to these elections, politicians and parties run campaigns to convince voters to elect them. Through rallies, speeches, advertisements and posters, politicians aim to gather support from eligible voters. The language used in campaigns is often highly emotive and targeted to specific audiences.

Politicians are trying to gather as much support as possible and defeat their political rivals. As such, citizens need to question the reliability of the information and promises parties make.

You can investigate civics and citizenship issues, such as election campaigns, by collecting a range of sources. It is important to sort through a range of arguments, slogans and promises to identify which you think are valid, which are reliable and which are biased. Apply the following three steps to any source you choose, such as a political campaign poster, a newspaper article or something on social media.



11.3.1 A 1928 Labor Party campaign poster. It is important to consider the language choices of the poster and its intended purpose and audience to evaluate (make a judgement based on your research) its reliability.

Step 1: Asking questions using the five Ws

Asking the following questions will allow you to understand the basic information or background to a source.

- *Who* created the source and for which audience? Is the author identified? Is the author respected? Do they have a good reputation? Who is the audience and why might they respond positively to this source?
- *What* is happening in the source?
- *When* was the source created? What was happening at the time?
- *Where* was the source created? Where is it published and by whom?
- *Why* was it created? What is its purpose? Is it responding to a specific event or statement? Does the source present a balanced view? Or does the author have a bias (unfairly favouring one opinion or point of view)?

Step 2: Breaking it down

Asking these further questions will allow you to understand the motivation of the creator or the purpose of the source.

- How is the source constructed? To break down a visual source, you can consider its composition:
  - What is the first you notice? What are your eyes drawn to?
  - What is the focus of the image? What's in the foreground? What's in the background?
  - What colours are used? What might the colours represent?
  - What language is being used? Are there any captions, speech bubbles or words used in the visual?
  - What is the tone or mood of the visual? Is it humorous or angry or inspiring?
- What might have motivated the creator to make this source? Is the source reliable or do you detect some bias?
- What is the purpose of the image? What message do you think the creator wants the reader to take away?

Step 3: Agreeing with or challenging the source

Now consider how this source has helped you develop your own opinion.

- Do you agree with the message of the source? Why or why not?
- What arguments would you use to challenge the source?

Activities

Remembering and understanding

1. What does it mean to 'engage with your sources'?
2. Explain in your own words what makes a source reliable.

Applying and analysing

3. Why is it important to know the intended purpose and audience of a source?
4. Why is it important to establish the background of a source using the five Ws? How does this influence our reading and understanding of the source?

Evaluating and creating

5. Brainstorm reasons why an author might be biased. Try and think about why someone might publish something without evidence.
6. Choose an issue in your community or school.
   a. Collect at least four sources that deal with the issue. Make sure you have two sources to support each side of the issue.
   b. Using the five Ws, check if each source is reliable.
   c. Now rank the sources in order from most to least useful.
   d. **Justify** why you have put them in that order.

11.4 Solving problems and making decisions

How can we resolve issues?

The study of civics and citizenship is designed to help you be an active member of your community. One of the skills you will need to develop is the ability to recognise, understand and value different points of view. Australia prides itself on being a multicultural society and including and tolerating all people. In our classrooms, we should mirror this attitude and demonstrate culturally inclusive behaviour. This means respecting all views and opinions. Developing this understanding will allow you to **mediate** difference, and find respectful and considerate solutions to problems. It is important that we use democratic processes to reach agreements and make plans on a course of action.

Resolving an issue

There are three steps to resolve a civics and citizenship issue.

Step 1: Identify the stakeholders and the differences in opinion

In an issue there are always different **stakeholders**. They are the people or groups affected or involved in the issue. Everyone is entitled to their own opinion. As a respectful student of civics and citizenship, it is important for you to try to understand why stakeholders' opinions may differ. You also need to identify any assumptions or judgements you or others might make in forming your opinions.

People's perspectives and assumptions are shaped by their:

- upbringing and family's views and values
- culture and heritage
- education and wealth
- life experience and social circumstances
- how they will be impacted by the issue.

Step 2: Use democratic processes to discuss the issue

Once you have identified the stakeholders and their opinions, you are ready to start resolving the issue. It is important to listen, share, debate and make sure everyone's opinion is valued. This is all part of the democratic process. Some ways everyone can have their say are outlined in Figures 11.4.1 and 11.4.2.

Step 3: Work together to reach a solution

The final step in the process is to try to reach a solution that considers everyone's point of view. A solution cannot always make everyone happy, but it should aim to satisfy the majority of people. Conducting a vote is often a good solution, because it allows everyone to participate.



11.4.1 Different ways you can have your say in society



11.4.2 Protesters gather on the steps of parliament in Melbourne, Victoria, asking the government to 'get serious about climate change'.



11.4.3 Participating in the democratic process of voting

Activities

Remembering and understanding

1. Explain what an assumption is.
2. Why is it important to consider different points of view?
3. Why is it important to be culturally inclusive?

Applying and analysing

4. There is a vacant plot of land in your local community and residents are discussing ideas about how best to use the space.
   - **a** Identify the stakeholders in this issue and the opinions they may have.
   - **b** Suggest why the stakeholders may have different perspectives.

Evaluating and creating

5. Considering Steps 1–3 in resolving issues, what limitations can you find in the democratic process?
6. Choose an issue in your local or broader community that you are interested in and have your say.
   - **a** Research who your local MP is.
   - **b** Write them a letter or email arguing your point of view. Don't forget to use evidence.

11.5 Communicating and reflecting

Presenting your argument confidently

Using subject-specific language

When it comes to presenting your findings and voicing your opinion, the language you use is very important. You should use subject-specific terminology. Doing so will help you make arguments that are clear and convincing. It is also important that you select specific language that will convince the audience you are targeting and will serve your purpose.

One way to extend your civics and citizenship vocabulary is to work with a glossary. A sample glossary is provided for you at the beginning of this toolkit. It is important when you come across new and complex vocabulary that you understand the meaning. Adding the word to your glossary and using it in sentences is good practice. That way, you will be confident to use it in your own arguments.

Digital technology and graphic displays

Digital technology and civics and citizenship go hand in hand. You'll use it yourself during your study when creating projects or arguing your own ideas. You'll also see it used a lot in your communities.

Digital technologies and graphic displays are used especially before elections or when people are campaigning for change. This could be in the form of an election poster, TV advertisement or, increasingly, on social media. Facebook, Twitter and Instagram allow people to share information quickly with a wide audience.

Social media also allows people to instantly get involved and share their opinion on an issue. Citizens can even share ideas directly with politicians and community leaders. Hashtags (#) are often used by groups or people with similar ideas. Hashtags link ideas or arguments together under a heading or catchphrase. In some cases hashtags 'go viral' or become a trend; they then give lots of publicity to the issue.

11.5.1 Communities come in all shapes and sizes. Everyone has the right to their own perspectives and the opportunity to express them.





11.5.2 Citizens can have their say using social media. A hashtag is a good way to increase social media engagement by discussing and connecting with the conversations happening around that hashtag.



11.5.3 Suggested questions to ask yourself when reflecting on your own opinion

Reflecting on the role you play in society

Everyone has a part to play in helping society run smoothly, including you. There are many ways you can contribute. It could be something small, like being polite and courteous to those in your community. Or it could be something large, like being actively involved in civics and citizenship issues in your area. Remember, the beauty of our society is that it is made up of lots of different people with a range of ideas, beliefs and attitudes. We work best together when we are tolerant and respectful of each other. That way, everyone has the opportunity to feel valued and contribute to making our world a better place.

It is also important that we reflect on our own values and think about our opinions. We know it's important to question and analyse other people's views, and identify any assumptions they may have. Reflecting means questioning and analysing our own arguments and assumptions. Doing this helps us make inclusive and meaningful contributions to our community, whether it be in the classroom, or in the local or broader community. Reflecting is a skill that needs to be developed. A key part of reflecting is asking yourself questions about your arguments.

Activities

Remembering and understanding

1. Define 'subject-specific terminology' in your own words.
2. List some ways that you can positively contribute to your community—either locally or more broadly.

Applying and analysing

3. Discuss why social media is so influential. Give reasons and examples.
4. Explain why reflection is important for yourself and for society.

Evaluating and creating

5. Select one or more key terms from the glossary. Using digital technology, create a poster for your classroom that helps explain your key term(s), or give some examples of your key term(s) in use.
6. Research a civics and citizenship issue that you are interested in. Create an informative brochure for your classmates that aims to persuade them to take action to address the issue.



Governing Australia

12

Australia became an independent nation on 1 January 1901. On this day, the British Parliament passed legislation enabling the six Australian colonies to collectively govern in their own right as the Commonwealth of Australia. The colonies were New South Wales, Queensland, South Australia, Tasmania, Western Australia and Victoria. This action, known as Federation, provided the foundation of our modern nation.

Some of the defining features of our democracy are the principles of freedom of opinion, religion, assembly, association and movement. Australians have made effective use of these democratic tools—such as staging peaceful demonstrations to campaign for positive change.

OVERVIEW QUESTIONS

- **12A** How is our political and legal system designed?
- **12B** How does the Constitution shape Australia's system of democratic government?
- **12C** What are the freedoms and responsibilities of citizens in Australia's democracy?
- **12D** How are changes made to our political and legal systems?

12.0.1 The Legislative Assembly Chamber in Parliament House, Melbourne. Just like the Australian Parliament, the Victorian Parliament has red and green chambers.

GLOSSARY

bicameral having two Houses of Parliament—the House of Representatives and the Senate

Cabinet a group of senior ministers who, with the prime minister, make government policy

colony a country or area under the political control of another country, and occupied by settlers from that country

Commonwealth / Commonwealth of Australia the official title of the Australian nation or its government, adopted at Federation in 1901; 'the Commonwealth' also refers to the organisation of countries formerly under political control of the UK

constitution a set of principles according to which a country agrees to be governed

constitutional monarchy a government headed by a monarch with powers limited by a constitution

Federation when Australia's independent colonies came together to form a single nation called the Commonwealth of Australia in 1901

government the elected group of people who control and make decisions for a country or state

governor-general Australia's head of state appointed by the Queen on the advice of the prime minister, with powers set out in the Constitution

House of Representatives the elected Lower House of the Parliament of Australia

judiciary the branch of government responsible for interpreting laws and deciding how they are applied

monarch a king, queen or emperor who generally holds power by birth right

parliament the place where the government is centred; it contains the House of Representatives and the Senate

referendum a vote of the Australian electors on a proposed change to the Constitution

Senate the Upper House of the Parliament of Australia

LS Before you begin

12.1 The Australian Constitution

Making the rules

In its simplest form, a **constitution** is a set of rules created to outline how particular groups should run and the procedures they should follow. Constitutions exist for many different groups, including businesses, school groups, sporting clubs and even nations.

Australia's constitution

When **Federation** took place in 1901, there was a need for a set of rules stating how Australia would be governed. This set of rules, known as the Australian Constitution, came into effect on 1 January 1901. Australia's constitution is a large and complex document containing eight chapters and 128 sections.

12.1.1 Some key features of the Australian Constitution

Chapter	Features
1	describes how the Federal Parliament is made up of two Houses—the Upper House or Senate, and the Lower House or House of Representatives (a bicameral government)—and the Queen as the head of state
2	describes the power of key people such as the Queen and the governor-general
3	relates to the federal courts, including the High Court of Australia, which can settle disputes about the Constitution
4	deals with money and trade
5 and 6	explain the division of powers and the relationship between the **Commonwealth** or federal government, and the states and territories
7	outlines where the capital of Australia should be and how the governor-general has the right to appoint deputies
8	explains how the Constitution can be changed by referendum

The Constitution describes how Federal Parliament is composed and how it works. It establishes how the power of the **government** is divided between the three branches of **parliament**. It sets up the role that each branch plays in governing Australia. The Constitution also lists the areas in which the federal government has the power to make laws. Australia's constitution can only be changed if the majority of the population vote to do so in a **referendum** (a national vote). This complicated process is explored further in unit 12.5 in this chapter.

The states can choose to make their own laws on any matters that the Constitution does not officially order the federal government to do. However, in cases where laws are made by both state and federal governments, the Constitution rules that federal laws must be followed.

Unlike some constitutions in other countries, the Australian Constitution does not explicitly state all the rights of Australian citizens. It does, however, define some, such as the right to choose and practise a religion.

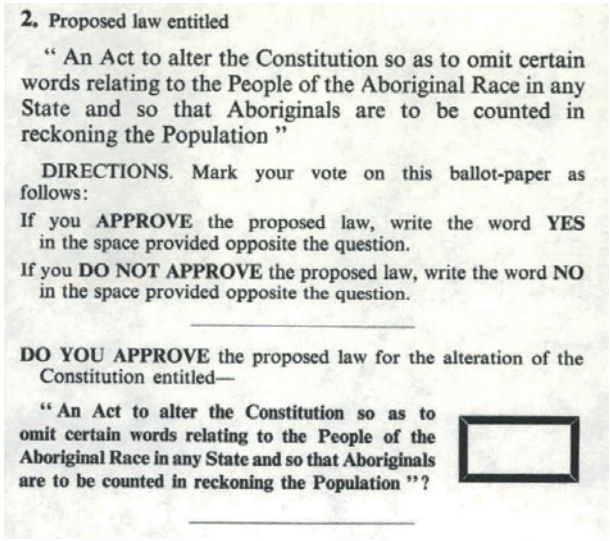
In addition to the Australian Constitution, each Australian state has its own constitution. The two territories (ACT and Northern Territory) have similar documents called self-government acts. This means they are able to govern themselves, but do not have their own constitution. An important distinction between states and territories is that states have their power protected in the Australian Constitution and can control their own legislation. However, territories are under the direct control of the federal government.



12.1.2 Australia's constitution can only be changed if the majority of the population vote to do so in a referendum (a national vote).

Did you know?

The original Constitution of 1901 stated in section 127, 'In reckoning the numbers of the people of the Commonwealth, or of a State or other part of the Commonwealth, aboriginal natives shall not be counted.' This meant that Indigenous Australians were not considered citizens of the new nation. Instead, they were categorised under 'Flora and Fauna'. It wasn't until all Australian citizens participated in the 1967 referendum, and voted to repeal section 127, that Aboriginal people were counted in the Census (a count of the Australian population) and were recognised as citizens of Australia.



2. Proposed law entitled

"An Act to alter the Constitution so as to omit certain words relating to the People of the Aboriginal Race in any State and so that Aboriginals are to be counted in reckoning the Population"

DIRECTIONS. Mark your vote on this ballot-paper as follows:

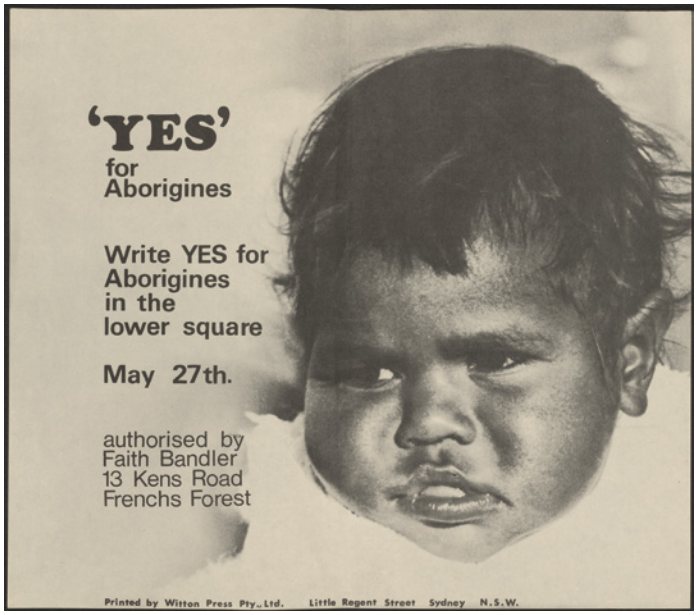
If you APPROVE the proposed law, write the word YES in the space provided opposite the question.

If you DO NOT APPROVE the proposed law, write the word NO in the space provided opposite the question.

DO YOU APPROVE the proposed law for the alteration of the Constitution entitled—

"An Act to alter the Constitution so as to omit certain words relating to the People of the Aboriginal Race in any State and so that Aboriginals are to be counted in reckoning the Population"?

12.1.3 Constitution alteration from the 1967 referendum



12.1.4 Support for the 1967 referendum

State and federal roles

The Australian Constitution lists areas of government that come under federal and state responsibility.

Federal government	State government
foreign policy	schools
currency	hospitals
immigration	roads and railways
defence	police
weights and measures	mining and agriculture
social security	prisons
trade and commerce	public transport
postal and communication services	utilities such as electricity and water

12.1.5 Jobs of the federal and state governments

Activities

Remembering and understanding

1 a Define the following terms in your own words:
- Federation
- constitution
- federal laws.

b Highlight the most important (key) words in your definitions.

2 When and why did Australia's Constitution come into effect?

Applying and analysing

3 Describe the key difference between a state and a territory.

4 The Australian Constitution acts as a framework for the federal government. Explain how in your own words.

Evaluating and creating

5 Investigate how and why Canberra became the site of the Australian Parliament.

6 Evaluate the strengths and weaknesses of the Australian Constitution.

12.2 The separation of powers

The three branches of government

There are three main branches of the Australian Government— (1) the parliament or legislature, (2) the executive and (3) the **judiciary**. These groups, and the roles they play in governing our nation, are outlined in the Australian Constitution. The power to make and manage federal law is divided between the three groups and is known as the separation of powers. These roles have been separated to avoid one group having all the power. The parliament makes and amends the law, the executive puts the law into action, and the judiciary makes judgements about the law.

This separation of powers is one key to the success of Australia's government. It means that each branch of government acts separately, and keeps the other branches from gaining too much power. For example, the executive branch may want a law, but the legislature has to pass it. The judiciary has the power to say if the law doesn't follow the Constitution, and therefore should not be put in place.

Australia does not have a complete separation of powers because some of the roles overlap. The prime minister, for example, is part of both the parliament and the executive.

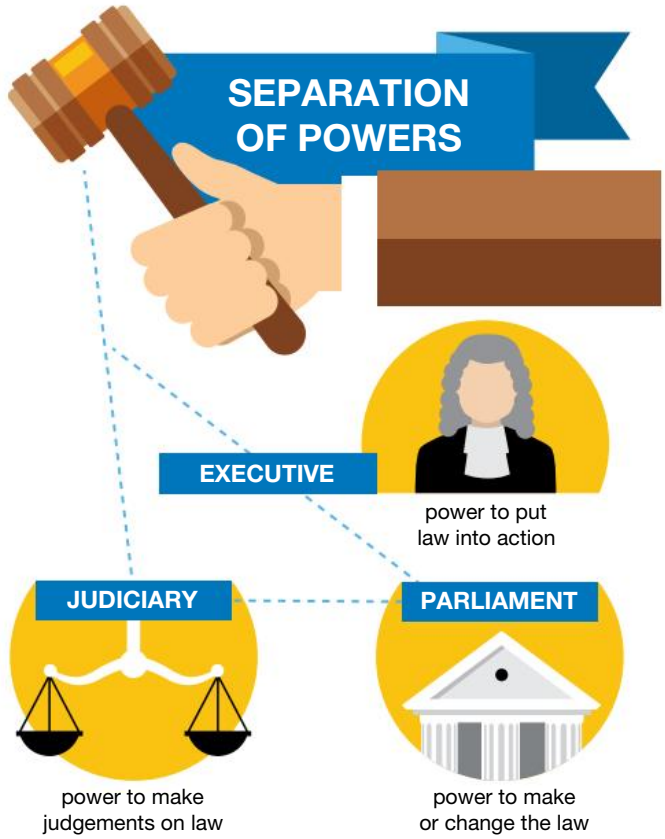
The parliament

The Parliament of Australia passes legislation to make laws. Any proposed laws need to be agreed to by both Houses of Parliament before they become law. Parliament is also known as the legislature. It is made up of:

- the **governor-general**, who represents Queen Elizabeth II, queen of the United Kingdom, Australia and New Zealand, and head of the Commonwealth. The governor-general also has a role in making laws, by assenting (or giving approval) to acts
- the **Senate** and the **House of Representatives**, which together are known as the Houses of Parliament.

Some of the other roles of the Australian Parliament are:

- providing the place where the government is formed
- providing representation for the Australian people through 150 members in the House of Representatives and seventy-six senators
- monitoring the work done by the government through debates and querying issues during question time
- authorising, or approving, the executive government to spend public money.



12.2.1 The separation of powers of the Australian Government

The executive

The job of the executive is to carry out the day-to-day government and administration of the country and to carry out the laws made by the parliament. The executive is made up of the governor-general (who represents the Queen), and the **Cabinet** and ministry, led by the prime minister.

The governor-general is part of the executive because Australia is a **constitutional monarchy**. A constitutional monarchy is a form of government where the powers of the ruling **monarch**—a king or queen—are limited by law and usually carried out only on the advice of the elected government. Australia's head of state is Queen Elizabeth II. Queen Elizabeth is also Queen of the UK and several other countries that were its former colonies. Her role in Australia is separate from her role in the UK. The head of state is a formal, symbolic and ceremonial job, and in Australia the Queen's tasks have been delegated (handed over) to her representative, the governor-general.

The roles of the governor-general and the Queen

The governor-general performs the ceremonial functions in Australia on behalf of the Queen. The tasks of the governor-general are written in the Constitution and can include:

- appointing and dismissing executive councillors and ministers
- appointing judges
- being the commander-in-chief of the defence forces
- deciding when parliament meets
- suspending and dissolving parliament
- granting permission for general elections
- recommending government spending to parliament
- signing off on proposed new laws
- blocking or proposing amendments to any laws passed by the Houses of Parliament
- receiving and entertaining official visitors to Australia.

The Constitution also gives the governor-general the power to act independently in some areas. For example, the governor-general is able to dissolve the House of Representatives or both Houses (called a double dissolution) in exceptional circumstances.



12.2.2 The leader of the governing party becomes the prime minister. Scott Morrison was the 30th prime minister of Australia. He became prime minister in 2018 after a leadership change in which he replaced Malcolm Turnbull to become leader of the Liberal Party.

Did you know?

Australia did not have its first female prime minister until 2010, when Julia Gillard was elected as the twenty-seventh prime minister. Fifty years earlier, in Sri Lanka, Sirimavo Bandaranaike became the world's first woman to be elected as prime minister. Since then over seventy countries have had a woman as head of state or government leader at some point.



12.2.3 Julia Gillard, the first woman to be prime minister of Australia

In 1975, the then governor-general, Sir John Kerr, made history by using his reserve powers to sack Gough Whitlam's Labor government. He then appointed the opposition leader, Malcolm Fraser, as temporary prime minister.

The prime minister

The prime minister is the head of government and leader of the executive. He or she is the person who leads the party voted into office by the Australian people. The prime minister has a great deal of power to select the government and determine what its priorities will be. The prime minister is also the chief adviser to the governor-general.

There have been thirty prime ministers in Australia and forty-five elections up to 2018. Sometimes the prime minister may change without an election. Reasons for this could be that the prime minister died while in office or there has been a party leadership change.

Cabinet

The Cabinet is the group of senior ministers who make government policy for running the country. This group is made up of senior politicians, selected and led by the prime minister. There can be up to thirty ministers, managing the major departments, which include Agriculture and Water Resources; Foreign Affairs and Trade; Treasury; and Industry, Innovation and Science.



12.2.4 Australia's High Court justices

The judiciary

The judiciary has the power to interpret laws based on the Constitution and to make judgements on them. This is done through courts such as the High Court, which is the most powerful court in Australia, and other federal courts. The High Court was established by the Constitution, while other courts were created by legislation of the parliament.

The High Court consists of a chief justice and six other justices (judges). High Court justices are appointed by the governor-general after advice from the prime minister and Cabinet. They can only be removed from their position by the governor-general. Once they are on the bench, justices keep the position until they retire or reach the age of 70 years, when they are forced to resign by law.

Activities

Remembering and understanding

1 What are the three main branches of the Australian Government?

2 List the three bodies that make up the Australian Parliament.

Applying and analysing

3 a Copy the diagram in Figure 12.2.1 showing the roles of and the relationship between Australia's three branches of government.

b Add the key stakeholders (groups and people) that play a role in each branch.

4 Australia's head of state is Queen Elizabeth II of England. Research and explain why this is the case.

Evaluating and creating

5 Investigate why former governor-general Sir John Kerr dismissed the Whitlam Labor government in 1975.

6 Australia had five prime ministers from 2013 to 2018. Investigate why there have been so many leadership changes. Discuss what this reveals about Australia's parliament.

12.3 The three levels of government

Federal, state and local levels of government

Australia is a big country of over 24 million people spread across 7.7 million square kilometres. Running Australia is an enormous task and needs the cooperation of many groups. Federal Parliament cannot make every decision and so the roles of governing the country are divided. This is known as the three levels of government. Each level of government has its own responsibilities, although sometimes these overlap. The three levels of government work together to make sure the country runs smoothly, and to provide the services we all need.

Did you know?

The first sitting of parliament was not held in Canberra, but in the Royal Exhibition Building in Melbourne. Canberra was selected in 1908 as the location of the nation's capital as a compromise (mutual concession or trade-off) between Australia's two largest cities, Sydney and Melbourne.

The three levels are:

- *federal government*—this is based in Parliament House in Canberra. The prime minister is its leader
- *state and territory governments*—these are based in the capital cities. Each state is led by a premier, and the two territories are led by a chief minister. Victoria's Parliament House is located in Melbourne
- *local councils, shires and municipalities*—these are located across the nation. The area where you live, for example, falls under a local government authority of some sort.

Australia has one federal government, six state and two territory governments, and more than 560 local councils. Voters elect representatives to all three levels of government to make decisions on their behalf. It is compulsory for citizens aged 18 years and over to vote in elections.

12.3.1 There are three levels of government working together in Australia.

Australia's three levels of government—examples	Who leads each level?	What is each level responsible for?	Making the law: legislative	Carrying out the law: executive	Interpreting or figuring out the law: judicial
Federal Parliament House in Canberra	prime minister	• defence • taxation • immigration • postal services • trade • environment	• Senate (Upper House) • House of Representatives (Lower House)	• governor-general • prime minister, Cabinet and ministers • federal public service	• High Court • Federal Court • Family Court
State Parliament House in Melbourne, Victoria	premier in states, chief minister in territories	• schools • hospitals • roads and railways • police and ambulance services • housing	• Legislative Council (Upper House) • Legislative Assembly (Lower House)	• governor • premier • Cabinet and ministers • state public service	• Supreme Court • District Court • Magistrates Court
Local City of Melbourne	mayor or shire president	• town planning • rubbish collection • jocal roads • pet control • parks and ovals • local libraries and swimming pools	• elected council members • municipal council • shire council	• mayor or shire president • council members	

Federal government

The federal government is responsible for matters that affect the whole nation. It deals with matters such as trade, defence, immigration and the environment. It is also responsible for countrywide services, such as currency (system of money), postal services and telecommunications.

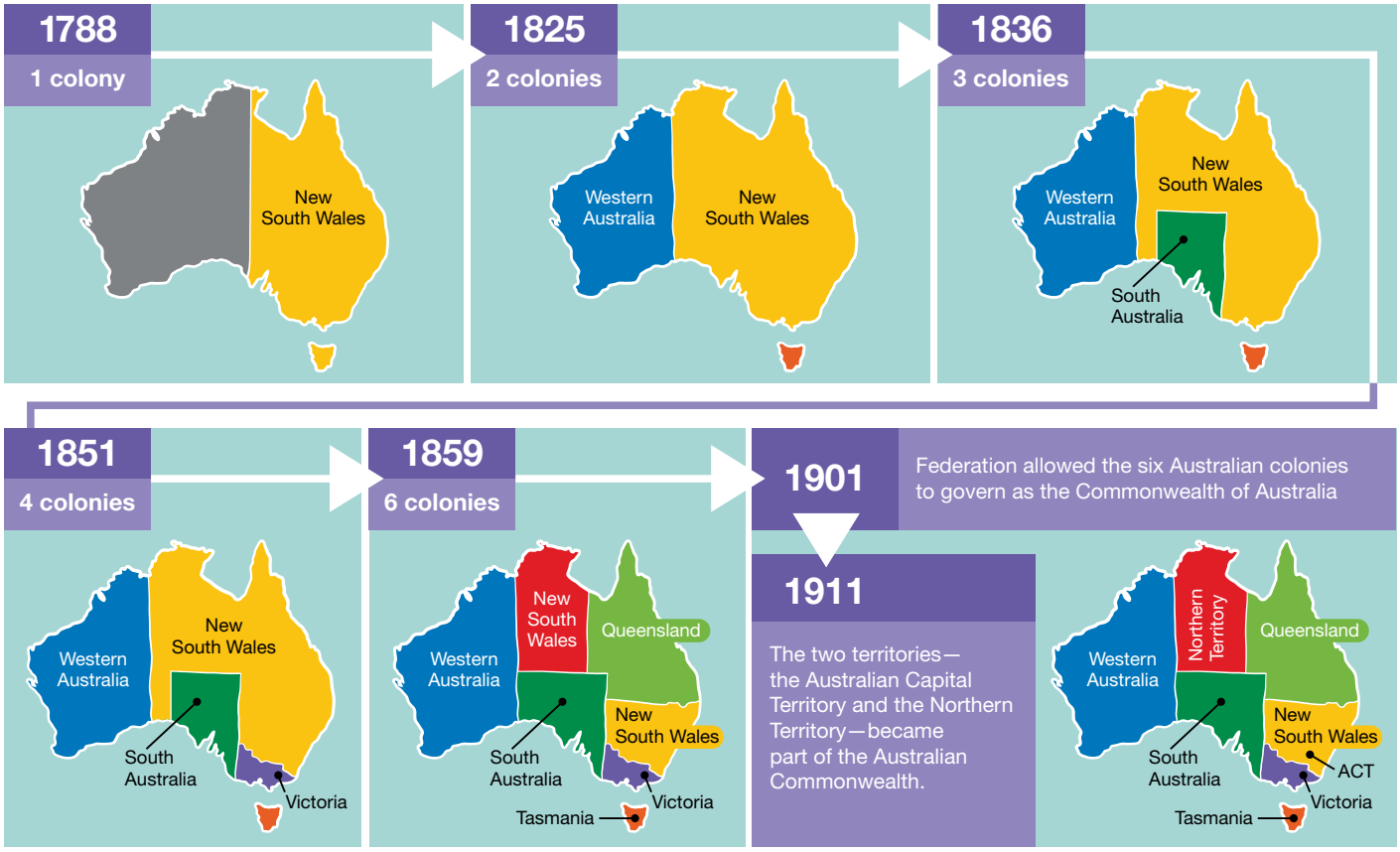
It is expensive to provide all these services to a whole nation. In order to fund them, the government collects taxes from companies and individuals. A tax is a compulsory contribution. For individuals, it is automatically taken out of their salary.



12.3.3 The federal government funds a number of projects in each state. The National Broadband Network (NBN) is the largest infrastructure project in Australia's history. The project aims to provide fast internet to meet the rapidly growing demands for internet access.

Did you know?

Before Federation, all the colonies had their own governments. Each **colony** had its own written constitution, parliament and laws. However, the British Parliament could overrule any laws passed by the colonies. The Australian Constitution, written when the colonies joined together in federation, allowed the states to keep their own parliaments (see Figure 12.3.2).



12.3.2 Australian colony development, 1788–1911

State government

Each state government is responsible for the issues that affect the particular state or territory. It deals with matters that are not covered by the federal government. For example, schools, police and public transport are state responsibilities.

In each state, except for Queensland, there are two Houses of Parliament—the Lower House or Legislative Assembly, and the Upper House or Legislative Council. The head of the government in the states is the premier. In the territories it is the chief minister.

Did you know?

The Victorian Government ran a competition inviting people to submit possible names for the five new Melbourne stations. It received over 50 000 entries. Some of the more creative suggestions for station names were Shane Warne, Vegemite, Bunnings Sausage, Smashed Avo, Kangaroo, Station McStationface and Winterfell. In naming the five stations, the government chose to call them after their location in order to help people navigate Melbourne.

Melbourne Metro Rail Project

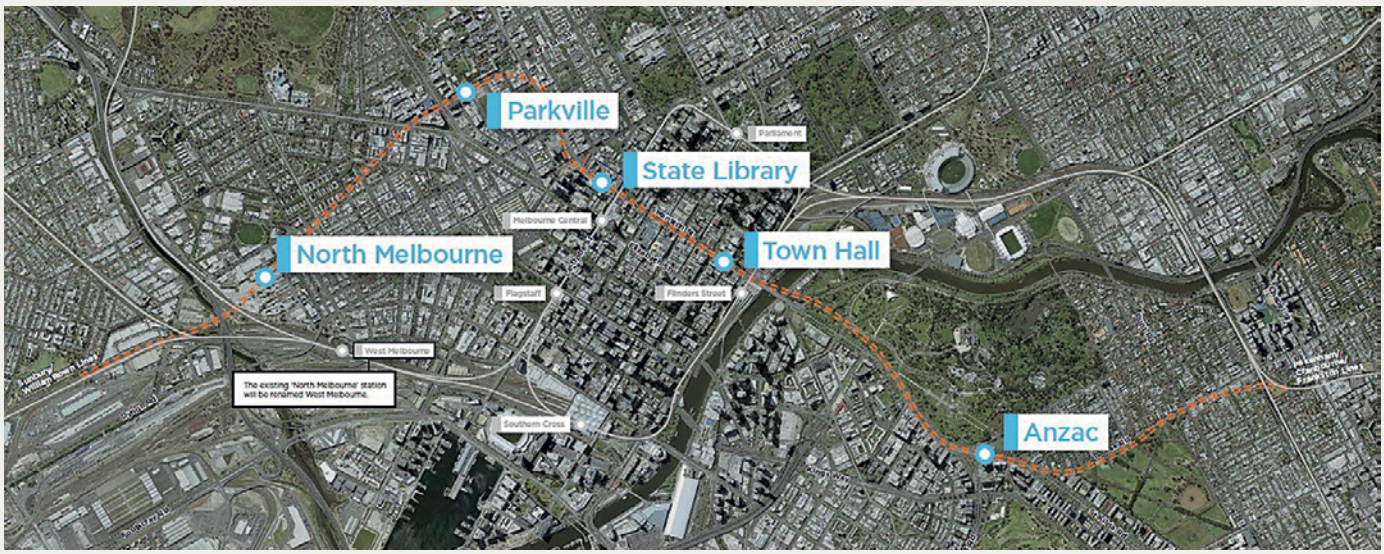
Melbourne is one of the busiest cities in Australia. More than 415 000 commuters use Melbourne trains every day. With so many passengers, Melbourne's rail network has become very congested (overcrowded). In order to satisfy the increasing transport needs, the Victorian Government is investing in the Melbourne Metro Rail Project.

The project work started in late 2016. Major construction began in early 2018. It's expected to be completed in 2026. The focus of the rail project is the metro tunnel, which will connect Melbourne's existing network and add five new stations. The new stations are North Melbourne, Parkville, State Library, Town Hall and Anzac.

The state government expects the project will reduce pressure on Melbourne's main train stations such as Flinders Street and Southern Cross. It also aims to increase the frequency and amount of train services for commuters.

Minister for Public Transport, Jacinta Allan, said, 'The Metro Tunnel will free up space in the City Loop to run more trains, more often across Melbourne. The Metro Tunnel will change Melbourne forever with a world-class design that will see new open space, terraced seating and sweeping arches.'

The Victorian Premier, Daniel Andrews, also said there is another benefit of the state government initiative: 'This is the biggest project that our state has seen for a very long time, perhaps ever, it is Infrastructure Australia's number one priority for all the public transport benefits it will deliver, but along the way so many thousands of families are going to benefit through employment, through skills.'

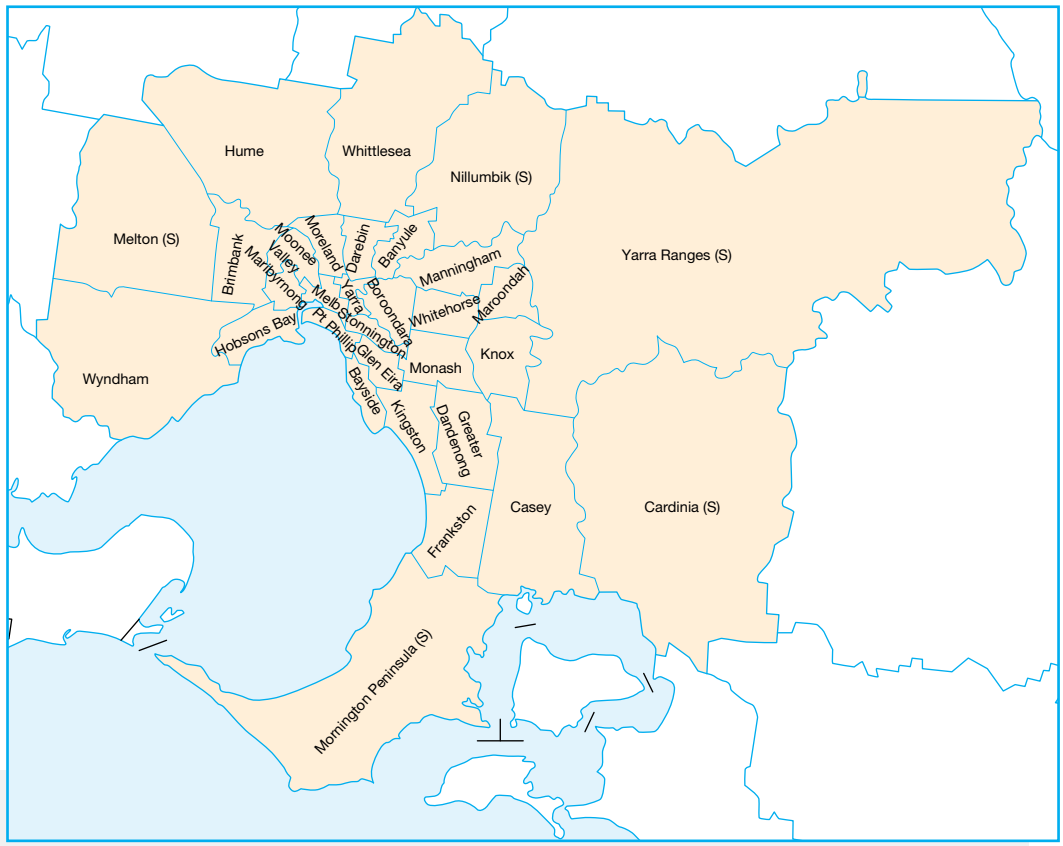


12.3.4 The Melbourne Metro Rail Project began in 2016 and will be completed by 2026. It includes five new stations in Melbourne. This infrastructure will help decrease traffic congestion.

The federal government allocates some money each year to the states and territories. State governments also receive funding, to run their affairs, by collecting taxes.

State government initiatives

State governments often use their funding to develop new projects to keep up with growing infrastructure needs of the population. These projects create new job opportunities for people. They also build efficient services that allow the state to run more smoothly. The Melbourne Metro Rail Project is an example of a state government initiative.





12.3.5 The seventy-nine local government areas (LGAs) in Victoria (below), and LGAs in and around Melbourne (above)

Skills builder

My local council

Asking complex and open-ended questions is an important skill to build in civics and citizenship studies, as they will help you look at issues more closely. Revisit the Toolkit to remind yourself about the difference between open and closed questions.

The following question starters will help you develop more detailed research about any civics and citizenship issue.

1 Your task is to finish each question to create a list of questions that will help you understand the role of your local council. The first one has been done for you as an example.
   - I wonder why *the mayor of local councils volunteers instead of being paid*.
   - What would happen if ...?
   - What if nothing is done about ...?
   - What are the reasons for ...?
   - What is the purpose of ...?
   - How can this be explained?
   - How are these the same? How are they different?

2 This list of questions starters is just a beginning. Can you come up with five more?

Local government

Local government is responsible for services in your neighbourhood. These services include:

- parks, sports fields and playgrounds
- libraries
- tree and footpath maintenance
- rubbish collection
- community services, such as Meals on Wheels.

In Victoria, there are seventy-nine municipal districts, often known as local government areas (LGAs). They are usually known as cities in urban areas and shires in country areas. A council is in charge of running each LGA. Like federal and state governments, local councils also need money to operate. They collect it in the form of residential rates, licences and fines. Rates are an amount of money paid by all property owners in the LGA. Councils are also given grants of money from the federal and state government.

Local councils are run by councillors. They are volunteers, who are elected by local residents through local government elections. Councillors make the main decisions that affect their local area. They are supported by a range of paid staff who take care of the day-to-day running of the local area. Examples of positions or jobs funded by councils include building and health inspectors, rangers, healthcare workers and librarians.

Activities

Remembering and understanding

1 a What are the three levels of government in Australia?
   b Why is it necessary to divide responsibility among the three levels?

2 What are the names of the two Houses of Parliament in each state?

3 Provide three examples of services that local governments manage.

Applying and analysing

4 Read about the Melbourne Metro Rail Project on page 273. Using a PMI chart (one has been started for you below), analyse the benefits and drawbacks of the project.

Plus	Minus	Interesting
It will reduce congestion.	Very expensive. It will cost $11 billion.	More than 415 000 people use the train every day.

5 Research and write down the name of each state premier and territory chief minister.

Evaluating and creating

6 Predict what might happen if your local government stopped providing some of its services, such as collecting waste and items for recycling.

12.4 Houses of Parliament

The bicameral parliament

The Parliament of Australia (or Federal Parliament) is called a **bicameral** parliament because it has two Houses. These are known as the House of Representatives (Lower House) and the Senate (Upper House). Each House has very different jobs.

House of Representatives

The House of Representatives is also known as the Lower House, or the People's House. This House represents the Australian people. It would be impossible for every Australian to vote on every decision that needs to be made. Therefore, citizens elect politicians to do this for them.

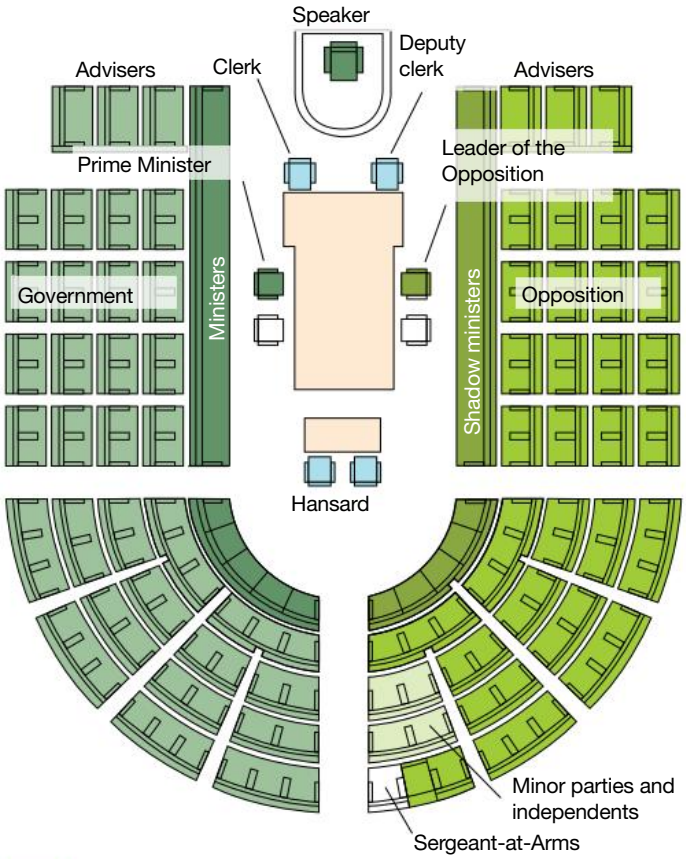
Did you know?

The colour of the House of Representatives is green for two reasons—one is to show our link with the traditional green decor of the House of Commons in the British Parliament; the other is to represent the Australian eucalypt landscape. The furnishings and carpet in the Senate are red to show our traditional link with the House of Lords in the British Parliament. The colour also represents the red earth that is typical of much of the Australian landscape.



12.4.1 The House of Representatives is also known as the People's House or the Lower House. In the image, government members sit on the right and opposition members on the left.

Australia is divided into 150 areas called electorates. There are 150 members elected to the House of Representatives. Each member represents one electorate. Each of these areas holds roughly the same number of people. This means that, in terms of land area, some of the electorates are very small, while others are very large. For example, the electorate of Melbourne is very small in land area, whereas the electorate of Mallee is very large. However, they both have a similar population.



12.4.2 House of Representatives seating plan

The House of Representatives is traditionally the most powerful House of the two. Its most important role is forming the government after an election. After a federal election, the political party that wins a majority of seats in the House of Representatives forms the government. Sometimes one party does not win a majority of seats. In this case it must combine, or form a coalition, with another party, so that it can form the government. The leader of the victorious party becomes the prime minister. The next largest party forms the opposition.



12.4.3 You are welcome to watch the proceedings of the House of Representatives and the Senate from the public galleries when you visit Parliament House.



12.4.4 The Senate is also known as the States' House or the Red Chamber. There are seventy-six senators in total, twelve from each state, and two from each territory.

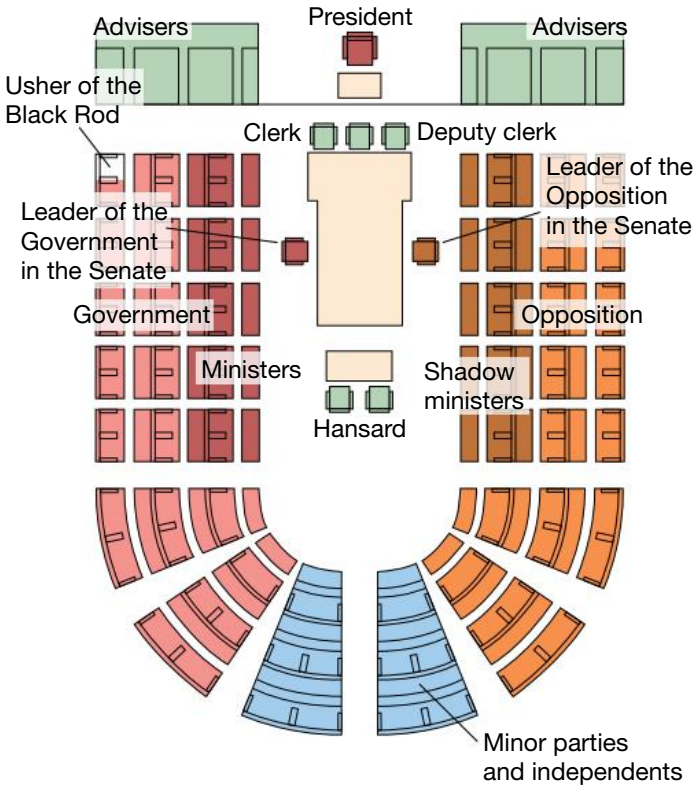
The Senate

The Senate is also known as the Upper House, the States' House and the Red Chamber. This House is made up of elected politicians who represent the people of Australia's states and territories. These politicians are known as senators. There are seventy-six senators—twelve from each state and two from each territory.

The Senate was established because of concerns raised by the states during Federation in 1901. When the idea of federation was first being proposed, there was a great deal of debate. Many of the colonies with smaller populations, such as Western Australia, were worried that the new federal government's House of Representatives would not listen to their concerns. These colonies were concerned that the larger colonies of News South Wales and Victoria would dominate discussions. This debate resulted in the second House, or Senate, being established. As a result, all states elect the same number of senators to represent them in the Senate or States' House, regardless of the size of the state's population. The Northern Territory and the ACT each elect two senators.

The role of the senator is to represent the view of Australians. They make and change federal laws by discussing proposals for new laws and voting on them. They also examine the work of the government. The Senate's role as the States' House has become less important over the years as political parties have grown.

Now senators generally vote on matters according to the party they belong to, rather than the state they represent. The Senate also acts as a 'house of review' for any proposed laws. It gives a second opinion and makes changes after the law has passed through the House of Representatives.



12.4.5 Senate seating plan

A day in parliament

Parliament only sits for about 18 to 20 weeks each year. Sitting days usually follow a set schedule. The days when parliament meets or sits are set out in a schedule at the beginning of each year. The daily schedule includes:

- government business and statements from members
- question time at 2 p.m.
- presentation of documents, such as reports from government agencies
- discussion of current issues of public importance, usually started by a non-government party
- the adjournment debate (a series of short speeches at the end of the day).

One of the main jobs of parliament is to consider and pass laws. A proposal for a new law, or a change to an existing one, is called a Bill.

How the two Houses work together

The Senate and the House of Representatives both play an important role. Both Houses must agree before a new Bill becomes law. There is much debate in the two Houses and sometimes they do not agree. The Constitution has special provisions for how to deal with disagreement between the Houses.

All language in a Bill and any amendments (changes) to it must be the same in both houses. It can be referred to the other body for reconsideration, if needed.

If the Bill is passed, the governor-general (acting on behalf of the Queen, who is Australia's head of state) signs the Bill and it becomes law. This process is called 'royal assent'.

Activities

Remembering and understanding

1. Why is the Australian Parliament called a bicameral parliament?
2. What colour is each House and what do the colours represent?
3. List the different roles of a senator.
4. Which document has special provisions for how to deal with disagreement between the House of Representatives and the Senate?

Applying and analysing

5. Explain why there are 150 members in the House of Representatives and seventy-six senators in the Senate.
6. Look at Figures 12.4.4 and 12.4.5.
   a. Research the role of the Hansard.
   b. Explain in your own words why you think the Hansard's role is important.

Creating and evaluating

7. Propose why senators now generally vote on matters according to the party they belong to rather than the state they represent.

LS 12A

12.5 Changing the Constitution

Referring to the people

The Australian Constitution can be altered to meet the changing needs or values of the community. However, it is a complicated process and does not happen very often. To change the Constitution, the federal government must call a referendum.

The word 'referendum' is Latin and means 'something referred', usually to the people. A referendum is a vote by citizens aged 18 years and over on a question that proposes to change the Constitution. In Australia, referendums may be held at state and federal levels. The Australian Constitution can only be changed by referendum according to the rules set out in section 128 of the Constitution. This section requires a double majority for change to occur.

A double majority

To change Australia's constitution a double majority is needed. This means that two things need to happen:

- the total 'yes' vote across Australia needs to be more than 50 per cent
- there has to be a majority of 'yes' votes in more than half the states. This means at least four states have to vote 'yes'.

A majority is more than half the total number. Exactly half, or 50 per cent, is not enough; at least one more is needed.

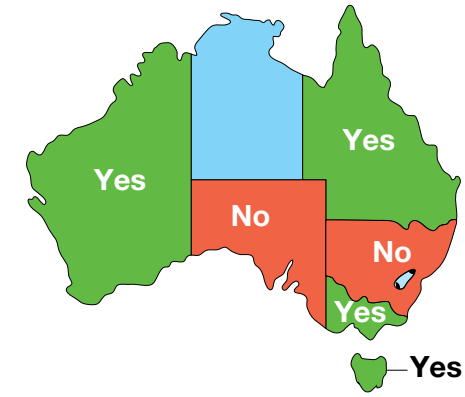
A referendum is passed when:

a national majority (more than half) of voters from all states and territories vote '**Yes**'

and

a majority (more than half) of voters in at least four of the six states vote '**Yes**'.





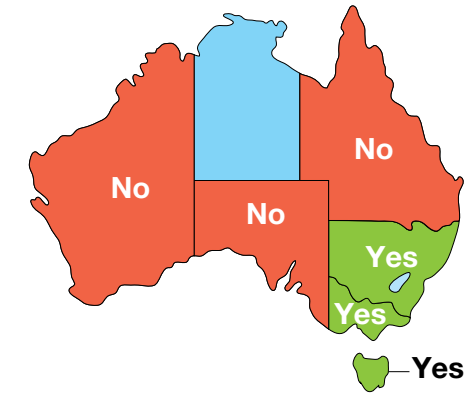
A referendum is not passed when:

a national majority (more than half) of voters from all states and territories vote '**No**'

and/or

a majority (more than half) of voters in at least three states vote '**No**'.





The votes of people living in the ACT, the NT and any of Australia's external territories count towards the national majority only.

12.5.1 How a double majority works

Referendums in Australia

The first referendum was held in 1906 and Australia has since held another forty-three referendums. Of these forty-four referendums, only eight have been successful. Some successful referendums have included:

- *the 1946 referendum*—this allowed the Commonwealth to provide social service benefits to returned service men and women
- *the 1977 referendum*—this amended the Constitution to put in place a retirement age for federal judges. Judges must now retire once they reach 70 years of age.

The 1967 referendum

The most successful referendum was held in 1967. It resulted in the highest 'yes' vote, with 90.77 per cent of voters agreeing to make a change to the Constitution. Australians voted to include Aboriginal people in the Census and give the federal government the power to make laws for Australians of Aboriginal and Torres Strait Islander descent.



12.5.2 Bill Onus, Victorian Aborigines' Advancement League President, taking part in an Aboriginal rights march in May 1967

12.5.3 Arguments for and against Australia becoming a republic

For a republic	Against a republic
• Australia's head of state should be a citizen of Australia. • Australia has developed closer ties with other regions, such as Asia. • Australia's population is more multicultural, not just from the UK. • Britain's monarchy is not consistent with Australian views and is irrelevant. • A president is usually chosen by the people, but a monarch is born into the position, which is not democratic. • The Australian people want a republic, not a constitutional monarchy.	• The system has worked well so it should not be changed. • It would be expensive to change. • Politicians may get more power through changing the Constitution. • Australia has historically always been linked to Britain. We should maintain this link. • Until the form of republic can be agreed upon, Australia should stay with the present system. • Australian people want to retain our links with Britain.

The 1999 referendum

Although Australia became a nation in 1901 when the colonies were federated, it still kept many links with Great Britain. The king or queen, referred to as the monarch of Britain, remained the head of the Australian Government. In 1999, the people of Australia were asked a referendum question about what type of government our nation should have. The question was whether Australia should cut its remaining links with Britain and become a republic. The question voters were asked was:

> 'Do you approve of an Act to alter the Constitution to establish the Commonwealth of Australia as a republic with the Queen and governor-general being replaced by a President appointed by a two-thirds majority of the Commonwealth Parliament?'

A republic is a democratic country that does not have a queen or king as head of state. Instead, it has a ruler known as a president. An example of this type of government can be seen in the United States of America.

Australia votes against a republic

The referendum failed to gain the Australian public's support. Australians voted against the idea of becoming a republic, with only the ACT returning a 'yes' vote. If it had succeeded, the Queen would no longer be Australia's head of state. Instead, Australia would have a president selected by a two-thirds majority of the members of parliament.

Other forms of national vote

A form of referendum or poll can also be held without seeking to change the Constitution. This type of vote is known as a plebiscite. Plebiscites are often used to test public opinions on government ideas and actions. They do not have any legal force, unlike referendums.

12.5.4 State-by-state results of the 1999 referendum

State/ Territory	Result	Yes %	No %
NSW	No	46.43	53.57
Vic.	No	48.84	50.16
Qld	No	37.44	62.56
WA	No	41.48	58.52
SA	No	43.57	56.43
Tas.	No	40.37	59.63
ACT	Yes	63.27	36.73
NT	No	48.77	51.23

Source: Australian Electoral Commission

Did you know?

In 1916 and 1917, there were two national plebiscites held about whether to introduce conscription during World War I. Both were defeated. In 1977, Australians voted to choose the national anthem. The choices were 'God Save the Queen', 'Waltzing Matilda', 'Song of Australia' and 'Advance Australia Fair'.

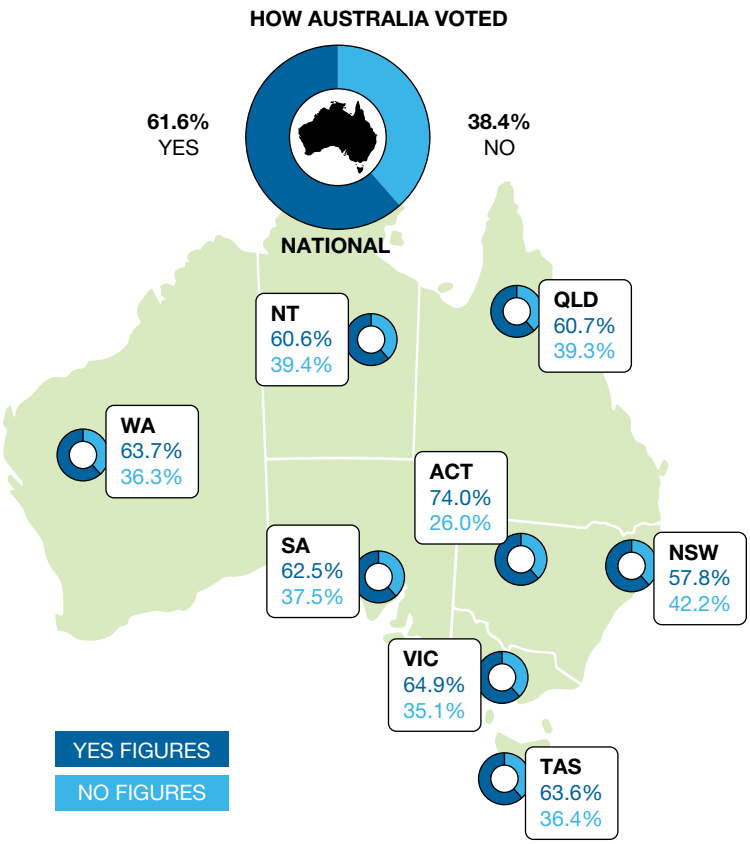


12.5.5 People involved in the conscription debate in 1916 and 1917 wore badges to raise awareness of their campaign and encourage people to vote 'yes' or 'no'.

The 2017 postal vote

In 2017, the Australian Government ran a postal survey that was similar to a plebiscite. The survey was designed to see if Australia supported same-sex couples being allowed to marry. Before this survey, marriage was defined as being between a man and a woman only.

Rather than ask people to vote at ballot boxes, the government sent out a postal form to every household in Australia between 12 September and 7 November 2017. Unlike in an election or a referendum, participation was not compulsory. Eligible voters were asked to vote yes or no on the question: 'Should the law be changed to allow same-sex couples to marry?'



12.5.6 State-by-state results from the 2017 marriage equality survey

A result of 61.2 per cent in favour was announced on 15 November 2017. This result gave Australian politicians a strong indication that the nation supported legalising same-sex marriage. Over the remaining weeks of the 2017 parliament sittings, politicians debated the Marriage Equality Bill in the House of Representatives and the Senate. Eventually the Bill allowing for same-sex couples to marry was passed. Couples were officially allowed to marry from 9 January 2018.

This change did not require parliament to alter the Constitution, but did reflect the changing values of Australian society.

LS 12B



12.5.7 Supporters join in the marriage equality rally in Melbourne in August 2017. The banner they are holding encourages voters to tick the 'Yes' box on their postal vote.

Activities

Remembering and understanding

1. What language does the word 'referendum' come from?
2. Identify the two steps that need to happen for a double majority to occur.
3. List two forms of national vote that don't seek to change the Constitution.

Applying and analysing

4. Identify the four stages in the process required to change the Constitution.
5. Research one of the other successful referendums in Australian history. Explain what change was made to the Constitution and why it was needed.

Evaluating and creating

6. Investigate the arguments for and against an Australian republic. State which arguments you agree with and why.
7. Research the status of the republic debate in Australia today and argue whether you think a referendum on the issue would be successful today.
8. Print out a blank world map showing all the countries. A world outline map can be located on your Student Reader+.
   - **a** Research all the countries that have marriage equality and colour them in on your map.
   - **b** Research the dates each country achieved marriage equality and write them on your map.
   - **c** Looking at the map, write down at least five observations you make from the data.

12.6 Australia: Freedoms

Since 1901, Australia has been a successful representative liberal democracy. This means that Australia has a form of government in which the people elect representatives in fair and free elections to represent them in a parliament and make laws on their behalf. Most people are able to live free from oppression, discrimination and government interference. They are protected by core principles of the rule of law and responsible government.

Democratic freedoms

The following freedoms (liberties) have been identified as some of the defining features of Australian democracy. Although there is no formal document guaranteeing the protection of these freedoms in law, they have been accepted and recognised as vital to the Australian democratic culture. They include:

- freedom of assembly and association
- freedom of religion and movement
- freedom of speech and expression
- freedom of information.

Magna Carta—the 'Great Charter'

Australia's democracy has been shaped by an important part of English law called the Magna Carta. This was a document written in 1215 by King John of England.

The Magna Carta limited the king's power and forced him to abide by the law. It established the foundation for the importance of the rule of law.

> No free man shall be seized or imprisoned, or stripped of his rights or possessions, or outlawed or exiled, or deprived of his standing in any other way, nor will we proceed with force against him, or send others to do so, except by the lawful judgement of his equals or by the law of the land.

12.6.1 An extract from the Magna Carta

Public interest versus democratic freedom

The world has changed immensely since our Constitution was introduced in 1901. There are now global fears of terrorism, increased refugee and humanitarian crises, and security issues surrounding the use of the internet. Governments have a responsibility to deal with these issues, but also to continue to protect and uphold democratic freedoms. This is a difficult task and there is much public debate about how best to do this.

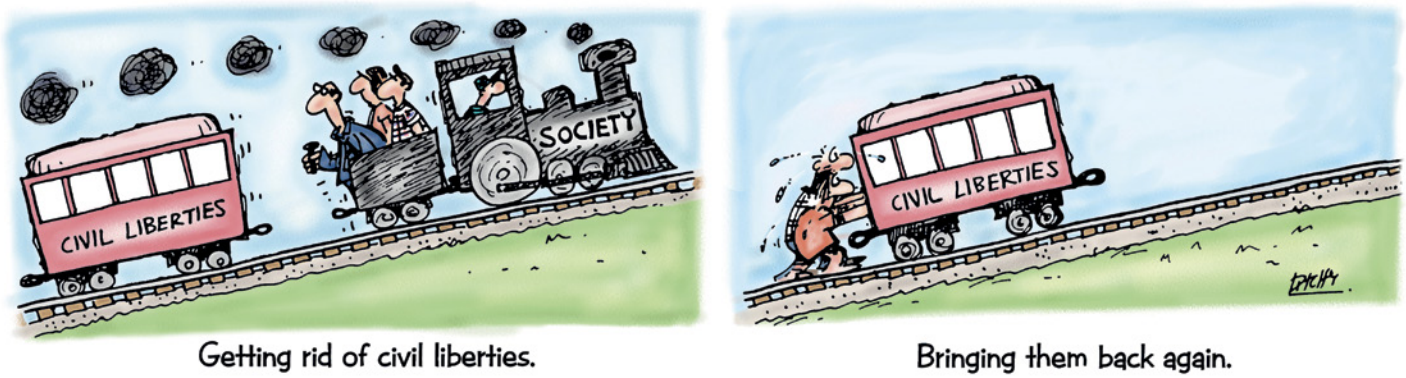


12.6.2 King Edward I (1272–1307) Inspeximus issue of Magna Carta, 1297, on display at Old Parliament House, Canberra

Limits to democratic freedoms

There are currently 350 laws that have been identified in Australia that limit democratic freedoms. Of those, 209 have been legislated since the terrorist attacks in 2001. While attacks of terror must be dealt with forcefully, there is increased concern from some groups in Australia that politicians are using this excuse too often. This point of view argues that democratic freedoms are being eroded without enough thought to the consequences.

Some people within the community are now asking to what extent is it reasonable for a government to interfere with a citizen's basic rights on the basis of protecting national security. Australians must continue to hold the government accountable for its actions if they are to preserve their democratic freedoms. It is difficult to regain such liberties (freedoms) once the law has taken them away.



Getting rid of civil liberties. Bringing them back again.

12.6.3 This cartoon shows a particular point of view about what the consequences of the new terror laws might be.

A bill of rights

The new anti-terror laws are just one example of the changing nature of lawmaking in Australia. As a result of the new laws, the demand for a bill of rights has re-emerged as an issue.

A bill of rights is a piece of law that guarantees basic individual rights and freedoms. It is used by judges to overturn laws that attempt to limit these rights. Perhaps the most famous example of a bill of rights is that of the United States.

12.6.4 Some of the arguments for and against a bill of rights

Arguments for a bill of rights	Arguments against a bill of rights
• Democratic freedoms would be guaranteed in law and not just implied by the Constitution (not specifically authorised in writing, but assumed because similar freedoms have already been granted). • Currently minority groups are at the mercy of the majority. A bill of rights would allow them to have equal protection before the law. This includes Indigenous Australians and refugees. • Judges are used to making decisions about difficult issues that parliament tends to avoid or defer. • State, federal and territory laws are inconsistent. • Currently judges must obey laws established by parliament, even if human rights are breached. A bill of rights would force judges to take human rights into greater consideration and bring Australia into line with international standards.	• It is a challenge to parliamentary sovereignty, the basis of Australian democracy. It places limits on laws that are willed by the people. • Moral issues become political ones. • Major decisions are left with judges who are not elected by the people. • It enables judges to interpret and change the meaning of laws. • There is concern that participation in democracy would decrease. This is because judges would have more lawmaking capacity. • The judicial system will become biased as judges could be appointed based on their moral judgments. • There is potential for it to become outdated very quickly. It's better for parliament to deal with emerging issues as they arise. • It can entrench (lock in) attitudes that are out of date. For example, when the American Bill of Rights was written, the concept of bearing arms was very different to what it means now.

Activities

Remembering and understanding

1 List four democratic freedoms enjoyed in Australia.
2 State the main ideas contained within the Magna Carta.
3 Cite examples of issues that have emerged since the Australian Constitution took effect.
4 Demonstrate how democratic freedoms might be impacted by anti-terror laws.

Applying and analysing

5 Discover the rights given to US citizens in the Bill of Rights.

Evaluating and creating

6 In groups of four, debate whether or not Australia should introduce a bill of rights.

12.7 Freedom of speech

Defining freedom of speech

Freedom of speech is the right of the individual or groups (such as the media or religious organisations) to express opinions publicly without government restraint or censorship (the restriction of free speech). It is seen as essential to democracy as it allows for political debate and criticism of the government. Freedom of speech does not just refer to spoken communication, but also includes written communication. Political cartoons, artworks and emails are all included when considering issues of free speech.

Exceptions to freedom of speech

There are some examples where it is right to limit freedom of speech. Laws have been enacted making vilification (hate speech) and defamation illegal. It is right to protect citizens from opinions that cause or incite violence and an intention to harm.

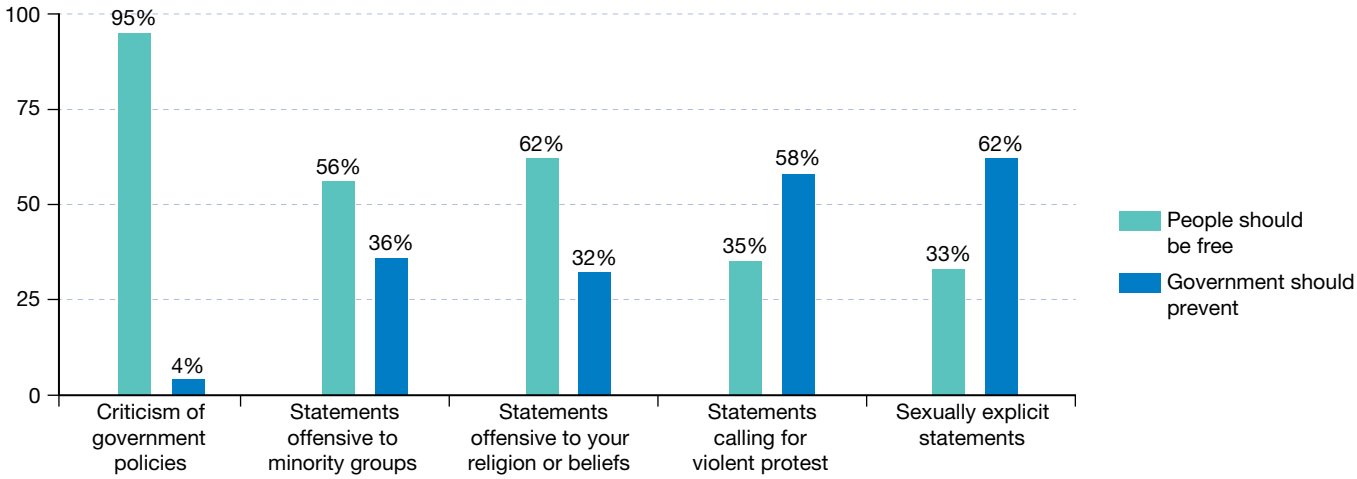
An example of this are the laws that make it illegal to publish child pornography. Although this is a limit to free speech, it aims to protect children from terrible harm and exploitation.

Figure 12.7.1 indicates how important free speech is to Australians. It also shows issues where the public feels some limits to freedom of speech are needed.

The Constitution and freedom of speech

Freedom of speech is not a guaranteed right in Australia, unlike in some other democracies around the world. The Australian Constitution does not explicitly protect freedom of speech and expression; it is merely implied (suggested, not directly stated).

Sections 7 and 24 of the Constitution state that both Houses of Parliament must be directly elected by the Australian public. If the parliament is to truly reflect the people's will, then the public needs to have access to information about the people they are voting for. They must be able to hear differing opinions before making a decision, so a provision of free speech is required. This is why the High Court (whose role is to interpret the Constitution) supports the idea that free speech is implied in the Constitution.



12.7.1 A global survey published by the American Pew Research Center looked at whether people supported all types of free speech or whether they agreed that the government should prevent some types of speech.

Challenges to freedom of speech

Lange v Australian Broadcasting Corporation (1997)

The Lange case in 1997 was one of the first times that free speech was challenged in the High Court. In this case the former New Zealand prime minister David Lange accused the ABC of defamation. In its ruling, the High Court made two important decisions:

- Freedom of speech is necessary only to promote representative and responsible government—it is not about individual rights.
- The public needs access to a wide range of opinions to help in the voting process.

The judges ruled that the public uses the media to get information about political candidates, and therefore they supported the implied guarantee of free speech. The case was important because it helped to form other High Court rulings on matters of free speech.

The Street Church case (2010)

The High Court ruling in *Lange v Australian Broadcasting Corporation* was applied to the Street Church case in Adelaide in 2010.

Samuel and Caleb Corneloup belonged to a street church in Adelaide. Using megaphones, signs and placards to express their particular religious views, they called out to passers-by that they would be going to hell for their activities. This included anything from holding hands to wearing Muslim dress.



12.7.2 The Corneloup brothers challenged a local council by-law that they felt limited their freedom of speech.

In order to remove the street church, the Adelaide City Council used a by-law (a law made by a local council that only applies to that area) that restricted preaching, canvassing, haranguing and handing out printed matter in the Rundle Street Mall.

The Corneloup brothers challenged the by-law. Their case was heard in the High Court, which did not rule in their favour. The judges believed that it was a legitimate reason to limit free speech in order to ensure public order.

The outcome highlighted some concerns for freedom of speech:

- Freedom of political communication is limited.
- Protection of free expression needs to be strengthened through the law or the Constitution.
- In this particular case, a by-law was able to prevent people from expressing their view in a public space.

Activities

Remembering and understanding

1. Define the term 'freedom of speech'.
2. Show why freedom of speech is an essential part of democracy.
3. Give examples of the forms of communication to which freedom of speech applies.
4. Describe some of the limits to freedom of speech.

Applying and analysing

5. Examine why free speech is an implied right in the Australian Constitution.

Evaluating and creating

6. Compare and contrast the findings of the High Court in Lange (1997) and the Street Church case (2010). Do you agree with the decisions?

12.8 Freedom of association and assembly

Freedom of association

Freedom of association gives Australians the freedom to join any group or organisation (provided it is legal). This includes joining a political party, a church group, sports club or trade union.

Protecting freedom of association

Freedom of association in Australia is valued as a basic democratic right. Legally, however, this is not the case. The Australian Constitution only implies protection of freedom under sections 7 and 24 (in the same way that freedom of speech is implied).



12.8.1 Freedom of association allows Australians to join any group and to meet together to express their views. This photograph shows Victorian nurses, supported by other trade unionists, rallying for better pay and conditions.

Laws that restrict freedom of association

The threat posed by terrorist organisations is one that the Australian Government takes very seriously. Recently it has introduced legislation that seeks to prevent the operation of terrorist groups.

These changes make it illegal to associate with certain organisations. This is meant to prevent people assisting terrorist groups either financially or through distributing materials (leaflets or pamphlets) to help in their cause.

The government argues that the laws are necessary to protect the public from terrorism. However, civil liberties groups have concerns that this legislation extends too far for the following reasons.

- The definition of a 'terrorist organisation' is very vague.
- The government can brand an organisation as 'terrorist' without giving it the ability to defend itself. This shifts the burden of proof; people have to prove innocence rather than guilt.
- An individual may not know that they are associating with an illegal group.
- People can be punished because of who they associate with, rather than because of their actual activities.
- It can prevent people visiting family members who live in areas associated with terrorism for fear of arrest.

Freedom of assembly

Freedom of assembly means that people are able to meet together in a public or a private place to exchange ideas and information and to express views. It also includes the right to peaceful protest.

Protests: An important part of the democratic process

Peaceful protests or demonstrations are an effective way for the public to show they are dissatisfied with the government. They allow people the chance to have a direct say in their community. Despite being a vital form of expression, they often create tension. This is because they can disrupt business and communities through the closing of streets or workers walking off the job.

Australians have protested over a wide range of issues including the war in Iraq, federal budgets, bikie laws, environmental concerns over mining and logging, religious issues or those involving asylum seekers and refugees. One of the most famous and longstanding protests was the Aboriginal Tent Embassy at Old Parliament House.



12.8.2 Indigenous Australians protesting in Halls Creek over the decision to close remote communities in Western Australia

Exercising the right to protest

In November 2014, the Western Australian Government announced the closure of 100–150 remote Indigenous communities across the state. It included areas such as Broome, Halls Creek, Fitzroy Crossing and Dampier Peninsula.

In March 2015, street protests occurred across Western Australia with Aboriginal elders branding the decision as a 'cultural genocide'—the deliberate destruction of their cultural heritage. The issue sparked national and worldwide attention, with protests occurring across international and state capitals in support of the first Australians.

The positive role of protests in a democracy

In this instance the holding of peaceful protests resulted in a positive outcome. It allowed a small number of people who were negatively impacted by a law to have their concerns acknowledged. They were able to exert pressure on the government by gaining the support of their community. It resulted in the state government of Western Australia seeking further consultation with the Indigenous community before taking further action. The demonstrations served as an important example of how people can actively be involved in their community to bring about change. Participation in a democracy is not just about voting at an election.

It also shows that governments can be forced to amend or abandon laws in the wake of a public outcry. If they proceed with unpopular or unfair laws they will be voted out at election time.

Activities

Remembering and understanding

1. Identify three ways that Australians can exercise freedom of association.
2. Show one example of a limit to the freedom of association.
3. Compare and contrast freedom of association and freedom of assembly.
4. Explain the meaning of the term 'peaceful protest'.

Applying and analysing

5. Choose one recent issue that has been the focus of peaceful protest in Australia and identify the point(s) of view being expressed by protesters.

Evaluating and creating

6. Appraise the importance of peaceful protest in Australia's democracy.

12.9 Freedom of religion and movement

Freedom of religion

A definition

Freedom of religion ensures that people are able to follow a religion of their choice. This includes the right of an individual to make the choice to not follow a religion (examples of these include atheism and agnosticism). The government is not permitted to influence or interfere with an individual's decision in relation to their religious faith.

Freedom of religion and the Constitution

Provisions for protecting religious freedom in Australia are not guaranteed. Section 116 of the Australian Constitution is unique as it makes a point of preventing the government from making laws about religion. The states are not bound by this section. They are free to legislate on religion as they see fit.

There are limited opportunities for individuals to seek amends if it is felt that their religious rights have been violated. Often appeals have to be made through international bodies.

The external affairs power

There is one way that the Commonwealth can get around section 116. This is through the external affairs power. The Commonwealth Government is the official government of Australia and therefore it takes responsibility for all international matters. Signing an international treaty is an example of this. Once signed, there is an expectation that Australian domestic laws will change to reflect what has been agreed to in the treaty. The Commonwealth can use this power as a way of introducing legislation in regard to religious freedom.

Protecting religious freedom

A person's right to exercise freedom of religion is taken away when laws prevent them from participating in the religion of their choice. No court in Australia has ever found that religious freedom can never be limited or restricted.

Freedom of religion is complex to protect. This is because freedom of religion can come into conflict with another freedom (such as freedom of speech) or a law. It can also come into direct conflict with other religions. Australian anti-discrimination law, while positive in that it prevents unequal treatment of individuals, directly impacts upon religious freedom.

Australian anti-discrimination law and religious freedom

Australian anti-discrimination law, which varies slightly from state to state, makes it illegal to discriminate against someone based on their personal attributes, such as race, gender and ethnicity.



12.9.1 A rally in support of religious freedom

In all Australian states, except for New South Wales and South Australia, this extends to religion.

Examples of religious discrimination claims:

- A Muslim prisoner claimed he was discriminated against because the prison did not offer halal meat; he was successful.
- A man who was employed by a petrol refinery was sacked after refusing to contribute to a union fund. His religious beliefs prevented it. He was successful.
- An employee was asked to remove a notice to hold a prayer service during work hours. It was a non-religious workplace (secular). The employee was unsuccessful.

Exclusions to anti-discrimination law

Currently, religious organisations are exempt from parts of the Australian anti-discrimination law. For example, religious schools argue that to protect the spiritual values of the school they need to hire people who practise the faith. This means that people who do not share the religion do not have to be considered for jobs at that particular school. While religious schools are legally able to do this under current anti-discrimination laws, non-religious schools cannot. On the one hand, this can be viewed as a violation of Australian anti-discrimination laws but, on the other, it can be seen as one that protects the ability of people to freely practise their religion. These exemptions do not apply to individuals, only to organisations.



12.9.2 This cartoon is a comment on what some groups feared would be a result of the Foreign Fighters Bill.

Freedom of movement

Defining freedom of movement

Freedom of movement allows people who are lawfully within Australia the right to:

- enter and leave the country
- move freely within the states and territories
- choose where they live.

Limitations to freedom of movement

The Foreign Fighters Bill 2014 was introduced to deal with the security threat posed by people who leave Australia to fight in foreign conflicts. It is feared that foreign fighters who have fought alongside terrorist organisations may return to Australia to commit a terrorist act. Foreign fighters are targeted in two ways:

- trying to stop would-be terrorists from travelling to war zones
- when they return to Australia, foreign fighters can be restricted in their travel within Australia, unable to leave Australia or made to wear a tracking device.

Some people claim that the Bill is dangerous in a number of ways. It is not very specific, making it easier to accuse people of wrongdoing. A person may be imprisoned for up to 10 years if they've travelled to places where terrorists are operating. This includes people who have family living in these areas or journalists who are on assignment. The onus (duty or responsibility) is on the traveller to prove that their visit was for legitimate reasons.

Activities

Remembering and understanding

1. Summarise what freedom of religion means for individuals and the government.
2. Name the section of the Australian Constitution that relates to freedom of religion.
3. Outline what this section of the Constitution says about religious freedom in Australia.
4. Illustrate how freedom of religion can conflict with other democratic freedoms.

Applying and analysing

5. Question the role of anti-discrimination laws in Australia with respect to freedom of religion. In your opinion, do these laws strengthen our democracy?

Evaluating and creating

6. Suggest two ways that the Foreign Fighters Bill (2014) could be improved.

LS 12C

12.10 Australians and democracy

Participating in democracy

In order for a democracy to thrive it must have active participation and involvement from its citizens. Australians can be involved in their community in many ways at a local, state and federal level. The most common way to participate is through the compulsory voting system that allows people to elect their representatives.

Participating in democracy is about more than just voting. The strength of Australian democracy relies on its citizens being informed about proposed laws, budgets, the impact of global issues such as war, and attitudes towards refugees and migrants. If public interest in the community declines and people stop participating in public debate, it is difficult to keep politicians accountable for their actions.

Ways to be involved in the political process

Some of the most obvious ways to participate in democracy are to stand for office, fund a political party or join a party and attend its meetings. This requires a high level of commitment. Other ways to be involved include lobbying, direct action, signing petitions, boycotting goods and products, participating in marches and demonstrations and contacting local members of parliament.

Lobby groups

Lobby groups are formed to represent particular issues that they want the government to support. Their aim is to either:

- convince the government to pass laws that favour their cause *or*
- oppose laws that disadvantage them.

Lobbying is also used to obtain government funding for projects.

Lobby groups vary in size and the causes that they represent. Wealthy corporations are able to hire full-time lobbyists to protect their interests. They tend to seek out former political staff workers or retired politicians. This is so that they have up-to-date knowledge of government policies and access to political contacts. Lobbyists, however, are not just employed by big corporations. Individuals may form community groups or volunteer organisations.

12.10.1 Ways that Australians can participate in the democratic process in between elections

Political action
• Sign a petition/e-petition • Boycott products for political, ethical or environmental reasons • Urge someone else to get in touch with an elected representative • Present views to a local councillor • Present views to a member of a state legislature • Present views to a member of the House of Representatives • Go to a political meeting • Take part in a demonstration, picket or march • Present views to a member of the Senate • Take active part in a political campaign • Donate money or pay a fee to a political party • Stand for public office

Methods used by lobbyists

Lobbyists use many methods to achieve their goals. It could include appearing before legislative committees, writing letters, emails or making calls to officials, and running campaigns to generate public awareness. Wealthier lobbyists are able to buy advertising on commercial television or radio stations. The critical element to successful lobbying is managing to keep the public interested and never to let it forget the cause.

Lobbying code of conduct

The Commonwealth has recently placed a lobbying code of conduct into effect. The purpose of the code is to monitor the activities of lobbyists. Big company interests have been known to be met at the expense of the public interest. In a democratic country it is believed that the public should know which lobby groups are meeting with politicians and the issues that they represent. The public wants their governments to be transparent, ethical and free from political corruption.

The mining tax: A case study

In May 2010, former prime minister Kevin Rudd announced his intention to introduce a 40 per cent tax on what was termed the 'super profits' of the mining industry. The financial strength of the mining companies allowed them to engage lobbyists to conduct a national campaign worth more than $22 million aimed at preventing the tax. The campaign included advertisements on commercial television and radio stations and the lobbying of politicians.

The key messages of the campaign were that the mining tax was above what they considered fair and would be the highest in the world, that the tax could threaten the industry as a whole and that greater consultation was required on the tax in general.

The Commonwealth Government and the unions also conducted their own advertising campaigns in support of the tax.

This context is seen as contributing to a drop in Kevin Rudd's personal approval ratings. Following a challenge to his leadership, he was replaced as prime minister by Julia Gillard. In the end, a 30 per cent tax was passed, limited to iron ore and coal. The event highlighted the effect a strong lobbying campaign can have on politics.

Direct action

Direct action uses activities such as strikes, protests and marches to achieve their means. As the name implies, direct action means that groups will take more aggressive measures to get their point across. They do not normally negotiate. Examples of organisations that use direct action tactics are Sea Shepherd, which aims to stop whaling in the Antarctic, and the Australian Conservation Foundation, which runs public awareness campaigns and lobbies governments.

Protests

Protests are an important aspect of democratic participation. Historically they have proven to be very successful in achieving political change. Examples of this include the Indigenous Freedom Rides, recognition of Indigenous citizenship and voting rights, the moratoriums on the Vietnam War and the Women's Liberation Movement.



12.10.2 A Sea Shepherd vessel in conflict with Japanese whaling boats. Methods of direct action can result in confrontation, which can be dangerous.



12.10.3 An anti-fracking protest on the Nightcliff foreshore in Darwin, Northern Territory

Issues such as logging and coal seam gas mining (such as fracking) are a regular source of debate. Some logging protest groups use methods of thumb locks and arm locks to strap themselves to equipment; some erect platforms in trees and stage a sit-in. In a bid to stop this type of protesting, some state governments have proposed new laws that make this type of activity illegal.

Changing nature of Australian political participation

In recent years much research has been carried out in relation to Australian democracy. There are widespread concerns of disinterest, distrust and dissatisfaction with politicians. Younger voters (aged 18–24) have been identified as the biggest challenge to democratic engagement. It is believed that they have no interest in political matters. This, however, is untrue.

Different forms of political interaction

Younger voters are using technology as their form of political engagement. This has two implications:

- Technology allows for a wider variety of issues to be given a voice. Young adults are concerned about climate change and the growing refugee crisis. They are concerned about local issues. Instead of using traditional means such as a formal protest to express their views, they can express their ideas online in relation to a greater number of issues.
- Politicians need to learn how to engage with technology to better connect with their voters. They are participating in a world where information is now instant and people respond immediately to unrolling events. Polls are regularly conducted to measure and compare politicians' performance. With increased use of online blogging, forums, emails, tweets, captioned photographs and Facebook likes, public figures are held up for criticism or praise much more quickly. They need to learn how to cope with this change of pace and delivery.

Politicians face a challenge in that they need to engage with new forms of technology, but also motivate younger voters to use the political structures that are already in place.

Ways of addressing change

The Australian Electoral Commission has started the process of trying to incorporate technology by allowing online enrolment. It received 830 000 online enrolment applications in the 5 weeks before the 2013 election.

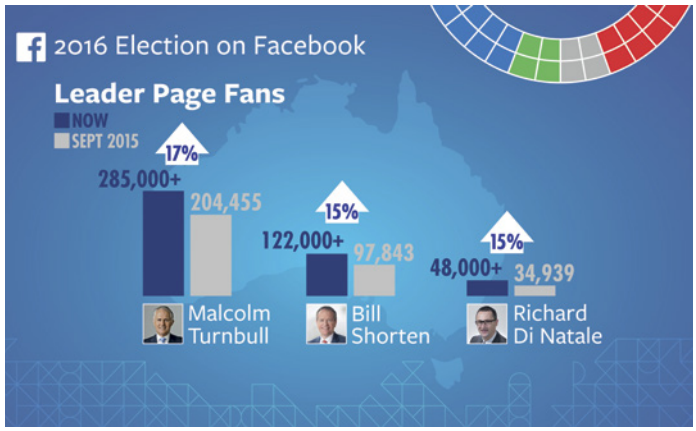
Youth parliaments, including one for Indigenous Australians, have been set up by the YMCA. The Greens also suggested opening up federal parliament for a sitting day.

Key findings in a survey on political engagement

The Institute for Governance and Policy Analysis (IGPA), at the University of Canberra, conducted research into the current state of Australian participation in politics. Some of their key findings are listed in Source 12.10.4.

- Australian citizens are observers rather than participants in formal politics. Over half (54.7 per cent) could not remember conducting any political activity in the last 2 or 3 years beyond the practice of voting.
- About nine in ten Australians think they have little or no influence at all over national decisions and just over 75 per cent feel the same when it comes to local decision making.
- Over nine in ten Australians think that politicians should stop talking and just take action on important problems.
- Some 32 per cent of the 18–24 age group and 28 per cent of the 24–34 age group use Facebook and Twitter and other social media to alert them to political news compared to only 4 per cent of those over 65 years old.
- There is interest in a greater role for citizens in decision making, with over 75 per cent of Australians favouring greater use of referendums to decide matters.

12.10.4 Findings from a survey conducted by the IGPA on political engagement in Australia



12.10.5 Social media is playing a greater role in the federal election campaign, particularly with younger voters. This graph shows those who engaged with and liked the major party leaders' Facebook pages. Although these figures only represent a very small percentage of the 16.5 million Australians who are eligible to vote, stories that are shared via Facebook could significantly influence undecided or disengaged voters.

Activities

Remembering and understanding

1. Identify the most common way that Australians participate in their democracy.
2. State the two aims of lobby groups.
3. List the various methods that are used by lobby groups.
4. Explain the meaning of the term 'direct action'.

Applying and analysing

5. Select one protest movement that is mentioned in this unit and identify its aims and its methods.

Evaluating and creating

6. Evaluate the way that technology is changing participation in the political process. Decide whether these changes are strengthening Australia's democracy.

LS 12D



Laws in action

13

Rules and laws exist wherever there are people. At school and at home, rules tell us about what is acceptable behaviour and what is not. Laws are the rules that people live by, to make things better for society. The legal system in Australia is about fairness. Laws are supposed to apply equally to everyone in society. It is important for you to know how laws affect you, and the rights and responsibilities you have.

OVERVIEW QUESTIONS

- **13A** How are laws made and applied?
- **13B** Who plays a role in Australia's system of law?
- **13C** What principles of justice help protect the individual in Australia's legal system?
- **13D** Does Australia's system of law cater for all Australian citizens?

GLOSSARY

accuse to claim that someone has done something wrong

adversarial system a legal system where two opposing sides present their case before a jury or judge

Bill a proposal for a new law

burden of proof the responsibility of proving that something is true in a court of law

civil law laws that relate to personal matters

common law laws made in court, based on decisions by judges in court cases (also known as case law)

criminal law laws that deal with crimes and their punishments

customary law rules and practices that have developed over time to guide people on how to live and behave

defamation the act of damaging someone's good reputation

defendant a person sued or accused in a court of law

inquisitorial system a legal system where the judge runs the trial by asking questions directly of the opposing sides

justice administration of the law in maintaining equality and fairness

kinship system in Aboriginal culture, a system of laws governing social interactions and family relationships

laws rules within a country or community that deal with people's behaviour and activities

natural justice the idea that all people have basic legal rights, such as being given a fair hearing in court

negligence in law, a failure to take reasonable care to avoid causing injury or loss to another person

plaintiff a person who accuses another in a court of law

precedent an earlier case that is considered an example or guide for later cases that are similar

rule of law basic principles or ideas that try to protect members of society and make sure justice is done

statutory law laws that are made and passed in parliament

LS Before you begin

13.0.1 The ancient Greek goddess Themis is often depicted to represent justice. She was considered the personification of law and order by the ancient Greeks.

13.1 The development of laws

Rules

Rules, **laws** and customs are important to the operation of society. Customs are the usual way of doing things. In Australia, for example, it might be customary in your house to eat dinner at a dining table with a knife and fork. In Japan, the custom may be to eat with chopsticks.

Rules are more formalised customs. They apply only to certain groups, rather than to all of society. Your school, classroom and any sporting clubs you belong to all have rules to follow. People who belong to the group are required to follow the rules, but they are not enforceable by law. That means they won't be formally punished by the court of a legal system. Breaking a rule will usually have a minor consequence within that group. Some groups that may have rules are:

- *sporting groups*—for example, a list of the rules of fair play
- *schools*—for example, rules about behaviour of students inside the classroom
- *families*—for example, a rule about no use of social media or gaming until homework is completed.

Laws

While rules apply to certain groups of people, laws apply to everyone. Laws are legal rules or regulations. They are made by parliament and it is the role of the courts to enforce the laws (to make sure they are followed). Laws explain what our rights and responsibilities are, and they exist to protect us and our property. Some laws apply to all of Australia and others are specific to individual states and territories.

Laws are important to help protect our society. They show people what is acceptable behaviour according to the values of our society. Australia has particular moral, economic, social and political values and beliefs. Our laws reflect them. There are laws to protect property, people and their rights and freedoms.

There are two ways in which laws can be made in Australia: through state or national parliaments (**statutory law**) and through courts (**common law**).



13.1.1 To ensure it is safe, there are many rules and some laws associated with the annual Lorne Pier to Pub open water swimming race in Victoria. One of the rules, for example, is that competitors must swim the course that is marked out for them, so they are within reach of lifesavers in case they need rescuing.

Statutory law

Statutory law is signed by the Queen's representatives in Australia, either the state governors or the governor-general. Statutory law prevails over (overrides) common law. This means that if common law conflicts with statutory law, the statutory law will be followed.

Common law

Laws made in courts are called common law (also known as case law or **precedent**) and are made by judges, courts and tribunals (less formal courts).

The two main types of laws are criminal law and civil law. These will be discussed in more detail in Unit 13.3.

Skills builder

My rules, my laws

Categorising information (placing it in a particular class or group) and justifying your opinion (providing a reason) are two key skills to build in civics and citizenship studies.

Categorising information

Draw up a table like the one below. In the left-hand column, list as many rules as you can think of that apply to your day-to-day life. In the right-hand column, list all the laws that apply to your day-to-day life.

My rules (consider home, school, after-school activities)	My laws (think about the rules you follow in public or that the police and council put in place)

Justifying your opinion

Once you have completed your table, choose the five rules or laws that you feel are most important to you. Rank them from 1 to 5, with 1 being the most important and 5 the least important. It's up to you to decide what makes it important or unimportant. Share your answers with a partner. Justify why you have chosen each of the five rules or laws.

The development of the Australian legal system

As with our government system, Australia's laws have developed over time. Our legal system has been shaped by systems from other societies.

The oldest written set of laws is known as the Code of Hammurabi. Hammurabi was the King of Babylon between 1792 to 1759 BC. His laws were carved in stone and placed around the city so that people would know about them. There were 282 laws. Although they were brutal, they set the standards of conduct and **justice**.



If a noble destroys the eye of a member of the aristocracy, they shall destroy his eye.

If he has broken another noble's bone, they shall destroy his bone.

If he has destroyed the eye of a plebian [a person of lower social rank], he shall pay one mina of silver.

If he has destroyed the eye of a man's slave, or broken a bone of a man's slave, he shall pay half his value.

If a man has knocked out the teeth of a man of the same rank, his own teeth shall be knocked out.

If he has knocked out the teeth of a plebian, he shall pay one third of a mina of silver.

If a man strikes the body of a man who is great above him, he shall publicly receive sixty lashes with a cowhide whip.

13.1.2 Hammurabi, the King of Babylon, created the oldest set of written laws.

Other early laws are believed to have come from religion, such as the Ten Commandments. According to the Bible, the Ten Commandments were written on stone and handed to the Jewish holy man Moses as laws for the Jewish people to follow. An example of a commandment you may have heard is, 'Thou shalt not kill'. Other early laws come from the ancient civilisations of Greece and Rome. In 621 BC, Draco, an ancient Greek legislator or lawmaker, drew up the earliest Greek legal code. The code was very harsh. For example, the punishment for stealing something as small as an apple or a cabbage was death. The word 'draconian' is now used for any laws that are extremely severe.

Long before the arrival of Europeans in Australia, Aboriginal and Torres Strait Islander peoples had a well-established system of laws. Unit 13.6 examines these laws in more detail. When Europeans began arriving in 1788, they brought many of their traditions from their home country. Much of Australia's legal and parliamentary system is similar to that of the United Kingdom. Originally, our laws were the same as Britain's, but over time, many of the laws have changed.

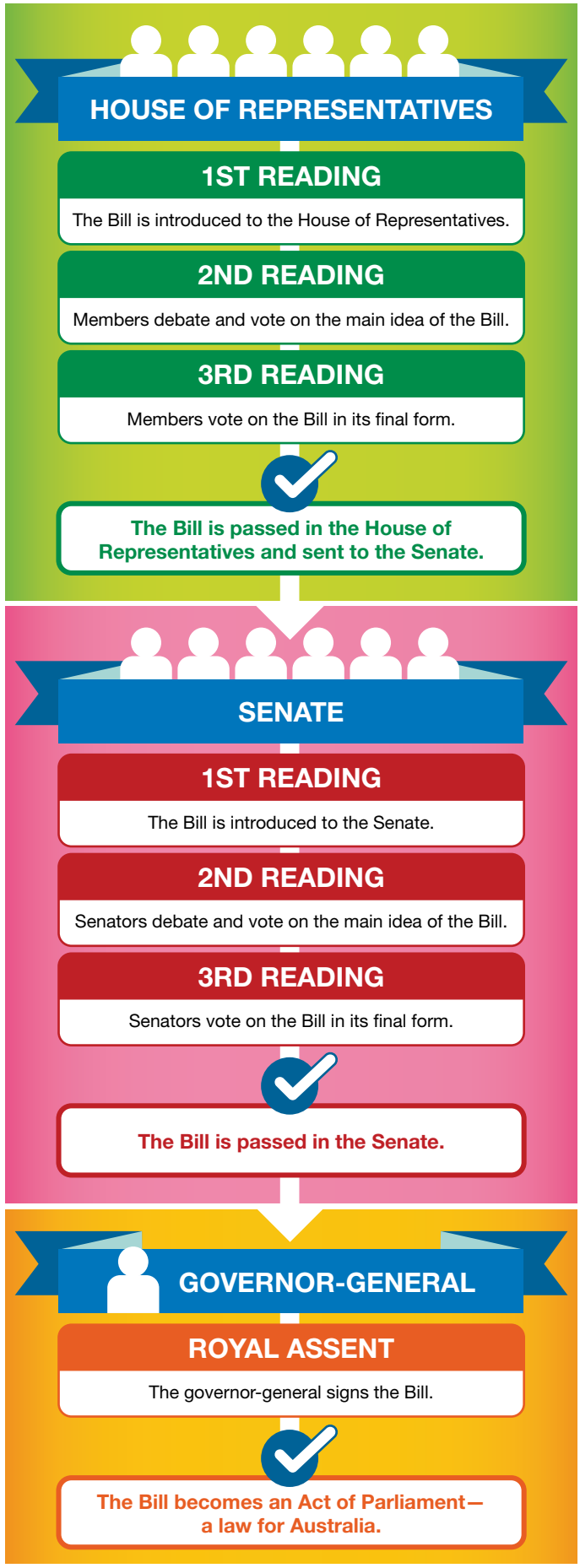
Passing a statutory law

Every year, about 200 new **Bills** (proposals for new laws) are introduced to parliament. About 90 per cent are passed into law. Similar steps are followed in state and federal parliament to pass a bill. Bills are generally introduced by government ministers. They can also be introduced by other members of parliament. These Bills are known as private members' or private senators' Bills. Typically, it may take weeks or months to debate and pass a Bill. If a Bill is urgent, it could be passed in days.

Figure 13.1.3 explains the usual path of a Bill through parliament.

Did you know?

In parliament a Bill is read three times. This practice dates back to the early British Parliament before printing was possible, or when many people could not read. In modern Australian Parliament, they only read the title of the Bill three times. This is because politicians are literate and can read the Bill in their own time.



13.1.3 A Bill can only become a federal law if it is passed by a majority vote in the House of Representatives and the Senate. The Bill must be agreed to in identical form by both chambers, and given royal assent (formal approval) by the governor-general. It is then known as an Act of Parliament. A Bill follows a similar path to be enacted into state law.



13.1.4 The moment the Bill legalising same-sex marriage was passed in the House of Representatives, Parliament House, Canberra, 2017

Why do we need common law?

Immediately after European settlement, laws in Australia were the same as British laws, but over the years many have changed. In England, law first began as tribal law or customs—an accepted way of doing things. These laws were not written, but based on judgements made by visiting courts of the king.

Today, judges write down their decisions when judging a case. Sometimes in hearing an unusual case a judge is unable to apply a statutory law, as the law cannot always apply to every case. Common law offers an important protection of individual human rights. It allows judges to account for the differences and discrepancies of each situation by making a new ruling. When a decision by a judge is the first of its kind, it is called a precedent. Later, when similar cases come before the courts, other judges can refer to these decisions for guidance.

LS 13A

Activities

Remembering and understanding

1 In your own words, define the term 'law'.
2 What is the difference between rules and laws? Give examples.
3 Identify two ways that law can be made in Australia.

Applying and analysing

4 Explain, in your own words, why we need common law.
5 Research Draco and discuss why historians now think his code of laws were too harsh.

Evaluating and creating

6 In your opinion, could any of the Code of Hammurabi be used in Australia today? Why or why not?
7 Some historians say the Code of Hammurabi has influenced modern law and justice. What reasons support this claim? In your answer, refer to Hammurabi's use of witnesses, punishment and standardised laws.
8 Create a set of rules and consequences that will help your class run smoothly and fairly.

13.2 Australia's legal system

Applying the law

Laws are made by governments. In a democracy, governments consist of elected representatives of the people. Laws are enforced by people who represent the government, such as police and **regulators** (officials responsible for controlling and supervising particular activities). If someone does something that breaks a law, then the legal system becomes involved. Lawyers, judges and juries investigate what happened. They determine if a law was broken and, if so, how that law's penalties (punishments) should apply.

In some cases, the legal system also looks at the laws themselves and decides if the government made a mistake when it created certain laws.

The judiciary

Australia's legal system, also called the judiciary, is one of the three branches of government. The three branches of government are the parliament, the executive and the judiciary. The parliament makes laws and amends them (makes improvements to them). The executive puts laws into action. The judiciary has the power to interpret (understand and explain) the laws and decide how they apply in individual cases. This interpretation is necessary because when a law is written it is impossible to know every situation it might apply to. This is particularly relevant for cases that involve technology and social media. Many laws were created before the invention of mobile phones, the internet and other technologies we use every day. For example, a new law had to be put in place to ban people using mobile phones while driving a car.



13.2.1 The basic set-up of a courtroom

When a conflict arises, it is up to the judicial system to decide how the law applies. This is what happens when a case goes to court. Disagreements are a part of community life. Instead of leaving people to battle their problems alone, courts can help them to resolve these conflicts.

The adversarial system

There are different ways of running court cases. Most countries with a British background, including Australia and the United States of America use the **adversarial system**. Adversary is another name for a rival, or opponent. It reflects the two parties on opposite sides of an argument.

Each side is responsible for arguing their own case. The parties present information to the court, usually through their lawyers, to prove their case. This is known as evidence. The lawyers call people known as witnesses into the courtroom. Witnesses are people who know something about the case and can give evidence. Lawyers from both parties can then question each witness.

The judge plays the part of an independent observer. The judge's role is not to run the proceedings, but to apply the law, make sure the rules are followed and decide on a consequence.

Did you know?

Many European countries, such as France, Germany and the Netherlands, use the **inquisitorial system** as their legal system. The judge calls witnesses and questions them directly. Lawyers help the judge rather than run the case.



13.2.2 A bronze statue of Chief Justice George Higinbotham outside the Old Treasury Building in Melbourne. He was Chief Justice of the Supreme Court of Victoria from 1886 to 1892.

Activities

Remembering and understanding

1. What's another name for Australia's legal system?
2. What is the role of a witness?

Applying and analysing

3. A judge is meant to be an independent observer. Explain what this means in your own words.
4. Using Figure 13.2.1, research the different roles people play in the courtroom.

Evaluating and creating

5. In your opinion, what are some benefits of having a judge call and question witnesses directly under the inquisitorial system?
6. Evaluate the benefits and limitations of the adversarial system. You might consider comparing it to the inquisitorial system used in other countries.

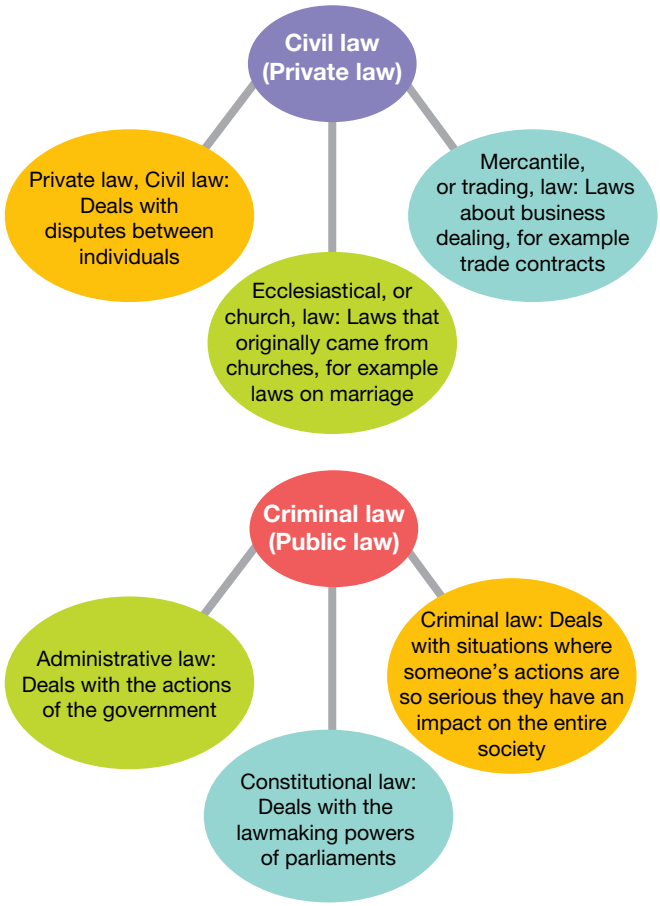
LS 13B

13.3 Criminal and civil law

Types of disputes

Courts hear many types of disputes or cases that cover all sections of society. Legal disputes can be divided into two basic groups—public and private, otherwise known as **criminal law** and **civil law**.

When someone breaks the law, it is called a crime. When someone is **accused** of committing a crime, they receive a trial in court. Court cases can involve either criminal or civil law, and different courts hear different types of cases. For example, the Children's Court of Victoria deals with offences (crimes) committed by young people aged 10 to 17 years. Some Children's Court cases are also heard in other courthouses throughout the state.



13.3.1 The different types of civil and criminal law

Criminal law

In Australia there are many laws to protect people from hurting each other. These criminal laws deal with crimes such as **assault** (physical attack), **manslaughter** (the crime of killing someone without meaning to) and murder.

Criminal law involves an offence that is seen as a threat to the whole community. Murder, arson (setting a fire) and assault are all examples of criminal acts. Since such criminal acts endanger society, it is the government's responsibility to make sure the person who has been arrested or charged with the crime faces trial in a court of law. Sometimes a victim cannot afford a court case, so the government takes the accused to court on behalf of the victim and other people in similar situations.

The four main types of criminal law are:

- laws that protect property
- laws that protect people
- laws that protect society as a whole
- laws that protect the nation and the legal system.



13.3.2 Members of Victoria Police protect the community and deal with criminal law offences.

Civil law

Civil law is sometimes referred to as private law because it doesn't affect everyone. Civil law involves disputes between individuals rather than the community as a whole. Examples of civil law are a dispute between neighbours about a barking dog or a loud party, or a dispute between an individual and a shop about a purchased product. If a case cannot be sorted out between the people involved, it may need to go to court.

Civil law is often not an area that individuals worry about until it directly affects them, but it is important to know that there are many laws in place to offer protection. There are three main types of civil law:

- *contract law*—this law concerns agreements between people, such as buying or selling a car or property
- *family law*—this law concerns matters such as births, marriages, divorces and the care of children. One example of family law is working out which parent will have custody of children (which means the legal right to look after children) in the case of a divorce
- *tort law*—the word 'tort' comes from the French word for wrong and deals with people doing something wrong or not taking reasonable care. Trespass (entering someone's property without permission), **negligence** (failing to take proper care of someone or something), nuisance (repeatedly carrying out acts that are harmful or offensive to the public) and **defamation** (damaging someone's reputation) are all types of issues covered under tort law.

Negligence laws

Negligence is an example of tort law, or wrongdoing. Previously, manufacturers were not held liable for products that they sold. This means they were not held responsible if their product caused any damage. Gradually, however, the law of negligence developed. Manufacturers are now considered to have a duty of care, or responsibility, to ensure health and safety. This duty of care applies to the end consumer or user of the product as well as the person who purchased the product.

Read Source 13.3.3 for an example of a case that was important in the development of negligence laws.

***Grant v The Australian Knitting Mills* (1936)**

What happened? Dr Grant, called the **plaintiff**, contracted a skin condition called dermatitis as a result of wearing woollen underpants. The pants were manufactured by Australian Knitting Mills Limited. Dr Grant wore the underpants for one week without washing them beforehand and the pants contained an excess of sulphite [a mineral substance that can cause allergic reactions in some people]. Dr Grant then sued Australian Knitting Mills for damages.

The law: The court used a previous case and stated that for a case of negligence to be successful it must be shown that:

- there was a duty of care owed by the **defendant** (in this case the Australian Knitting Mills)
- there was a breach of the duty of care (meaning Australian Knitting Mills didn't fulfil their responsibility to keep the client safe)
- damage was suffered as a result.

The result: The law of negligence was established and Dr Grant was awarded £2450 in damages (the equivalent of about $200 000 in 2018). The law of negligence could be expanded to include many other situations and aims to prevent people and companies from breaching their duty of care.

13.3.3 This case was the first one of its kind to establish negligence by a manufacturer. It set a precedent for future cases.

Did you know?

If you buy something online, you are usually covered by contract law if the product is different from the way it was described in the advertising, or if it is faulty.

Nuisance laws

A legal nuisance is any behaviour or activity that interferes with people being able to enjoy time at home. Courts usually take into account the following factors when considering complaints of nuisance:

- the activity causing the problem
- how long it has been going on
- when it is taking place
- whether a 'reasonable person' would consider it a nuisance.

Read Source 13.3.4 for an example of a case of private nuisance.

Apart from noise, there are many examples of behaviours that fall under nuisances laws:

- smoke from burning off rubbish or garden waste
- bad odours from uncollected rubbish
- damaged drainage or water run-offs from a neighbour's property
- unhygienic enclosures for birds or other animals
- buildings or other structures that are in disrepair.

Things that go 'plop' in the night

Gold Coast unit owner Neisha Cook was so disturbed by things that go 'plop' in the night that she took her upstairs neighbour to an adjudicator [an official who decides on a dispute] to flush out the problem.

Ms Cook, whose bedroom in the duplex is under the upstairs unit's toilet, can clearly hear 'trickles and drips, loud plopping and scrubbing with a toilet brush'.

The 'disgusting' noises often woke her up and she could hear them even if she had the television on in the lounge room, she told an adjudicator ...

In late 2014 she paid more than $1400 for an acoustical engineer's report, which recommended immediate work to improve the acoustics between the upstairs toilet floor and her bedroom...

After unsuccessfully trying to negotiate with her neighbour, she took an application to the Queensland Body Corporate and Community Management Commissioner.

An adjudicator found Ms Cook suffered 'unreasonable interference' caused by the sound transfer through a concrete slab with inadequate sound isolation and it was unreasonable for her to have to listen to toilet sounds every night or morning.

... [S]he ordered the two unit owners to share the costs of doing recommended work in both units.

13.3.4 The law of nuisance often relates to neighbours and may be heard in court.

Activities

Remembering and understanding

1. List the four main types of criminal law and the three main types of civil law.
2. Explain in your own words, the meaning of 'tort'.
3. A couple is seeking a divorce. Which court would hear their case?

Applying and analysing

4. Compare and contrast the criminal and civil legal systems.
5. Use the internet to find a civil case involving a dispute between neighbours. Briefly summarise the case and its outcomes.

Evaluating and creating

6. In your opinion, explain what makes a 'reasonable person'.
7. Now research what the law defines as a 'reasonable person' and compare it with your answer.

13.4 Principles of justice

The rule of law

Australia's legal system consists of certain basic principles, or ideas. These principles try to protect members of society and ensure justice. This is known as the **rule of law**, and is an important concept that influences our daily life in Australia.

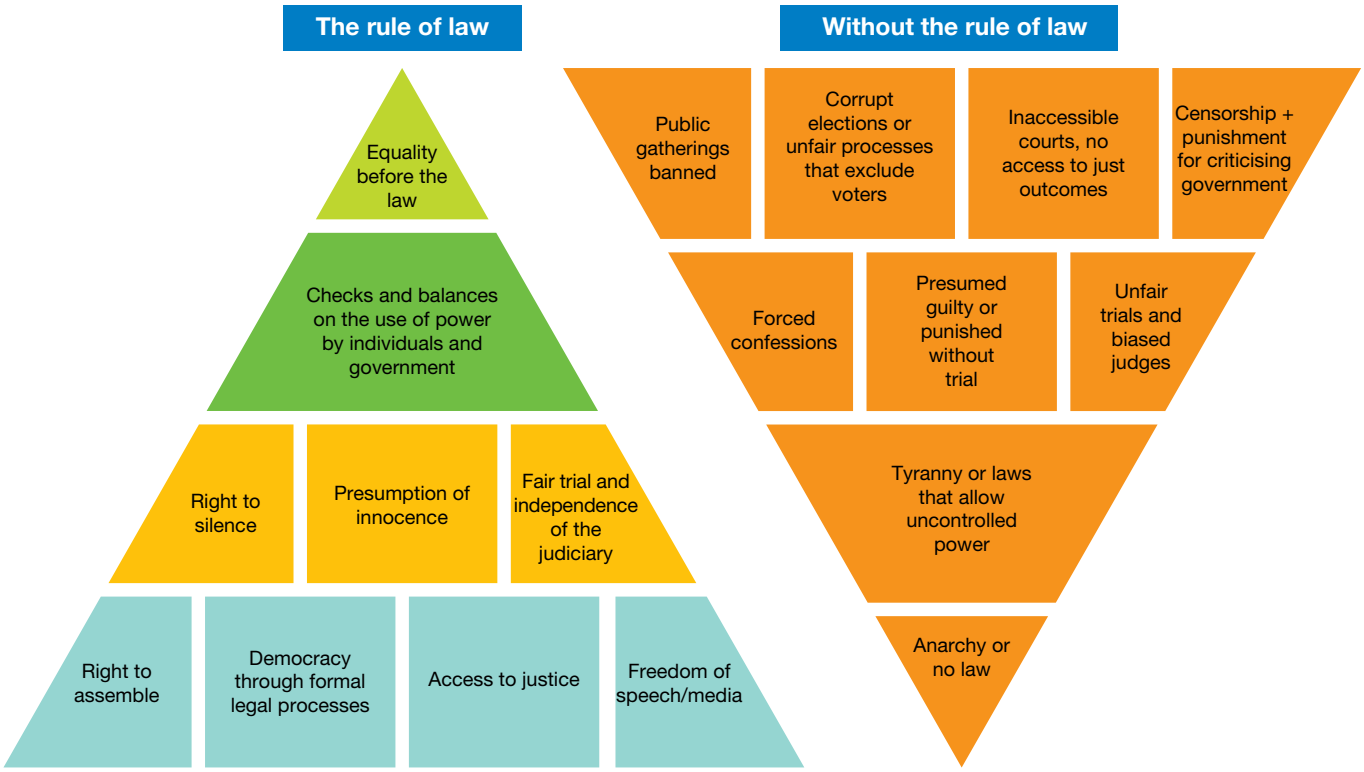
The rule of law is based on the idea of the supremacy of law—that all people should follow the law. If the rule of law is broken, consequences are put in place. This means that government decisions must be made according to established laws and everyone must obey the law, even governments and lawmakers. This ensures that everyone is treated equally and fairly, and that justice is maintained.

There are a number of important principles that ensure justice is maintained. These are:

- *the separation of powers*—this means that each of the three branches of government acts separately and acts as a check on the other. This keeps the other branches from gaining too much power
- *fairness*—laws apply equally to everyone. No one is above the law, and laws apply to everyone living in Australia even if they are not citizens of Australia
- *procedural fairness*—procedures or processes of applying the law should be fair and predictable, and people should be treated consistently
- *judicial precedent*—legal decisions made previously are taken into account in later cases. Cases with similar facts should have similar verdicts. Judges must identify how cases that seem similar are actually different if they want to treat them differently
- *judicial independence*—judges can make unbiased (fair) decisions about the case without the government telling them how to decide the outcome.

Did you know?

The Magna Carta, meaning 'Great Charter', was issued by King John of England in 1215. The Magna Carta established for the first time the rule of law: the principle that everybody, including the king, was subject to the law. Most famously, the 39th clause gave all 'free men' the right to justice and a fair trial. This is still a key principle of Australia's modern legal system.



13.4.1 The pyramid on the left shows the intended impact of the rule of law on society, while the inverted pyramid on the right shows the likely outcome for a society without rule of law.

Right to a fair trial

All people who come before the courts have basic legal rights. This principle is known as **natural justice**. It means that everyone should be given a fair hearing and the chance to present the other side of the story. Each person who is accused of a crime is entitled to hear the case against them; they have the right to question the other side, and to raise arguments against any opponent.

Natural justice also means that the judges must be even-handed and fair. They cannot favour one party, or side, over another. When making their decisions, judges cannot take into account irrelevant matters that have nothing to do with the matter being considered. For example, the fact that a person is of a particular religion may not have anything to do with a particular case, and should not be taken into account.

Sometimes there are disputes over whether certain pieces of evidence should be allowed into court. In these situations the jury leaves the courtroom while the lawyers make their arguments. Then the judge decides whether or not the jury can hear the evidence.

Innocent until proven guilty

There is an important presumption, or belief, in criminal law that a person accused of committing a crime is innocent until proven guilty. In other words, the accused does not have to prove their innocence. Instead, the person making the accusation—the prosecutor—has to prove that a person is guilty. If the prosecutor cannot establish guilt, the accused is entitled to be set free.

The rules of evidence

Evidence refers to information that helps to prove someone's case. It can come in many forms. Witnesses or people might prove evidence when they stand up in court and say that they know about the case. A document that the court examines might also be evidence. Or it can be a physical object, such as a weapon used in a crime, that is brought into court.

Rules of evidence make sure that court cases are fair. Some of the more common rules include:

- *relevance*—only evidence that has something to do with the case being heard can be brought to court; for example, a fingerprint on the murder weapon would be relevant to a murder case
- *hearsay*—witnesses can only repeat information that they saw or heard personally. Rumours and overheard stories cannot be told to the court
- *legality*—if information was obtained illegally (for example, by recording a conversation without permission), it might not be allowed into court.

Witnesses have to limit themselves to relating facts. Their opinions are not evidence. A witness can say they saw the accused crying, but they cannot say that crying proved that the accused felt guilty; that is only the opinion of the witness.



13.4.2 Before answering questions, witnesses have to swear to tell the truth, the whole truth and nothing but the truth. If they lie, they are committing a crime called perjury. Witnesses can choose to swear on a holy book such as the Bible, Torah or Qur'an. Or they can make an affirmation, a formal promise to tell the truth.

Burden of proof

The **burden of proof** is one of the basic principles of most adversarial legal systems. It refers to two important ideas:

- *onus of proof*—who has the responsibility of proving what is alleged (claimed) to the court?
- *standard of proof*—has the guilt of the accused been proven convincingly or beyond reasonable doubt?

In Australia, the onus and standard of proof are different for civil and criminal cases. In civil cases, the onus of proof rests on the side making the complaint, called the plaintiff.



13.4.3 In civil cases, the burden of proof rests on the plaintiff, who must prove on the balance of probabilities the case they are claiming.

The plaintiff has to prove to the judge, magistrate or jury that the claim they are making is true, on the balance of probabilities (meaning they have proved it is 'probably' true). This is known as the civil law standard of proof.

Because criminal cases carry more serious consequences than civil cases, a higher standard of proof is needed. When considering guilt, the magistrate or jury must be convinced beyond reasonable doubt. This means the accused would 'almost certainly' have to be guilty, as opposed to 'just probably' guilty.

In criminal cases, the burden of proof rests on the prosecution to prove 'beyond reasonable doubt' that the accused is guilty of the crime they are charged with.

Access to legal advice

Justice should be available to everyone, not just those who can afford expensive lawyers' fees. Sources of legal help exist for people who are unable to pay lawyers' fees to ensure that they get quality legal representation and advice without spending more than they can afford.

There are a number of such legal help groups; each state and territory has a Legal Aid Commission that provides legal services for free. These bodies are funded by government and private interests, and together they help more than 750 000 Australians each year with services ranging from phone advice to representation in court.

Activities

Remembering and understanding

1. What is the rule of law based on?
2. List the five principles that ensure justice is maintained.
3. Define the term 'natural justice' in your own words.

Applying and analysing

4. King John of England introduced the Magna Carta in 1215, because he was facing a political crisis.
   a. Research and explain what was happening at the time.
   b. Discuss the positive impacts the Magna Carta has had on society.

Evaluating and creating

5. Create an informative poster designed to explain the term 'burden of proof' in court cases.
6. Australia's principles of justice state that everyone has a right to a fair hearing. Propose what factors might prohibit or prevent people from receiving a fair trial.

LS 13C

13.5 The law and you

Legal restrictions

Under the law, a 'young person' is anyone under 18 years of age. As a young person there are many legal restrictions on what you can and can't do. Once you reach the age of 18 you are considered an adult and the law will treat you as such.

Some areas of law that affect young people include buying and drinking alcohol, buying tobacco products, getting tattoos, damaging property and doing graffiti, and sexting. However, there is no one set legal age that covers all areas of the law for young people; each area of the law has its own age restrictions on when a young person can participate in that activity.

Alcohol

It is illegal for a person under the age of 18 to purchase, consume or possess alcohol except under two circumstances:

- they are in a private home, either their own or a friend's, and have permission from parents or guardians to drink alcohol
- they are eating a meal at licensed premises such as a pub or restaurant and are accompanied by an adult who is their parent or guardian.

It is also illegal for adults to supply alcohol to minors (people under 18 years of age) at home unless they have gained permission from the minor's parents or guardians. Under new legislation, police can act on complaints by parents about their children drinking at another person's house. Adults who break the law face fines of $7000 or more—the same amount a licensee (someone who has a licence to sell alcohol) can be fined for selling alcohol to a minor.

Did you know?

In Victoria, South Australia and Queensland, it is a criminal offence for a tattooist to tattoo someone under the age of 18. In the Australian Capital Territory, New South Wales and Western Australia, people under the age of 18 need to get parent or guardian permission. Permission must be given in person or in writing. It must also say what type of tattoo the minor can get and where. In Tasmania and the Northern Territory, there are no specific laws about getting a tattoo.



13.5.1 It's illegal to graffiti without the property owner's permission. It can also be an offence to carry spray cans on or near public transport.

Tobacco products

It is illegal for people under the age of 18 to buy cigarettes and other tobacco-related products. It is also illegal for young people to allow an adult to purchase cigarettes or tobacco for them.

Graffiti

It is illegal to graffiti without the property owner's permission. It is also illegal for anyone under the age of 18 to purchase spray-paint cans unless they can prove the paint is for use at work. It can also be an offence to carry spray-paint cans on or near public transport, or to carry something that can be used to graffiti (such as permanent markers or other forms of paint). If the police can prove that you have used them or were going to use them for graffiti you can be fined.

Sexting

As technology has developed, new laws have been introduced to protect people from digital dangers. Sexting is defined as sending or receiving explicit images (for example, a nude photo), messages or videos through phones or computers. Although teenagers often see sexting as harmless fun, it can have serious social and legal consequences.

Some teens may take, send or receive a 'sexy' image because they are in a romantic relationship or because they are being pressured. Unfortunately, there is no way of knowing if that image will then be shared with other people, and it is impossible to control who else views it.



13.5.2 Sexting can have serious legal and social consequences. There is also no way of controlling who images may be shared with.

Laws about sexting

Sexting may be considered a criminal offence, even if the person either taking the photos or in the photos agreed to be involved. Depending on the ages of the teenagers involved, the laws could be a federal or state offence.

In Victoria, it is an offence to take a sexually explicit photo of a person under the age of 16 years. It is also illegal to encourage others to take photos of themselves.

Activities

Remembering and understanding

1. State the meaning of the term 'sexting'.
2. What conditions might make a police officer suspect a young person has done grafitti or is about to?

Applying and analysing

3. A person has been caught drink-driving by the police.
   - a. State some legal consequences that may be imposed on this person.
   - b. State some social consequences this person might experience.
4. Why is sexting a criminal offence even if all those concerned agree to be involved?
5. Research why we have age limits for getting a tattoo. Consider what risks are involved.

Evaluating and creating

6. Drinking alcohol under the age of 18 is illegal, but there are two exceptions.
   - a. What are they?
   - b. Why might they apply?
7. Make a list of recent laws that help regulate the use of technology, particularly social media and mobile phones.
8. In your opinion, why are there different laws for young people and adults?

LS 13D

13.6 Aboriginal and Torres Strait Islander law

Originating in the Dreaming

Before European settlement, Aboriginal and Torres Strait Islander peoples had a complex system of law and order in Australia. These rules and laws were not written down as in other countries. However, they were incorporated into traditions and ways of life. Kinship, spirituality and family structures formed the basis of how to live and guided how people should behave.

Through the traditions of storytelling and performance, Aboriginal law was passed on through generations. Like other aspects of traditional life, **customary law**—as it is also known—originated from the ancestral beings during the Dreaming. For Aboriginal people, the Dreaming is an understanding and knowledge of the time when the Earth was created along with the people, animals and plants. Dreaming stories contained clear messages about how people were to live and the consequences that would result from not following these expectations. Good or bad consequences, including death, could result.



13.6.1 Dancers at the Laura Aboriginal Dance Festival in northern Queensland. Traditionally, Aboriginal law was passed on through storytelling and performance.

The Dreaming stories were considered sacred, so the messages of law, rules and behaviour had authority. Spiritual beliefs formed the basis of customary law in a similar way to the teachings of the Christian Bible, the Muslim Qur'an and the Jewish Torah, for example. The ancestral beings decided the rights, responsibilities and behaviours of all. Laws covered aspects of life such as:

- what foods could be eaten and how they should be shared
- the rules for family, marriage and social organisation
- the rules for looking after the land
- the rules for ceremonies
- the punishments if laws were broken.

Following customs

In a similar way to how societies today follow customs, traditional Aboriginal societies were bound by customs or accepted ways of behaving. Rather than a list of written rules and laws, people knew what was expected of them, how to treat their elders and the relationships that existed within the **kinship system**.

When children reached the time of puberty, they went through an initiation. This is a ceremony in which a child ceremonially becomes an adult. Following the initiation, children were expected to behave according to the teachings of the group, as well as the teachings of the Dreaming stories.

Law in practice

Law in Aboriginal society operated through the kinship system. People who felt that they had been wronged first tried to settle the dispute through the network of obligations (duties) that existed under the kinship system. Obligations meant that people had a duty to perform a favour or service. Ideas of justice or fairness were seen in terms of kinship as there were no 'chiefs' or groups with authority over others.

After a rule or law had been broken or a wrong had been seen to be done, questions were asked, such as:

- What were the circumstances of the wrongdoing?
- How or why was the affected person injured or killed?
- Who committed the crime or wrongdoing and who was their kin?
- Why did the alleged wrongdoer commit the crime and did their relatives take any action?

Following these questions, a decision was made on how to settle the case.

The beginning of an initiation ceremony

Peter Stevens, a Kurrama man, remembers law meetings for initiation. [Initiation ceremonies take place to mark when a child is fomally recognised as an adult member of their community.]

... Law meetings for initiation ... start from the centre of the law ground. Say you've got a son to start the meeting, you must stay within the law ground boundary and start the ceremony there. If you go to the ceremony, you can't leave that law ground until everything connected with the initiation process is finished. As a father you are not allowed to go anywhere. All the fathers must sit there throughout the ceremony.

The preparation for the ceremony starts with one boy going round to the communities bringing all of the mobs to the law ground for the opening. ...

The traditional method was that two boys at a time would go through the law together in accordance with their skin grouping [*], and in a relationship of skin, which cannot be mixed up. These boys are said to be *yarlbu* to each other.

These days, with the loss of traditional land and culture, there is a lot of mixing up of skin grouping at these ceremonies. Everybody is *yarlbu* now. Traditionally, boys who were *yarlbu* were said to be like brothers-in-law, *gumbarli*.

13.6.2 Peter Stevens talks about the importance of initiation ceremonies in his culture, because they taught young people how to behave and what systems and laws to follow. (* A skin grouping or name is similar to a surname. It shows a person's blood line and ancestry. It is an important part of showing how generations are linked and how they should interact.)

Punishments for breaking the law

Although conflict was generally reduced through the belief systems of the Dreaming, the kinship relationships and the threat of punishment, some people in traditional societies broke established laws, just like people in any society.

The main areas of law breaking involved marriage rules, revenge for injury or death and breaching sacred laws. Groups of relatives may then have taken the matter into their own hands or the issues of law breaking may have been deferred to the council of elders.

Customary law in today's society

In Australian law today, customary Aboriginal laws may be recognised and considered in a range of ways. This is a relatively new idea, emerging in the late twentieth century. Western Australia and the Northern Territory have argued strongly that customary law should be recognised in legal situations that involve Aboriginal Australians. It continues to be debated across Australia because some customary laws conflict with Australia's modern legal system.

Customary law is what I am; the essence of an Aboriginal person is customary law. It controls you completely and wholly, not in an imprisoned way but in the way that it cares for you completely and that means holistically.

13.6.3 Customary law is still important in some areas of Australia. The above statement was made by Rosalie Kunoth-Monks on 15 May 2003 when she was giving evidence to the Northern Territory Law Reform Committee of Inquiry.

Activities

Remembering and understanding

1. In your own words, describe what 'kinship' is and why it's important.
2. Describe how Aboriginal law was passed from one generation to another.
3. What laws were covered in the Dreaming stories?

Applying and analysing

4. Select three statements from Source 13.6.2 that show the importance of initiation to people within Aboriginal society.
5. When a law was broken, Aboriginal society asked many questions of the crime. Compare and contrast this procedure with the modern Australian legal system.

Evaluating and creating

6. In your opinion, could the kinship system be merged into modern Australian society? Consider the following in your answer:
   - Does the kinship system help people connect to their community and promote shared responsibility among all people?
   - Does it complement (add to) or contradict (work against) modern Australian law?



Economics and business toolkit

14

Economics and business are both important areas because they focus on the making and transferring of wealth, which is essential for our society to function. Understanding economic concepts gives us insight into the production and sale of goods and services, the impact of outside influences, desirable and undesirable business practices, as well as how prices are set and why they might change. This understanding helps us to make more informed decisions in our everyday lives; for example, considering the costs or benefits of alternatives, weighing up impacts on ourselves and on the community, thoughtful consumption of resources, and planning future careers. It also allows us to examine events in order to predict and plan for what might happen in the future, as well as analyse and solve real-world problems.

GLOSSARY

depression in economics, an extreme form of recession, when there is a downturn in economic activity for a very long period of time

economic growth an increase in the capacity of a country's economy to produce goods and services per person over a period of time (e.g. a year)

entrepreneurship a willingness to set up new businesses by investing one's own money, time and energy, with the aim of making a profit in return

factors of production the four types of inputs used to produce a good or service—land, labour, capital and entrepreneurship

gross domestic product (GDP) the monetary value of a country's goods and services produced per year

non-renewable resource something that cannot be readily replaced, such as fossil fuels (coal, petroleum, natural gas)

recession slow or no economic growth for a period of time (usually up to 6 months)

renewable resource something that can be repeatedly used or replaced, such as solar energy or plantation wood

OVERVIEW QUESTIONS

14A Why are economics and business important?

14B How can the impact of economics and business be measured?

14.0.1 Stallholders at fresh food markets understand the importance of buying locally, using local produce to help strengthen local economies.

14.1 Questioning and research

Improving economic and business systems

Economists and business people seek to improve economic and business systems. Since economists and business people are well organised when they research, they are methodical and follow structured guidelines. They do this to:

- make sure they consult everyone concerned (the stakeholders)
- stay on track to achieve their set objective (business goal)
- keep clear and accurate records
- consider all relevant areas and possibilities
- continuously improve.

Plan–Do–Study–Act

A guideline that is often used to conduct research is Plan–Do–Study–Act. This is also known as the PDSA cycle. The PDSA cycle is a well-tested way to implement change to processes:

1. The first step is to plan a desired change.
2. The second step is to act by doing what you have planned.
3. The third step is to study any consequences from your actions.
4. The fourth step is to make improvements by acting further.

The PDSA cycle can be used as a guideline to undertake economic and business research. Let's examine this type of process in more detail and practice.

1 Plan

Pose inquiry questions

A good economist or business person does not just accept the way things are, they ask questions. They regularly consider what they need to know to better explain or improve something. Then, they work out how they will find that knowledge.

Your role as an economist or business person would be to investigate assumptions that people make and test whether they are true. To do this you will need to pose inquiry questions.

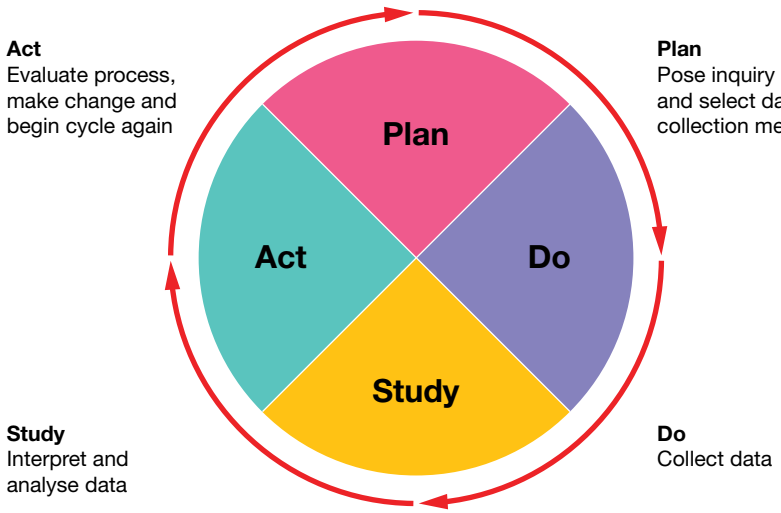
For example, an inquiry question might be: 'Should businesses switch to solar power?'

Select the data collection methods

Finding reliable data requires careful planning and selecting a data collection method. There are various ways to collect data once you have chosen your inquiry question. Usually, there are two types of data to collect: primary and secondary.

- Primary data involves any data you collect yourself. This could be through face-to-face interviews, online surveys or fieldwork observations.
- Secondary data is data already collected by someone else. This data could come from the Australian Bureau of Statistics, an expert in the field, a journalist or a research firm.

For example, appropriate primary data for the inquiry question above might be for a manager to plan to analyse the power bills for a business, and research the cost of installing and running a solar power system that generates the same amount of power.



14.1.1 A snapshot summary of the PDSA cycle in relation to economists and business people

2 Do

Collect the data

Now that you have your question and know how you will collect your data, you can act to find the answers to your question. You will need to make sure you accurately record the data you collect whether it is primary data from speaking to people, or secondary data from other sources.

For example, the manager would then analyse the previous bills and conduct research online or by email to find out the costs of solar system installation and management.

3 Study

Interpret and analyse the data

This step is where you put together your findings to show what your collected data means. Look at your data and ask yourself what you found out. What do your findings mean for the issue you are investigating? Does the data you have answer your question?

For example, the manager could then write a report to summarise the findings and show which type of power generation is more efficient for the business. This could be split into short-term and long-term costs and benefits. Based on the report, senior managers would then decide whether to go with solar power or not.

4 Act

Evaluate and begin the cycle again

Good economists and business people aim for continual improvement within systems and themselves. This last stage of the PDSA cycle is about reflecting on how things went and looking for more improvements. At this stage, you can think about questions such as the following:

- How did this process work for you?
- How can it be improved for next time?
- What else could you have done to find out more about your question?

For example, energy use would then continue to be monitored. If a solar system was trialled, costs over time could then be measured against previous systems. Depending on the results, solar systems may then be expanded across the business or abandoned. The manager would also look at the process of examining this issue and how it could be improved for future power assessments.

Activities

Remembering and understanding

1 Draw a PDSA cycle and annotate it with the research steps and what a business could do when investigating whether to switch to solar energy.

a Choose one of the following questions to follow the PDSA cycle:

- Do businesses only aim to make profit?
- Are production resources always hard to find?
- Do businesses always follow the law?

b Discuss with a partner how you could collect data on your chosen question.

Applying and analysing

c Conduct one primary research method and one secondary research method.

d Note your methods and the actual data that resulted from your research.

e State why you believe the data you collected is reliable.

f Summarise what you found out from the data you collected about your issue.

Evaluating and creating

g Suggest what your findings mean in relation to your initial question.

h Consider the processes of data collection you used and write a paragraph on each to evaluate their strengths and weaknesses.

i Propose at least two ways your data collection processes could be improved to be more effective.

j Suggest how else you might better answer your question.

Investigation

2 Take your research from Question 1 further by researching more about the issue. Present your findings as an oral or written argument to your teacher or class.

14.2 Analysis and interpretation

Collecting and interpreting economic data

Economists interpret economic data (figures or statistics) to measure **economic growth** in different areas, such as the value of goods and services produced per person in a year (referred to as **gross domestic product** or GDP). The impact of changing conditions can be measured and past trends can be used to predict future trends. However, just because something was valued one way in the past does not mean this will continue into the future. An example is the online currency Bitcoin, which recently experienced an unusually rapid rise and fall in value over a short period of time, as shown in Figure 14.2.1. (Its value had previously been fairly stable.) Economists try to work out why events occur and how we can better prepare to take advantage of economic conditions.

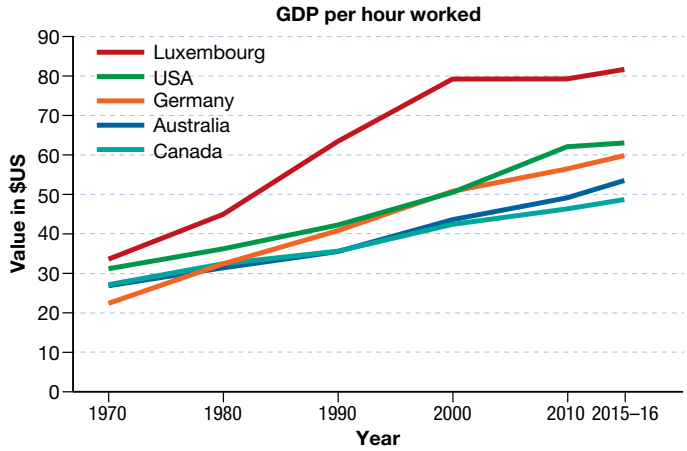
The Australian Government has an Office of the Chief Economist to collect and interpret data on economic issues. The Office produces reports that examine the areas of industry, innovation, science, resources and business. In these reports, raw or unformatted data is presented as more user-friendly infographics, graphs and interactive charts—see Table 14.2.2 and Figure 14.2.3 as examples.

Just as businesses compare their performance against others, in the global economy whole countries need to be able to compete for customers. So analysing this kind of data on GDP to inform government policy is essential for economic stability and progress.

14.2.2 Some raw data on GDP in $US per hour worked in various countries from 1970 to 2016

Country	1970	1980	1990	2000	2010	2015–16
Luxembourg	33.47	44.82	63.27	79.05	79.09	81.50
USA	31.06	36.09	42.11	50.37	61.93	62.89
Germany	22.29	32.29	40.68	50.64	56.32	59.68
Australia	26.75	31.28	35.40	43.46	49.00	53.38
Canada	27.02	32.32	35.50	42.27	46.20	48.56

Source: Office of the Chief Economist, *Industry Monitor 2017*



14.2.3 This line graph is a more user-friendly visual representation of the raw data in Table 14.2.2.

14.2.1 Since its beginning in 2008, the value of Bitcoin remained steady for about 8 years. Just because it varied wildly over 2017 does not necessarily mean that will happen again the following year.

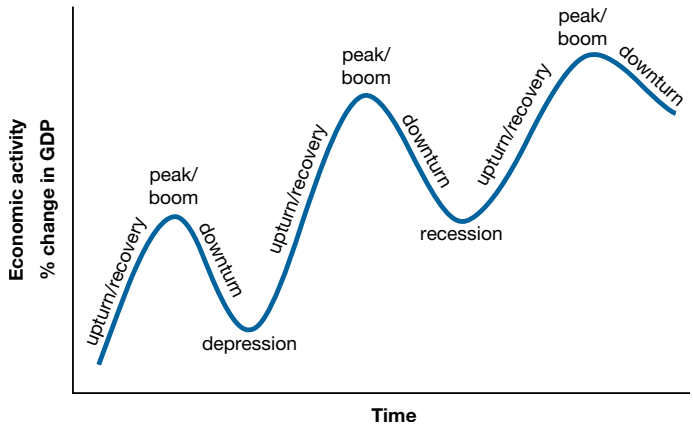




14.2.4 Investors in Bitcoin and other cryptocurrencies need to remain up to date on the latest market movements and analyse the statistical data collected. This analysis can be performed manually, but there are also a wide range of tools and apps available to investors that streamline the process.

Economic cycles

The economy goes through cycles of growth where there is prosperity, and slowdown when there is scarcity. Economists study the various stages of economic cycles in the past and assess current indicators to predict the length and severity of cycles to come. An economic boom is when there is a strong period of growth; if there is slow or no growth for an unusually long period of time, then it is called a **recession**. When this downturn is for a very long period of time, the economy can move into an extreme form of recession called **depression**.



14.2.5 The economic cycle

Did you know?

After 26 years straight of economic growth, the Australian economy is worth approximately $1.7 trillion. In theory, this means that, right now, every Australian citizen has access to the second highest amount of wealth in the world. However, Chinese demand for our iron ore and coal (our biggest earning exports) is decreasing due in part to China trying to cut environmental pollution. Because of this reduction in demand, some economists say we will soon experience not only less growth, but may actually go backwards and experience an economic depression. Others think future Indian demand for our resources will maintain economic stability.

Activities

Applying and analysing

1. Interpret the data in Figure 14.2.1 to determine the best and worst time to buy Bitcoin in the given time period and state why.
2. Consider the data in Table 14.2.2. Identify which country you would go to if you wanted advice to improve worker output and why.

Evaluating and creating

3. Consider Figure 14.2.5. Where do you think Australia's economy sits currently on this diagram and why? You may need to do some internet research to justify your placement.

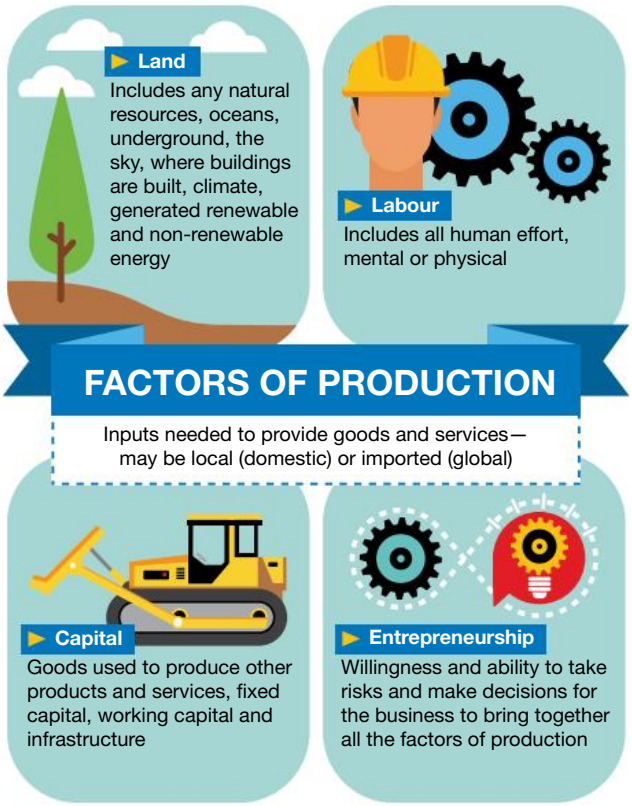
14.3 Economic reasoning, decision making and application

Spotlight

Factors of production

The four main factors of production are land, labour, capital and **entrepreneurship**. Business managers must make decisions relating to each factor, such as:

- *land*—where they will locate their production facility to have easy access to resources (including raw materials and finances)
- *labour*—how they will build the most capable and correctly sized labour force
- *capital*—what kinds of equipment they will need and how they will provide maintenance
- *entrepreneurship*—who will support their operations and invest in their ideas.



14.3.1 Factors of production: land, labour, capital and entrepreneurship

Factors of production

In the systems approach to business, managers consider inputs, processes and outputs in an attempt to streamline production so they can make decisions to minimise waste. The **factors of production** focus only on the inputs used to make goods and services that earn businesses a **profit**. These factors may be located locally (domestic) or may be imported from global sources.

Land

Land generally refers to the Earth's surface, but it also refers to anything we get from the land—all physical natural resources. That means timber grown in forests, waterways and the fish living in them, gold mined from the ground, but also things such as climate and generated energy. Some of these resources are **renewable resources** because we can grow or produce them again, such as plantation wood and wind power. Others are **non-renewable resources**, such as coal. Resources can be sourced locally or imported from other countries.



14.3.2 This opal boulder found in Queensland is a non-renewable natural resource.

Labour

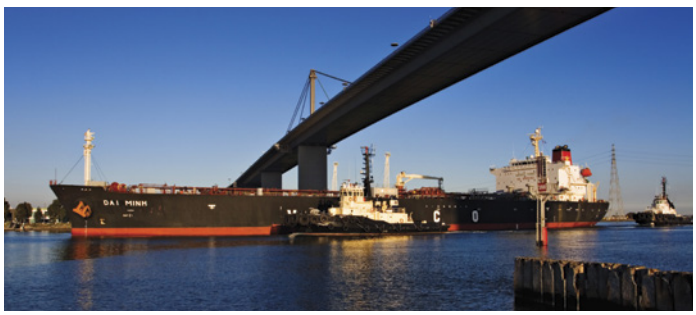
Labour refers to the human effort required to produce goods and services. This might be physical effort, such as lifting boxes in a warehouse, or mental effort such as contributing new ideas. Workers are employed by businesses and get paid wages for their labour. This is their income, which they then spend on other goods and services in our economy. Human resources—the people who make up the workforce—are one of the highest cost inputs for a business. Labour costs are subject to worker availability and productivity. Many businesses are now making use of the global workforce.



14.3.3 Human resources include factory workers

Capital

Capital, as a factor of production, refers to manufactured and built things that are then used to make products and deliver services. Fixed capital goods include machines, factories and new technology. Working capital means stock, including unfinished components or finished products ready for sale. Capital infrastructure refers to the built environment needed to operate a business, such as roads, bridges, ports and internet networks.



14.3.4 Various kinds of capital infrastructure at Port of Melbourne. How many can you identify?

Entrepreneurship

Entrepreneurs seek business opportunities and take calculated risks in order to experience business success. They often risk their own financial resources (money) to start something new. The hope is that it will make them a profit as a return on their investment. Entrepreneurship is about bringing the other three factors of production (land, labour and capital) together to add value and grow potential. In other words, it's about developing the capacity of a new business to grow into a successful one. This can be in relation to a small start-up business or a multinational company that operates in many countries.



14.3.5 Entrepreneurs look for business opportunities to develop potential for success.

Activities

Remembering and understanding

1. Distinguish (show the difference) between the terms 'renewable resource' and 'non-renewable resource'.
2. Describe in your own words the four factors of production.
3. Suggest the kinds of decisions that might need to be made in relation to the factors of production.

Applying and analysing

4. Classify the following items into the correct factor of production (you may need to look up meanings) and justify your answer:
   - a crayfish
   - b labelling machine
   - c forklift driver
   - d conveyor belt
   - e wheat
   - f venture capital financier
   - g receptionist
   - h entertainment industry promoter.
5. Imagine you are starting a new business. Address each factor of production by listing what questions you will need to consider to ensure your business is a success.
6. Analyse how entrepreneurship assists our economy. This means you need to define the term and state all the different ways it does and/or does not assist our economy. You may need to research your answer.

Evaluating and creating

7. Because entrepreneurship greatly assists our economy, the Australian Government provides support and services to new businesses. Investigate some of these support schemes and make a summary of what assistance is currently available and what you have to do to qualify. Reflect on whether what you have found would be helpful for a new business venture, and design a star rating system to rank the resources. Combine class members' research into a 'Support Guide for Entrepreneurs'.

14.4 Reflection and communication

Tools for reflection and communication

To reflect on how economic systems work and to communicate complex or large amounts of information in an easy-to-understand format, economists use statistical charts and graphs, as well as reports, fact sheets and infographics.



14.4.1 Collected data can be more easily understood when presented as a chart.

Economics and business language and concepts are also discussed, using subject-specific language or terms. The chapter glossary lists some of the terminology used in economics and business, specific to the chapters you will study here. If you come across other terms you are unsure of, you can use a dictionary, the internet or your teacher to help you understand what they mean. It is a good idea to keep your own glossary of subject-specific terms in your notebook.

Written economics and business reports

Writing clearly expressed, structured reports that are based on evidence is an important part of being an economist or a business person. You will need to clearly communicate to others your expert opinions and the reasons for them as well as your recommendations. This is done after you have posed your questions, done your research, analysed your findings and applied your reasoning to plan for economic decisions and business change.

Investors and managers of organisations need timely and accurate information to make decisions, especially when they are investing their money or considering alternatives to solve a specific problem. The reports that economists and business people compile follow a standard structure to assist in this decision-making process.

Some common considerations and components of economics and business reports for you to consider and become familiar with are listed below.

- Purpose: what is the reason for writing this report?
- Audience: who will be reading this report?
- Title page: an outline of this report's subject and consulting group name.
- Executive summary: a one-paragraph summary of the whole report for those who have limited time to read it.
- Table of contents: a well-organised list of what is included in the report.
- Research: a presentation of the research methods and the data you collected in an easy-to-understand format (such as graphs and tables).
- Findings: a summary of the overall results of your research using short sentences and bullet points.
- Analysis: the conclusions drawn from your findings.
- Recommendations: the predictions for a future event or trends, and the recommendations for changes (based clearly on your findings).
- References: a list of the references you used to create the report.
- Appendices: an outline of the statistics or researched raw data that is not needed in the main body of the report.



14.4.2 Business reports provide the evidence to make well-informed business decisions.

Activities

Investigating

1. Identify what must be included in an economic or business report.
2. Find an economic report online to download and analyse.
   - **a** Name the title, author and date of this report.
   - **b** Note the purpose of this report.
   - **c** Determine who the audience is for this report.
   - **d** Identify the kinds of evidence and data used to support this report.
   - **e** Find at least five terms in this report that you don't already know and write definitions for each.
   - **f** Give a summary of your understanding of what this report is saying about the data.
   - **g** Comment on the recommendations or predictions made in this report and their link to the data provided.
3. Suggest why it is important to use clear expressions when you write economics and business reports.
4. Search online for other ways that data about Australia's economic performance is communicated and presented. Start by searching for the Department of Foreign Affairs and Trade (DFAT) fact sheet on the Australian economy.
   - **a** Read the information carefully and reflect on three things that you found interesting or surprising.
   - **b** Also note three economic terms you haven't seen before and research them to define in your own words.

Communicating

5. Investigate the circular flow model by watching an online explanatory video, such as the free online *Circular flow of income and expenditures* video by the Khan Academy.
   - **a** Reflect on how helpful you found the video and what you learnt.
   - **b** Create an infographic or diagram to explain and communicate this economic system to others. You could use a free online graphic design tool such as Canva. Display your work in the classroom.



Understanding markets

15

Markets are where buying and selling takes place. There are many different markets in Australia that help make us one of the richest countries in the world. In this chapter we learn how buyers and sellers meet to agree on prices of things for sale, and how markets help in making decisions about how we use resources. We also learn how the decisions made by governments in Australia influence how markets work.

OVERVIEW QUESTIONS

15A What are some different kinds of markets in Australia?

15B What factors help producers to know what consumers want to buy?

15C How has the online marketplace developed over time?

15D How do governments influence the way producers and sellers behave in markets?

GLOSSARY

competition rivalry among sellers to sell their goods and services to increase their profits and share of the market

consumers people or groups that are the final users of goods or services

economic problem of scarcity the basic economic problem of having unlimited human wants in a world that has limited resources

goods things that are bought and sold

law of demand when prices fall, the demand for a good or service is higher so the quantities sold will increase; when prices rise, demand is lower and so quantities decrease

law of supply when prices increase, the supply of a good or service increases; when prices fall, supply of a good or service decreases

market the organised exchange of goods and services by buyers and sellers

market economy an economic system that coordinates the production and distribution of goods and services using markets

market forces economic factors, such as changes in income or supply costs, that affect the price and availability of goods and services

market price the current price that goods or services can be bought or sold for

merit goods goods or services that are of merit (do good), which the government provides free to all members of society

monopoly when one group or company has total control of a good or service in the market

price mechanism the price of a good or service is determined by supply and demand for it

producers people and businesses who make or produce goods and services

public goods goods and services provided to all members of society either by a government or by an organisation

retail market places where goods and services are sold directly to consumers

services the provision of skilled labour by people with specialised skills, knowledge and qualifications

taxes money that you have to pay to the government, which it uses to provide public goods and services

15.0.1 We buy and sell things on a daily basis as part of our way of life.

LS Before you begin

15.1 Types of markets

Markets

In economics, a **market** refers to any situation where people exchange **goods** and **services** at a price. Goods are physical things that you can see and feel. They are items like bread, soft drinks, shoes, pens, skateboards, magazines, television sets, computer games and radios. Some of these goods are perishable (only last for a short while) and others are durable (long-lasting). Services are actions that other people might perform for us and are not physical items. When you visit the hairdresser, ride on a bus, go to the doctor, log on to the internet or learn from a teacher, you are receiving a service.

We take part in markets when we buy or use goods and services in our daily lives. This makes us buyers or **consumers** in markets. People who provide goods and services are sellers or **producers**. A market may be in an actual physical place such as a shop or a street market where buyers and sellers meet. In modern times we have virtual markets where buying and selling is done through the internet, without face-to-face meetings. Buyers and sellers interact with each other in many different kinds of markets and in many different ways.

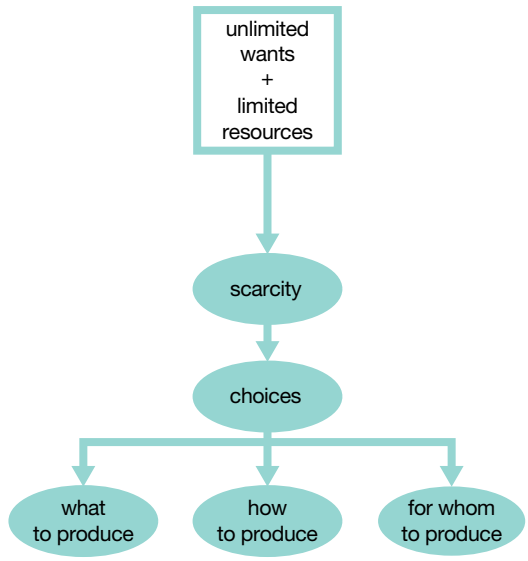


15.1.1 Shopping online has become very common. According to the Australian Bureau of Statistics, the three most common groups of goods or services bought online are music, movies, electronic games and books (50 per cent); clothes, cosmetics and jewellery (46 per cent); and tickets for entertainment events (45 per cent).

Markets and the economic problem

We all have many needs and wants for goods and services, but we have a limited amount of resources—including money—to obtain them. This is known as the **economic problem of scarcity**: when resources are scarce or limited compared to needs and wants. A simple example is how the money available to you is very likely less than the cost of all the things that you want to buy, so money is a scarce resource. The same situation faces your family, your school, a local shop, a large business or a government.

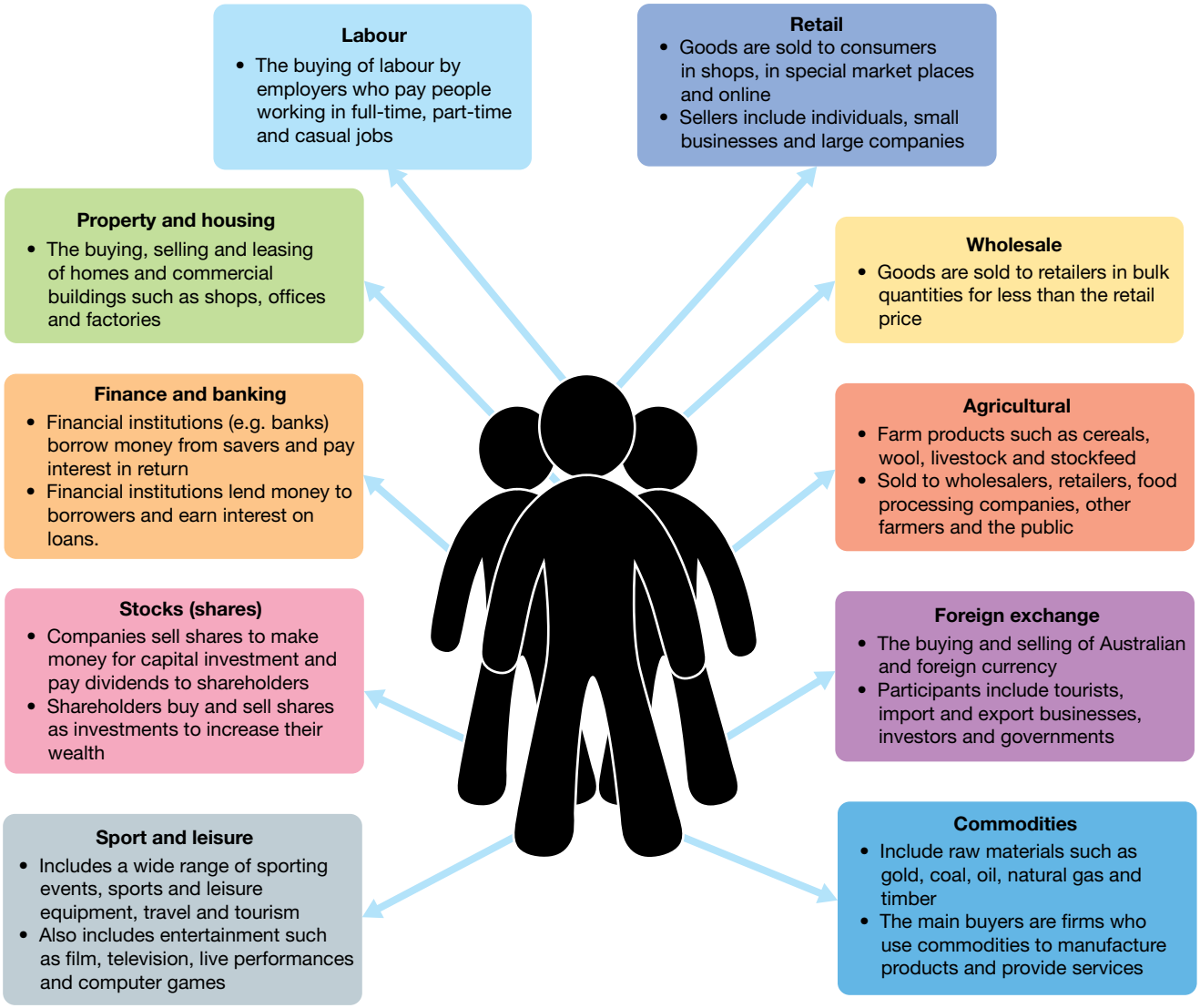
This economic problem forces both consumers and producers to make choices about how they will use, or allocate, their scarce resources. Markets have developed as a way for buyers and sellers to make their choices and to satisfy as many needs and wants as possible with their scarce resources. In the modern world we depend greatly on markets to provide the things we need to support our lifestyle.



15.1.2 Scarcity occurs when there are not enough resources to satisfy all of our wants and needs.

Types of markets

Australians all take part in the market for consumer goods and services, known as the **retail market**. There are many other markets, and they vary in a range of ways, including the products traded, the types of buyers and sellers, the geographical area over which they operate, and the quantity of goods and services exchanged.



15.1.3 Markets cover many different areas of life.

Activities

Remembering and understanding

1 Define the term 'market'.

2 Classify the following purchases as either goods or services: (a) a can of tuna, (b) a movie ticket, (c) a lounge chair, (d) a flight to Vietnam, (e) a basketball, (f) advice from an accountant, (g) waiting on tables, (h) a smartphone, (i) a physiotherapy session.

3 Distinguish between producers and consumers.

Applying and analysing

4 Draw a diagram or cartoon to explain what you think is meant by the term 'economic problem'.

Evaluating and creating

5 a Construct a mind map showing the different types of markets. Include information about the products traded and the types of buyers and sellers involved.

b Decide which of these markets is of greatest importance to the Australian economy. Explain your answer using dot points.

LS 15A

15.2 Buyers and sellers

Australia's mixed market economy

Australia has a **market economy** where buyers and sellers are allowed to trade quite freely. However, federal, state and local governments have some control over the economy through spending, **taxes**, laws and regulations. Governments also take part in economic activity by producing and consuming goods and services. Combining free markets and government involvement creates a mixed economy. Most world economies are mixed economies.

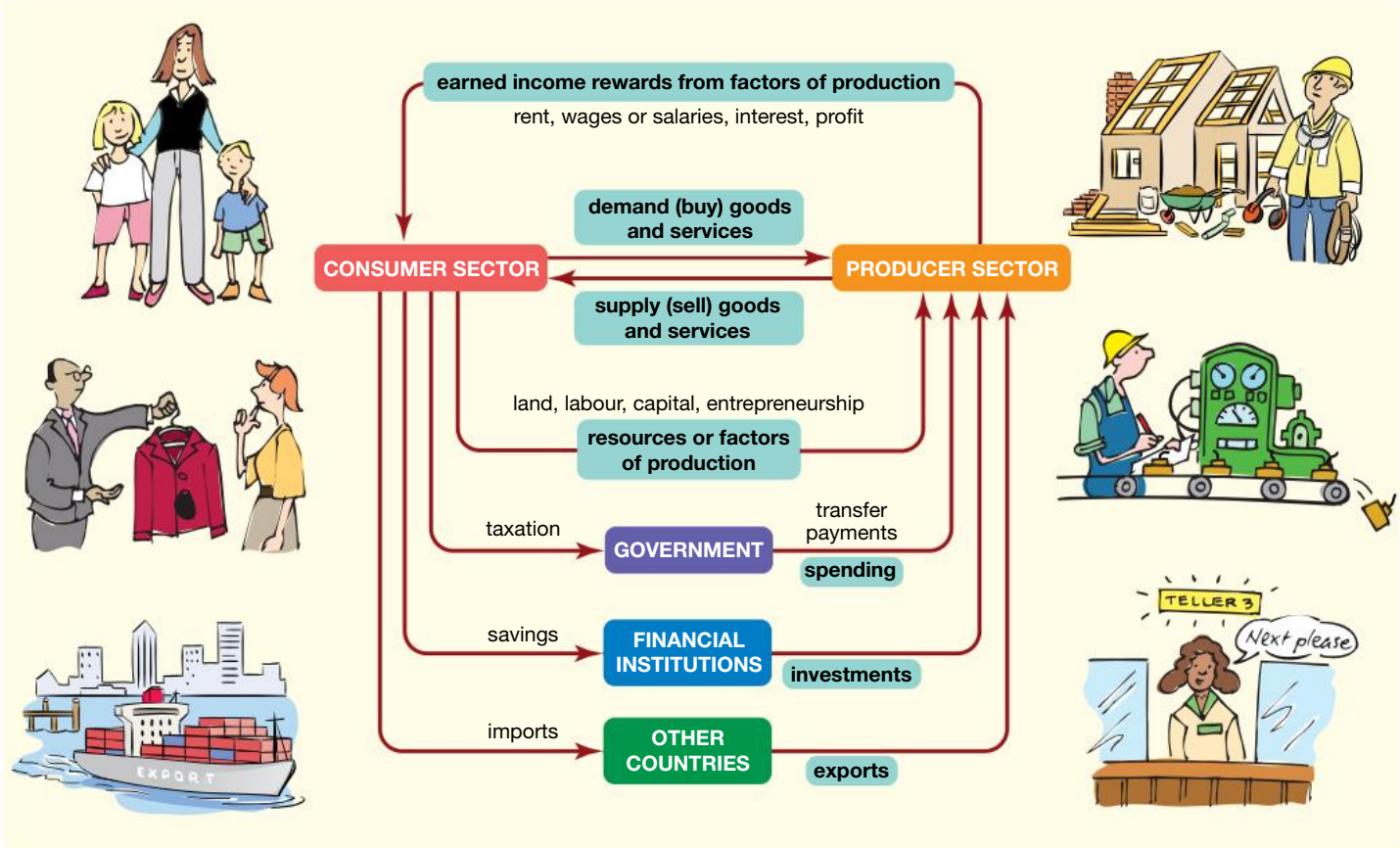
Consumers and producers

In a market economy, there is a system of exchange between the producers (sellers) and consumers (buyers) that forms a circular flow (see Figure 15.2.1). Producers provide goods and services to consumers in return for payment. Consumers provide the resources (such as labour), called factors of production, that the producers need to provide the goods and services.

Factors of production

The factors of production are land, labour, capital and entrepreneurship.

- Land resources are raw materials that come from nature. This includes natural resources such as land, water, iron ore, coal, natural gas, forests, the atmosphere and animals.
- Labour includes all human work, both physical and mental.
- Capital refers to things that people have made that are used in the production process. This includes machinery, tools and buildings. Money is not a capital resource because by itself it does not produce anything. When money is lent to businesses it is considered a capital resource because it is contributing to economic activity.
- Entrepreneurship refers to the ability of people called entrepreneurs to organise the combination of land, labour and capital resources to produce and sell goods and services, and making a profit as a result.



15.2.1 A model of our economic system

Allocation of resources

Every society must decide how to allocate (distribute) an economy's scarce resources and goods and services. Buyers must decide what to buy, how much to buy and who to buy it from. Consumers create demand for goods and services. Sellers must decide what to produce, how to produce it, how much to produce and for whom to produce it. They supply goods and services.

One important factor that guides both buyers and sellers in making their choices is the **market price**. It is the key piece of information in the operation of markets because it influences both demand and supply.



15.2.2 Buyers and sellers influence and respond to each other.

The influence of price

Buyers often look for the cheapest products when shopping for goods and services. It is in their interest to do this so they will have more money left over to spend on other products or to save for the future.

However, price is not the only factor shoppers have in mind. They also consider the quality of the products in the market, the functionality of products and how much they need these products in their lives. For example, if the quality of a product is high, then people will be prepared to pay more for it.

Market prices also affect the decision making of sellers. If they cannot cover the costs of producing goods and services, they operate at a loss. This will stop them from producing those goods and services and will make them choose more profitable options.

Sellers aim to make a profit from their business by selling their products for more than they cost to produce. If the market price is high enough to make a good profit, then sellers will continue to, or even increase, production. When the price is too low to make a reasonable profit, sellers look for ways to lower costs or reduce production. They may even stop producing those products.

Influences other than price

The market price is not the only factor that sellers must keep in mind. They compete with other producers of the same or similar products. **Competition** does involve price, but sellers must also consider their product's quality and features. As well, they compete through promoting their products. This is done through different ways of packaging, presenting and advertising products. Competition means that sellers must be efficient in their production processes to keep the costs of production as low as possible compared to the market price. It also means that producers and sellers will try to make their products stand out from others on the market on the basis of factors other than price: such as quality, brand and functionality.

Activities

Remembering and understanding

1 What is a mixed market economy?
2 Describe the four factors of production and give an example of each.
3 Compare and contrast the way that price changes influence buyers and sellers.

Applying and analysing

4 What factors other than price affect a buyer's purchasing decisions?

Evaluating and creating

5 Select a product that you would like to buy and research the purchasing options available. Choose the best option for you and justify your decision in a short report.

15.3 Setting market prices

Demand and supply

In Australia's market economy, sellers do not simply choose a price for their products. Prices are largely determined by the combination of the demand from buyers and the supply from sellers. Economists call this the application of **market forces**.

Demand forces

Buyers' demand for goods and services is constantly changing. Some reasons for changes in demand from buyers include the following:

- Prices move up or down. When prices rise, consumers buy less of a product. A fall in price encourages people to buy more of it.
- Tastes, fads and fashions come and go. Popular things are in high demand; less popular things are demanded less.
- Technology develops, providing new and better products. An example is the high demand for smartphones as telecommunication networks keep getting faster.
- Changing seasons create seasonal demand because they affect people's choice of food, clothing, leisure activities and modes of transport.
- Public holidays, school holidays, major sporting events and special times of the year such as Christmas, Easter, Ramadan and Chinese New Year create demand for particular goods and services.
- Changes in income arising from cuts or increases to taxes also affect how much people can spend and therefore how much they demand.
- The level of activity in the economy affects people's jobs and incomes, causing them to alter their spending, depending on how much money they have. Our economy relies on trading with other countries, so the level of global economic activity affects the income of Australians greatly.

Changes in prices cause changes in demand. Economists have developed the **law of demand**, which says that when the price of a product rises, then demand for it will fall. Likewise, when the price of a product falls, demand for it will rise.



15.3.1 Advances in technology have driven demand for new and better ways to listen to music.



Did you know?

The old record player is back! From the 1950s to late 1970s, record players or turntables were popular. Changing technologies replaced them with cassette players, CD players, iPods and streaming services. Now the market has changed again, with a new demand for retro record players. Should they be called re-turntables?



Supply forces

Changes in the supply of products are also connected to changes in price. The **law of supply** says that, when the price of a product rises, then the quantity supplied will also rise. (If suppliers can sell a product at a higher price, then they will make more of it because their profits will increase.) In the same way, if the price of a product falls, then the quantity supplied will fall.

A shift in supply can be caused by a number of factors, including:

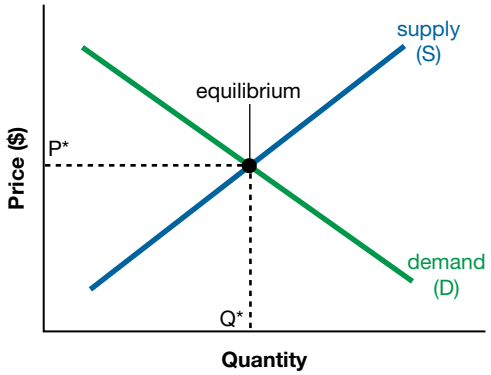
- new technologies and methods of production, making production more efficient and less expensive
- a change in the cost of one or more of the factors of production. This changes the cost of providing goods and services
- the discovery of new resources, meaning that more can be produced at lower cost
- a change in the number of suppliers competing in the market. More suppliers in the market means total supply increases; fewer suppliers means supply decreases
- natural disasters such as cyclones, bushfires, floods and droughts may affect the supply of farming, mining and fishing products, as well as essential services such as power and transport.

Market equilibrium

Sometimes, the price is at a level where the amount that buyers are willing to demand is the same amount as that which sellers are willing to supply. This price is the market equilibrium price. There is no pressure for the price to move up or down. Buyers are happy because they can obtain all they are prepared to pay for at the market price. Sellers are happy because they are able to sell as much as they can produce at that price.



15.3.2 New technologies make producing cars more efficient and less expensive.



15.3.3 When supply and demand are in balance, there is market equilibrium.

Market structures

Many different markets exist in Australia and they all arrive at prices for goods and services. The way in which prices are set in markets always involves agreement between buyers and sellers. However, buyers and sellers are not always in an equal bargaining position and this influences prices. Markets are structured in several ways, depending on the number of buyers and sellers.

Prices in perfectly competitive markets

In markets where there is perfect competition, there are many buyers and many sellers. The sellers are often small businesses that sell very similar, inexpensive products. An example is the market for fruit and vegetables. These are common foods that people consume and buy regularly in small quantities, so no single consumer can have any impact on market demand. The sellers are farmers who each contribute a small amount of the total supply of products. Their products are very similar to those of any other farmer who supplies to the market.

Prices in a perfectly competitive market are set by the forces of demand and supply, and they settle at or near the equilibrium price. In actual fact, perfect competition is an economic idea that does not exist in real life for various reasons. In particular, not all buyers and sellers have good knowledge of the best price in the market at any time. Also, it is rare to find a market where buyers or sellers cannot influence the market by their activities. Despite these difficulties, strong competition is seen as good in markets. This is because competitive markets provide the most efficient way for both buyers and sellers to decide how they will allocate their scarce resources. Competitive markets lead to lower prices, greater diversity in products on offer and innovations (new products).



15.3.4 There are many buyers and sellers in the market for fruit and vegetables, making it a competitive market.

Prices in imperfectly competitive markets

In perfectly competitive markets, both buyers and sellers are called 'price takers'. This means that they have to accept the market price because their individual buying or selling is too small to influence demand and supply. In reality, no markets are perfectly competitive and this allows sellers to be price makers. This means that sellers can influence the price of their products. There are different types of imperfectly competitive markets, as explained below.

Monopolistic competition

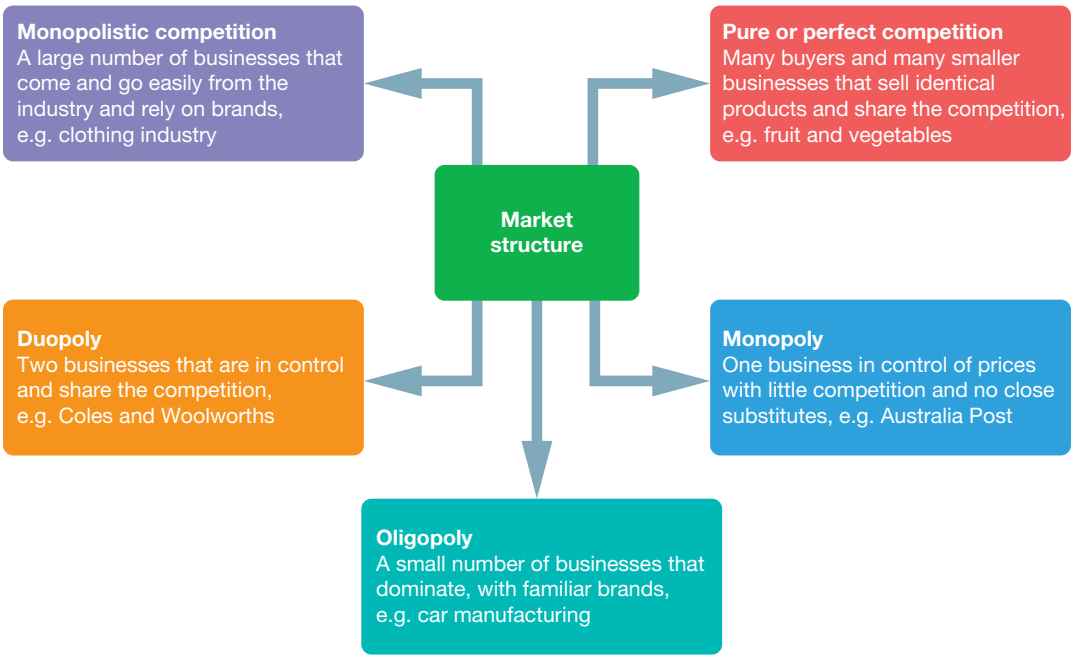
In monopolistic competition, large numbers of sellers have products that are in some way different from those of other sellers. An example is the clothing market, where businesses have different brand names and styles. Each firm tries to get the greatest share of the market as possible, mostly through branding, style variations and advertising. These sellers set the price of their products and will increase production if they are making a profit.

Monopoly

In a monopoly market, there is only one seller of products for which there are no close substitutes. They control the prices because there are no competing sellers. An example of a **monopoly** was Victoria's Tattersalls, which was the only licensed provider to its market for 54 years. In late 2017, the Victorian Government awarded a second licence to Intralot, creating a duopoly.



15.3.5 Australia Post is an example of a monopoly in Australia in that it has a 100 per cent share of stamp sales in Australia.



15.3.6 Types of market structures

Duopoly

A duopoly is where there are two businesses that control most of the market. The grocery market in Australia is an example because of the dominance of Coles and Woolworths. Between them, these two companies controlled over 68 per cent of the $101 billion grocery market in 2017. Because each company is larger than all of the other companies in the market, they are price makers who mainly compete with each other for customers.

Oligopoly

An oligopoly is where a small number of businesses dominate the market. They are price makers and well-known brands. An example of oligopolies in Australia are the 'big four' banks (Commonwealth Bank, Westpac Banking Corporation, National Australia Bank, and the Australia and New Zealand Banking Group).

LS 15B

Activities

Remembering and understanding

1. Identify two different types of market forces.
2. Give three examples of factors that influence demand.
3. State the law of demand.
4. Outline the difference between the law of supply and the law of demand.
5. List five factors that can cause a shift in supply. State which of these factors suppliers can most influence.

Applying and analysing

6. Apply your knowledge of supply and demand to explain the concept of market equilibrium. (Hint: You may use a diagram to assist.)
7. Differentiate between perfectly competitive markets and imperfectly competitive markets.

Evaluating and creating

8. Discuss one type of imperfectly competitive market that exists in Australia. (Hint: You can research the cinema industry, supermarkets or the banking sector.)

15.4 Allocation of resources

Prices and the allocation of resources

In a market economy, prices are critical in determining what gets produced and who gets what products and services. This is called allocation of resources.

In Unit 15.3, we saw that there is a connection between market prices and the demand and supply of goods and services to markets. This is called the **price mechanism**, because it affects both demand and supply as buyers and sellers use prices to decide how to allocate their scarce resources. The resources are the factors of production: land, labour, capital and enterprise. **Resource allocation** is dividing these limited resources between various uses to satisfy unlimited and competing needs and wants. For example, a cafe owner may make most of her income from selling coffee. However, there might be a higher profit in selling milkshakes. The cafe owner will have to decide how much time and effort to spend on each of these activities, given that there is a limit to the amount of labour she can hire.

Through the operation of the price mechanism, prices are important in markets in these ways:

- they provide a signal (called a 'price signal') to buyers and sellers about the state of the market, indicating to consumers how much to buy
- they provide an incentive (motivation) to producers to produce more or less.

Prices as a signal

Prices adjust to changes in supply and demand. When demand is greater than supply, there are shortages in the market and some buyers will pay higher prices just to obtain the goods or services. Sellers take this as a message, or signal, that they should provide more to the market because they can make greater profits. If supply is greater than demand, then sellers cannot sell all of their products and are left with a surplus (more than is needed). This is a sign to them that they will have to lower their prices to sell surplus stock, and prices fall as a result. This will result in lower profits, or even losses.

Prices provide incentives to producers

Changes in prices provide information to producers. If prices rise, the message is to produce more. The incentive for them is that they can make larger profits, by selling more at higher prices. When prices fall, producers' profits are lower, so they will reduce their production or use resources more efficiently. Both these actions will help them to cut costs and maintain profits. They will reduce their costs and avoid being left with a surplus of unsold products. Surplus products often have to be sold at a reduced price.



15.4.1 At the beginning of the tulip season, fewer tulips are available for sale, so they are more expensive. When there are a lot of tulips in flower, their price decreases.

Did you know?

Daily deal websites are a popular choice for selling surplus stock at reduced prices. These dedicated discount companies alert their substantial mailing lists to a selection of deals available each day. The offers tend to run for a limited time only, making them very appealing to potential stock buyers who respond to the time pressure involved by making a purchasing decision instantly.

Decisions for producers

Producers make decisions about how they will allocate their resources based on market prices and levels of demand and supply. In doing so, they ask three key questions:

- What to produce?
- How to produce?
- For whom to produce?

What to produce?

Producers try to maximise their profits by producing goods and services for which there is strong demand and no oversupply from sellers. They will need to find and choose ways of keeping the cost of producing their products as low as possible. This can be done, for example, by buying the lowest cost supplies and also through limiting the amount stored as stock in warehouses.

How to produce?

Producers look for ways of producing goods and services that minimise costs and maximise profits. They can look for cheaper supplies of raw materials and capital goods or cheaper substitutes for these items. Another way to reduce costs is to change the amounts of labour and capital used. For example, producers might buy machines that can do routine tasks automatically and quickly. In some industries, such as motor vehicle manufacturing, robots can do routine tasks very quickly and accurately. It also costs less than employing people to do these jobs.



15.4.2 Haigh's in Adelaide is famous for its chocolates. Some of these are handmade and contain expensive ingredients, which makes them a luxury sweet compared to cheaper products in the market.

For whom to produce?

Goods and services are made for any buyers who can pay the price that sellers are prepared to accept. This leads to the production of a great variety of products in different markets, depending on the number of buyers, who the buyers are, and how much they are prepared to spend. Some products are produced for people on low to middle incomes, while others are aimed at high-income earners.

As an example, a basic food item such as bread is priced so that most people can afford to buy it at a few dollars per loaf. Luxury food items such as truffles are very expensive and only wealthier people would buy them at around $2000 per kilogram. Per kilogram, truffles cost about 400 times as much as bread!

Activities

Remembering and understanding

1. Demonstrate three ways that prices are important within markets.
2. Explain what happens in a market when demand is greater than supply.
3. Illustrate, with an example, what happens if supply is greater than demand.
4. Relate a situation that you have experienced where price limited your demand for a product. You may consider the cost of tickets to a concert or sporting event, or clothing to illustrate your point.

Applying and analysing

5. Develop a flow chart to model how price can provide either an incentive or disincentive (obstacle) to producers.

Evaluating and creating

6. What to produce, how to produce and for whom to produce are important questions for producers. Imagine you are a producer of cosmetic products, T-shirts or mobile phone apps. What other questions might you consider?

15.5 Online markets in Australia

The growth of online retail

Technological developments have increased our ability to buy and sell online. In 2017, sales in Australian retail stores grew by about 3 per cent. In comparison, Australian sales online grew by more than 10 per cent. A survey by market research firm Roy Morgan in 2016 valued Australian online sales at $41.3 billion.

What is sold online?

Anything that can be physically bought or sold can be sold online. Goods purchased online will need to be physically delivered to the buyer or picked up from the seller.

Services can be purchased online, though they may be performed in a physical space or online depending on the nature of the services. Consider the online businesses that sell tickets for different types of events. A purchase and 'delivery' can be made online through sending a PDF version of the tickets to the buyer to download and print. Hotel reservations, accounting services, financial and architectural advice can all be purchased and delivered online. The purchase of cleaning services online will require the physical presence of the cleaner. The service must be performed offline.

Websites, shopping carts and payment platforms

A website should carry clear images and text. Many shoppers will want to view an item from more than one angle in the virtual store. Shoppers often want to browse and then make a selection from a group of possible purchases. Many websites will offer a 'shopping cart' or 'wish list' option so a buyer can store their products before deciding whether or not to buy.

Once selected, items will need to be paid for via a secure payment platform run by a business such as PayPal. A secure system is necessary because customers need to be confident that their financial data and privacy are safe.

Did you know?

Search engine optimisation (SEO) is about maximising the number of visitors to a website. In the case of a business, its website should be designed in such a way that when consumers are searching for particular products (goods or services), it is one of the first found and presented by the search engine.

Social media and online markets

Businesses use social media such as Facebook, Instagram, and Twitter for promotion. The use of sites that enable 'likes', 'shares' and direct communication with customers has meant that some businesses are very close to their markets.

Adaptive systems

Adaptive systems are computer-based systems that can learn from the way consumers use websites. Businesses selling online can gather data about customers and their individual buying behaviours. 'Metrics' is a term applied to describe the measurements made by businesses about page views, a person's previous purchases, how long a customer spent viewing particular items and how much they spent. This data is used to directly market products to the customer.

Online businesses

Some very large businesses trade only in the online space—such as Amazon and Etsy—bringing together a range of buyers and sellers. The Australian company Blackmilk Clothing is a medium-sized enterprise that only trades online. Most businesses, however, use a mix of physical and online trading.



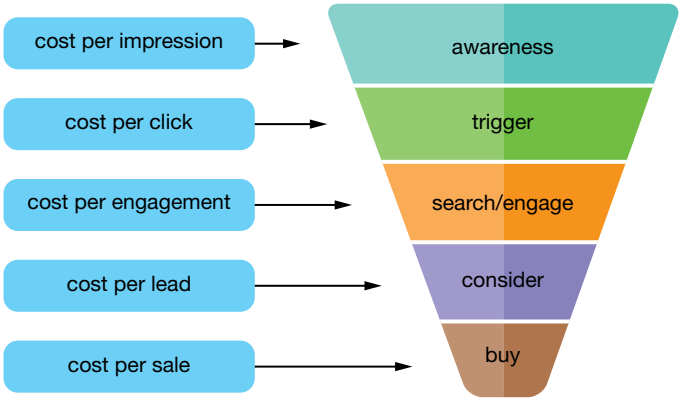
15.5.1 An example of an online market is people buying and selling (or publicly auctioning) goods and services on eBay.

Did you know?

E-commerce refers to commercial transactions over the internet. It includes buying goods and services from a mobile device or computer, using direct debit and point-of-sale (POS) payments made by cards, and card-reading technologies at a store checkout.

Did you know?

Social media can be a significant source of revenue for business. Businesses that create social media posts are able to track how many people view their post, how many times people click on any links, how long they linger on pages and which web page they read last. Metrics can even tell the business which type of device was used to view pages (for example, an iPhone or Android device) and where the device was located! Each time a customer browses a web page and then clicks on links, the business is collecting data about that consumer's behaviour and also about what social media posts eventually lead to sales. The business will follow a process shown in Figure 15.5.2.



15.5.2 This sales funnel details the number of page views (awareness), the number of people clicking on links (triggers or leads), the number of people who open additional pages for more information (search/engage), the number of times people hover over pages and for how long (consider) and the number of sales.

Skills builder

Investigating online retailers

You are to investigate the design and ease of use of the websites of five online retailers. You must select five very different types of businesses.

Do the following for each retail business website:

1. State the name of the business and the URL (web address) of the home page.
2. Describe the home page in terms of layout, colour and clarity of presentation.
3. Click through the various pages and determine whether the site is 'nimble' (uploads quickly) and is easy to navigate.
4. Detail the features you like best, such as:
   - the range and presentation of products
   - the use of a 'shopping cart'
   - the need to create a registration
   - the use of a 'wishlist'
   - clarity of payment and delivery options
   - disclosure of prices
   - any other feature you think is important.
5. Rank the sites from best to worst based on your assessment of the features. Justify your ranking.

Activities

Remembering and understanding

1. What is the online market?
2. Outline how online markets have developed.
3. Approximately how much is the annual value of Australian online sales?
4. Describe whether both goods and services can be sold online.

Applying and analysing

5. How does having a 'wishlist' option assist consumers when making their online purchases?

Evaluating and creating

6. Look at the use of social media by two businesses or brands you like.
   a. Would you be attracted to buy from the retailer as a result of the social media posts or not?
   b. What effect can social media have on attracting sales?
7. Evaluate how businesses 'reading' a consumer's buying preferences and scanning habits is beneficial to them, but can have a mixed effect on consumers. (Hint: Think about any issues that could arise if a website can read and suggest what consumers should buy.)

LS 15C

15.6 The stock market in Australia

Financial products

The stock market is a form of financial market. You will recall that a market is a 'place' where buyers and sellers meet. In a financial market, instead of goods and services, the buyers and sellers are trading financial products. These financial products are sometimes called 'financial instruments' and can be divided into two broad types: equities and debts.

Equities

Equities are financial instruments that give the owner part-ownership in public companies. Other names for equities are 'stocks', 'shares' and 'securities'. Public companies are listed on the Australian Securities Exchange (ASX). Details about the ASX, and how it operates, are provided below.

Debts

People often borrow money for large purchases such as a house or a car. The borrowed money is a debt. Debts are financial instruments called 'loans' or 'borrowings' that investors take in order to buy assets. Debts are of a fixed term, which means that the borrower will have to pay the money back within an agreed length of time. The lender, which is often a bank, will charge the borrower a fee for their use of the loaned funds. The fee is called interest and is the cost of borrowing. Borrowers will want to try and reduce the cost of borrowing to the lowest level possible.

Secured and unsecured loans

Apart from the cost of borrowing, a lender will also have to manage the risk involved with borrowing, for example in case the borrower cannot pay back the debt. The risk for the lender can be reduced if the lender has security. Security means that the lender will have the legal right to sell an asset if the loan is not repaid. For example, if a person wanted to buy a car, then the car is the asset used as security. This means that if the buyer cannot repay the loan on the car, the lender can sell the car to get back their money.

An unsecured loan means that the lender cannot sell any of the borrower's assets to recover the debt if the borrower cannot repay. To manage this risk, lenders usually charge higher interest for unsecured loans.

The Australian Securities Exchange

The Australian Securities Exchange, or ASX, used to be called the Australian Stock Exchange. A stock or share is a financial instrument that gives the owner a part-ownership in a public company. The ASX is a financial market that enables buyers (usually called 'investors') to buy or sell the shares of publicly listed companies. These companies will sell either primary or secondary stocks.



15.6.1 The latest ASX news and prices displayed outside the Australian Securities Exchange

Primary stocks

The primary stock market is the place where new issues of shares are first offered. This will occur when a company is first listed and is seeking investment monies from shareholders. It works like this: a company wants to be listed on the ASX, so it sends out a prospectus to the market. A prospectus is a document that invites investors to buy shares. It details how the company is forecast to perform over the first few years of its life, including expected income and profits. Investors can look at the available information and decide whether or not they want to buy the shares on offer.

Secondary stocks

Once a share has been bought and owned, it can be resold. The sale of pre-existing and pre-owned shares is the main activity on the ASX. As the shares have already been owned, the ASX is no longer acting as a primary market. Although the ASX is the only place where stocks can first be listed, the main work of the ASX is as a secondary market. The daily value of shares traded is easily above $1 billion, with the top eight companies alone trading this value. There are over 2000 companies listed on the ASX. In November 2017, the ASX was used to raise $3.7 billion of new shares (primary stocks) and nearly $3.4 billion of secondary stocks.

Investors and the stock market

People who buy shares expect two different forms of financial benefit or return. The first is a share of the profits made by the companies whose shares they own. When a company makes a profit it is expected that a proportion of this profit will be returned to the shareholders. The profit given to shareholders is called a dividend.

A second form of financial benefit occurs when the value of the actual shares increase over time. This increase in value happens when a company experiences continued financial success (profitability) over time. The stock market is a market that determines the 'price' or value of shares based on the interaction of supply and demand. The more a company's shares are demanded by investors, the higher the share price will go. In this way, the stock market will reflect any other market; that is, the price mechanism will operate to provide a value for the listed shares.

In summary, investors will buy shares that they believe will give the highest financial return in the form of dividends and increased value of shares through price rises.

Government influence on financial markets

The Australian Securities and Investments Commission (ASIC) is the government authority that oversees the work of the ASX. ASIC also grants and registers financial licences to all of the companies that offer equities or debts to investors.

Did you know?

Technological developments and the creation of online and financial markets have led to new forms of money called 'cryptocurrencies'. They are electronic forms of money that can be used like real money to buy goods and services. Bitcoin, Ethereum and Litecoin are examples of virtual money that are becoming popular in online trading and investing.

Activities

Remembering and understanding

1 Define the term 'financial market'.
2 Distinguish between equities and debts.
3 What is the difference between a secured loan and an unsecured loan?
4 What was the former name of the ASX?
5 Outline the role of the ASX.

Applying and analysing

6 Explain the process by which a company is listed through the sale of primary stocks.

Evaluating and creating

7 Consider the idea of a government-owned 'People's Bank' that lends money at very low interest rates. Create an advertisement for this bank, pointing out what you consider to be the benefits to borrowers of a bank such as this.

15.7 The government and the market

The need for government in a market economy

In a mixed economy such as Australia's, governments take steps to make sure that markets operate as competitively and fairly as possible. This is done in three main ways:

- having regulations that control the behaviour of buyers and sellers
- providing goods and services that are not adequately provided by sellers
- operating their own businesses, known as government business enterprises.

Government regulation of markets

There are three levels of government in Australia: federal, state or territory, and local. Each government within these levels makes decisions about matters affecting people within its area. These governments make laws and regulations to make sure that these decisions are carried out. Some examples of such laws and regulations are discussed below.

Controls on imports

Some laws and regulations are designed to protect Australian consumers, even though they restrict the market. At the federal level, for example, there are controls on importing some agricultural products, such as bananas and livestock. Importing these products would carry the risk of bringing into Australia plant and animal diseases that could badly affect Australian producers.

Another example is the restriction on importing and selling some types of firearms. If there were no restrictions on importing high-powered automatic weapons, the likelihood of violent crimes resulting in multiple deaths would increase.

Incentives and taxes

Sometimes governments regulate markets by providing financial incentives for sellers or buyers to operate in a particular way. For example, the First Home Owner Grant scheme gives money towards the cost of buying a first home. This is designed to encourage people to buy their own home, which helps to boost the market for new and established homes.

Governments may also tax some products, such as alcohol and tobacco, in order to discourage particular buyer behaviour.



15.7.1 Government restrictions on importing food and other products aim to prevent the spread of diseases, pests and weeds.

Warnings, restrictions, bans and other regulations

Governments can influence buyers by providing health warnings against the use of some products (such as cigarettes), or limit sales of products through restrictions such as licensing or censorship.

Regulations can also be used to produce or prevent outcomes in different places and times than otherwise might occur. For example, the Victorian Government does not allow some fruit to be brought into the state from other parts of Australia. This is to prevent the spread of pests and diseases that would affect the local fruit industry.

Another example are the federal government regulations that enforce plain packaging of tobacco products, together with other regulations such as banning the advertising of these products, their sale to people under 18 years, and smoking in certain areas. These regulations all help to produce the outcome of reducing tobacco smoking in the community and reducing the level of tobacco-related illnesses more quickly than would happen if there were no restrictions.

Governments providing public goods and services

The markets do not provide some things because it is difficult to make a profit from them. In economics, these are called **public goods**. Public goods and services are all around us, and they have two features. First, it is not practical to stop a person from using the goods. Second, one person's use of the goods does not reduce the ability of other people to use them. An example of a public good is a footpath that anybody can access and walk along. It is not practical to make everybody who uses a footpath pay for walking on it. One person's temporary use of the path does not stop other people from using it.

Other examples of public goods and services include:

- defence and police forces to protect all of us
- street lighting that helps everyone to see at night
- fire and emergency services that help everybody in times of accidents and disasters
- lighthouses and navigation aids that assist all ships and boats to travel safely.

As well as public goods, governments also provide some goods that could be provided by markets, but not at a price that some people can afford. For example, federal and state governments fund public schools to provide a low-cost option for parents. Health care is another service that can be provided privately but that governments also pay for, such as public hospitals and various health services.

Education and health care are **merit goods** because they benefit society, not just the individuals who consume them.

Government business enterprises

Sometimes governments set up their own business enterprises to sell goods and services. Government business enterprises (GBEs) are generally created because governments do not feel that private business can deliver essential goods and services, or might stop production as soon as profits drop. The creation of GBEs has been common in cases where governments ran essential services such as public transport or utilities (gas, water, electricity, telephone). GBEs make it difficult for other, similar businesses to compete, which creates a monopoly. Over time, monopolies become inefficient and unproductive businesses. Governments then might sell off these services to private businesses.

The sale of government-owned utilities may be done over a period of time so that the business can adapt to changes and become more productive and efficient over time. The sale of government services also brings in revenue to the government. Examples include the State Electricity Commission of Victoria (SECV), which was sold in 1994, and also the sale of the state's Gas and Fuel Corporation in 1999 for over $1.6 billion. The Port of Melbourne was sold in late 2016 for $9.7 billion.

At a national level, some of Australia's best known brands used to be owned by the government but were privatised and sold off. These include Qantas (Australia's national airline), Telstra (Australia's largest telecommunications company) and the Commonwealth Bank of Australia.

Some current GBEs of the Australian Government include:

- Air Services Australia
- Australian Broadcasting Corporation (ABC)
- Australian Government Future Fund
- Australia Post
- Clean Energy Finance Corporation
- Defence Housing Australia
- NBN Co (National Broadband Network)
- Snowy Hydro (a 13 per cent share)
- Special Broadcasting Service (SBS).

Some current GBEs of the Victorian Government include:

- Port of Hastings
- Snowy Hydro (a 29 per cent share)
- VicForests
- VicTrack.

LS 15D

Activities

Remembering and understanding

1. Explain why markets may not always provide all types of goods and services.
2. Identify three ways that Australia's governments ensure that markets operate competitively and fairly.
3. Select one example of how the government regulates the market and explain its importance.

Applying and analysing

4. Detail the importance of government warnings and bans in shaping the behaviour of both producers and consumers in markets. Support your answer with relevant examples.

Evaluating and creating

5. Experiment with the idea that the government is no longer providing any public goods and services. Write a paragraph describing what your day would have been like so far.



Work futures

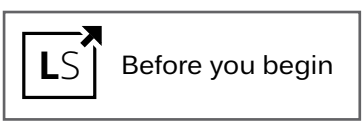
16

For most people, some form of work is necessary so they can earn an income. This does not mean that work has to be a chore; instead, it can bring great happiness and satisfaction, which improves personal wellbeing. Being employed also allows the worker to buy goods and services, thereby contributing to our economy. What work involves has changed over time, as have people's attitudes towards it. Although we do need to prepare, we can only make educated guesses as to what work will be like in the future.

OVERVIEW QUESTIONS

- **16A** What impact does work have on individuals, society and the economy?
- **16B** How is the nature of work changing?
- **16C** What will work be like in the future?

LS Before you begin



16.0.1 For many people, working in a pleasant environment with people they like can be a source of considerable satisfaction.

GLOSSARY

casual loading being paid more per hour than a full-time employee to compensate for the uncertainty of future work shifts and a lack of entitlements

casual work work that has irregular hours and is not guaranteed, with no entitlements such as paid sick leave or annual leave

contract work where a person is employed to complete a specific task without having any guarantee of work after completing that task

employment agreement a written contract that sets out the terms and conditions of a work agreement, including pay rates, leave entitlements and how to legally end the contract

full-time work ongoing employment of about 38 hours each week

income money or other benefits an employee receives in exchange for working

investments items that are expected to earn an income for the owner in the future

part-time work regular, ongoing employment of less than 38 hours each week

profit the difference between the amount a business sells their product for and the amount it costs to make the product

salary a fixed amount of money received by the worker, usually based on a yearly rate, regardless of the number of hours they actually work

standard of living the level of necessities, wealth, and material comfort a person can achieve

transferable skills skills such as communication, time management and leadership that can be used across a range of different jobs

volunteer work unpaid work or tasks for others

wage income based on the number of hours worked by the employee

work–life balance the relationship between the amount of time and effort spent on work and the amount spent on other aspects of life, such as family and leisure

16.1 What workers want

What work offers

In Australia, out of a total population of more than 24.5 million, there are over 11 million people aged over fifteen who either have a job or are actively looking for work. While people choose to work for many different reasons, usually they are motivated by a combination of these factors:

- earning an income
- gaining access to a higher standard of living
- contributing to self-esteem
- contributing to happiness
- providing challenges and opportunities.

Earning an income

In exchange for working, employees receive money and sometimes other benefits, for example the use of a company car. This payment is called the employee's **income**. Income is often the most obvious benefit of work: in each pay period the employee receives their pay and can then use the money as they wish. While accumulating money can be an end in itself, for many workers the appeal of earning an income lies in being able to use it to purchase goods and services that raise their standard of living.

Higher material standard of living

A person's **standard of living** is the level of wealth and comfort they can achieve. Being able to afford a greater number, variety or quality of goods and services makes a direct contribution to the individual's living standards. As income rises, the worker might decide to spend some of their money on:

- holidays and travel
- buying a new house, or home improvements
- accessing services such as life insurance, fresh food deliveries or financial advice
- taking time for themselves by reducing working hours, hiring a gardener or cleaner
- more frequent medical checks or having elective procedures.

Contributing to self-esteem

For many people working life offers a sense of purpose and of contributing to a common cause. Being part of a team with a shared vision provides a sense of belonging and community. Being competent and satisfied in your work can make you proud of your daily achievements, adding to self-esteem and confidence.



16.1.1 Earning an income allows people to purchase goods and services. For some people, work may be a way to allow them to afford a holiday overseas.

Some workers can be described as having a vocation, or a strong sense that they are well suited to serving others through a particular occupation. This can be experienced in any industry; just as a nurse may feel they are supporting others who are in poor health, a chef may feel they are providing enjoyment to their customers by creating dishes that are both delicious and beautifully presented.

Contributing to happiness

For many people, their work is a source of genuine happiness. They enjoy what they do, and this enjoyment brings far greater rewards than simply providing an income. This may arise from the nature of their work; for example, a teacher might enjoy helping students to learn and understand concepts, while a journalist might enjoy the process of researching, writing and presenting a news story.

The nature of the work environment can also contribute to workers' enjoyment. If they have positive, supportive relationships with their colleagues and a pleasant physical environment to work in, workers are likely to feel that they are making a positive contribution beyond simply earning an income. The social element of work can give great satisfaction, allowing employees to meet new people and create new social and professional opportunities. One of the most important things Australian workers say they want from their work is to make friends. Workers who make friends are more engaged with their work and generally stay longer, so managers try to provide an environment where friendships can develop. In practice this may involve collaborative work spaces or hosting regular social events.

Providing challenges and opportunities

Work can also provide meaningful challenges. The process of solving these challenges can be enjoyable in itself, so the employee can feel that their work is fun and interesting. Having a sense of responsibility can contribute to this, giving the worker some degree of ownership of the solutions and products that emerge from their efforts. Managers encourage this personal investment by:

- *co-creating business objectives*—asking for workers' input in setting up business goals
- *delegating authority*—entrusting workers with different tasks and responsibility
- *using inclusive management styles*—seeking opinions from workers and developing team solutions
- *supporting worker autonomy*—allowing and trusting workers to do their job without close supervision.



16.1.2 Different jobs will appeal to different people. Some may find fixing cars very enjoyable; others may prefer to work as a paramedic or emergency services officer. Whatever work a person does, it can provide benefits beyond simply earning a wage or salary.

Reasons for working change over time

Even with the most exciting job there can still be days that are routine, and over time a person's reasons for working may change. For example, a job that once provided great satisfaction and happiness may no longer offer a challenge, and instead just be a way to make money until a new opportunity arises. Moving from one job to another, relocating to different branches, or being allocated further responsibilities may provide new challenges and renew the employee's interest in the work they do.

Family circumstances can change, so employees may want greater flexibility to go part-time or work from home. To improve their employability, find more challenging work or move jobs, workers can participate in professional development training to build their **transferable skills** (skills such as communication, time management and leadership that can be used across a range of different jobs).



16.1.3 Some workers enjoy the challenge of work, others gain happiness from working in teams and making friends.

Activities

Remembering and understanding

1. How many people in Australia either have a job or are actively looking for work?
2. List four factors that combine to motivate people to choose to work.
3. Define the term 'standard of living'.
4. State two factors that may contribute to a person's happiness at work.

Applying and analysing

5. Survey people who work, to determine what contributes to their happiness at work. Prepare your questions and ask people in a public place (or your school) about their opinion. Be ready to record people's answers. Efficient ways of recording survey data include using a tick-box list or a rating scale with suggested responses. Report your findings back to your class and construct a class rank of what makes people most happy at work.

Evaluating and creating

6. Reflect on your own needs to determine what types of work would best contribute to your self-esteem and happiness. Write a paragraph about what kind of work you would like to do and why. Consider the following:
   - What is your preferred location for work?
   - What kind of work setting would you enjoy?
   - How often would you like to work?
   - What time of the day would you prefer?
   - Would you prefer to work with others or on your own?
   - How important is the level of income for you?
   - Are there other things that are more important for you than money?
7. According to the Australian Bureau of Statistics, in 2016 the number of people in work grew, but the percentage of workers on a higher income ($1750 or more per week) decreased and the percentage of those on a lower income ($500 or less per week) increased. Why might this be?

16.2 Working for society and the economy

Working helps us all

Work not only provides positive benefits for the individual worker, it can also benefit the wider community and society. Some people are so satisfied by the work they do that they are happy to do it for no income at all, and this provides much-needed services to those who cannot afford to pay. However, the majority of workers do earn an income, which they spend on goods and services. This spending contributes to gross domestic product (GDP), which allows other workers to be paid, businesses to expand, and keeps the flow of wealth moving.

Did you know?

In Mexico, workers work an average of 40 hours per week and contribute about $20 per hour to GDP. In Australia, we work about 33 hours for a $55 contribution. But in France it's a 28-hour week for a $66 contribution and in Luxembourg a 29-hour week to contribute a super-efficient $93 to GDP for every hour worked.

Volunteer work

Many people do **volunteer work** for others without being paid for their efforts. An example is volunteering with the State Emergency Service, which involves a commitment to ongoing training and assisting in tasks, such as cleaning up storm damage or searching for missing people. Other opportunities for volunteer work include providing companionship and entertainment for elderly people, organising parent support groups at schools, and assisting with soup kitchens and other services for the homeless. Many services to local communities could not be provided without the work of volunteers. While they do not receive any monetary pay, volunteer work can provide individuals with a great sense of wellbeing, and their contribution is vital to maintaining many aspects of modern Australian communities.



16.2.1 State Emergency Service volunteers are not paid for their efforts, but provide a vital service to the community.

Did you know?

The Department of Foreign Affairs and Trade (DFAT) pays for Australian volunteers to work overseas. Between 2011 and 2017, over 5000 volunteers were supported by more than 1350 host organisations in over 40 different countries. DFAT has a new program that it plans to run until 2027, costing about $40 million per year and supporting 750 volunteer assignments annually. The Australian Government does this to promote cross-cultural sharing and help develop stability in the region.

Earning an income

Income refers to the money a person receives in return for their work and from property, shares and other assets they own. This income can then be used to purchase goods and services that will contribute to the person's standard of living and to the Australian economy. There are many different sources of income, including:

- wages and salaries
- owning a business
- shares and other investments.

Wages and salaries

The most common forms of income are wages and salaries paid to workers. A **wage** is based on the number of hours worked by the employee. A **salary** is a fixed amount of money the employee receives, usually calculated per year, regardless of the number of hours they actually work.

Wages and salaries are negotiated between the employee and their employer, although the federal government sets minimum levels for income and other conditions of work. In 2017, the national minimum wage for adults was $18.29 per hour or $694.90 for a standard 38-hour week. (Average earnings per week were around $1600.) Workers younger than 21 years earned less, with those under 16 earning a minimum rate of just under $7 per hour.

16.2.2 Young people's pay rates are calculated as a percentage of the adult minimum wage.

Age	Percentage of adult minimum wage
Under 16 years of age	36.8
16 years	47.3
17 years	57.8
18 years	68.3
19 years	82.5
20 years	97.7
From 21 years of age the adult minimum wage applies to an award or agreement-free employee.	

Source: WorkplaceInfo, 2018



16.2.3 Young people can legally earn income, but employers must comply with work restrictions; for example, an employee must be over 15 to operate heavy machinery.

Young workers

In Victoria, children are required to prioritise school over work. However, as long as a Child Employment Permit has been approved by the government, children of any age can earn an income in a family business run by a relative, volunteer for a community group, or perform professionally as an actor or musician. Children aged 11 to 15 have restrictions on the types of work they can do and their hours of work. Only 'light work' is permitted, meaning work that won't harm their health, safety, development or moral and material welfare. Examples of light work are caddying (carrying golf clubs), delivering leaflets or brochures, babysitting, doing odd jobs for neighbours or gardening. After the age of 15, junior workers have access to a much wider variety of employment options as long as they satisfy the government's education requirements.

Did you know?

In Victoria, it is illegal to employ a child for more than 3 hours per day and 12 hours per week during school terms. During school holidays the time allowed increases to 6 hours per day and 30 hours per week. Children must have a rest break for every 3 hours and a 12-hour break between shifts.

Children under 15 cannot be employed to:

- serve alcohol
- operate heavy machinery
- work in gaming
- sell things door to door
- work on a fishing boat at sea
- work on a building or construction site.

If you want further information about rights or assistance as a young worker or student, check the Fair Work Australia or Fair Work Ombudsman websites.

16.2.4 Quick facts table for young workers

Age	Work opportunities	Hours of work	Supervision
Any age	Entertainment industry or a family business or farm	The hours of work allowable depend on the age of the child	• Parental supervision and a Child Employment Permit • If under 12 weeks old, a registered nurse may be required • If less than 6 years old, particular supervisor requirements
11–12	Delivering newspapers, pamphlets or pharmacy products before and after school	Not before 6 a.m. or after 9 p.m.	Must be accompanied by a parent or another adult with written permission from the child's parents and a Child Employment Permit
13–14	Deliveries, working in a shop, fast-food outlet or café, collecting shopping trolleys from a retail outlet or adjacent area	Not before 6 a.m. or after 9 p.m.	Must have written permission from parents and a Child Employment Permit
15–21 'Junior worker'	Appropriate industries as long as qualified to do the job and not breaking any laws such as driving or serving alcohol	• Must remain in some form of education until 17 (or completion of Year 10) • Hours worked also depend on the laws for that industry, for example retail laws say no under-18s can work longer than a 10-hour shift	No permit required

Source: Adapted from Business Victoria, Child employment laws and requirements

Owning a business

People who own a business are able to earn an income from that business. **Profit** refers to the difference between the amount a business sells their product for and the amount it costs to make it. When the business earns a profit, the owners can decide whether to pay themselves an income from that money or spend the money on improving the business.

The amount of money earned by business owners can vary greatly from one year to the next.



16.2.5 The owners of rental services, including car rentals, make a profit by lending cars, appliances and other items to customers in exchange for a fee. The car rental industry in Australia alone earns over $1 billion in revenue each year.

Investments and shares

Investments are items that are expected to earn an income for the owner in the future. For example, a person may own a house that they rent out to others. This rent is a source of income for the property owner. Money deposited in a bank can also earn income, because the bank pays interest on the amount of money in the account.

Shares are another type of investment. When a person buys shares they are buying a small part of a company and can therefore earn a corresponding amount of any profit that company makes. Although they have some decision-making power, such as voting on important issues, shareholders have little input into the day-to-day operations of the company and therefore have little control over the amount of profit earned. There is no guarantee that shareholders will receive any income; however, they do have the option of selling their shares at almost any time.



16.2.6 Share prices are displayed on electronic boards in share markets throughout the world. These prices continually change.

Activities

Remembering and understanding

1 Identify (say) and describe (give features of) three ways people can earn an income.
2 State two restrictions placed on children aged between 10 and 12 being able to work.
3 Define the term 'investment'.

Applying and analysing

4 In terms of income, why might someone opt for a full time job with a salary rather than running their own business? Give reasons to support your answer.

Evaluating and creating

5 Write a paragraph to argue for or against this statement: 'The minimum young person's wage per hour is not enough.'
6 a At some stage you will have been involved in volunteer work of some kind at your school. List any programs or fundraising to which you have made a contribution.
b Investigate the kinds of volunteer work done by your family and in your community. Report back to your class on the range of local volunteer opportunities available. Be sure to explain what service each organisation provides and how more volunteers may help.

LS 16A

16.3 Ways people work

Work arrangements

There is considerable variety in the way that jobs can be arranged. While the standard working week involves 38 hours of work, many people work shorter or longer hours than this. The times at which people work can also vary, with some working a traditional 9 a.m. to 5 p.m. day, while others may work at night or on the weekend.

The various paid work arrangements can be classified as:

- full-time
- part-time
- casual
- from home
- contract.

Full-time work

In Australia, **full-time work** is based on working 35 to 38 hours per week, with the employee having either a permanent position or a contract lasting for a fixed period of time. Usually, this involves working about 8 hours per day for 5 days each week. However, it is possible to have 'averaging' arrangements, which are designed to ensure that over a given period of time the employee works an average of 38 hours per week. For example, workers at remote mine sites may have rosters that cover a period of time when they are on site and work long shifts, followed by a period when they are at home and don't work at all. This could take the form of 'two weeks on, one week off', averaging out at over 35 hours per week.



16.3.1 Many workers in the hospitality industry are employed on a part-time or casual basis.



16.3.2 Working from home offers flexible hours and can save the employee considerable time because they don't need to travel to a central office.

Full-time workers are entitled to sick leave, parental leave, holiday leave and other benefits. The amount of leave they are allowed to take and the timing of it varies from industry to industry. Terms and conditions must always be clearly explained in the **employment agreement** signed by the employee and the employer. Most full-time workers receive 4 weeks' annual leave each year, plus at least 10 days of sick leave. Employers and employees are allowed to negotiate better pay and conditions as long as the minimum requirements set by the *Fair Work Act 2009* are included. (This Act is the law that sets out what must be in an employment agreement and how to get assistance with work disputes.)

Part-time work

Employees undertaking **part-time work** spend less than 38 hours per week at their job. Like full-time workers, they usually have an employment agreement determining their hours of work, and have either a permanent position or a fixed-term contract. The amount of leave they are entitled to each year is based on their 'full-time equivalent' or FTE; this is the proportion of full-time hours they work. For example, someone working 19 hours per week would be described as working a '0.5 FTE', and would receive half the leave allowances of a full-time worker.

Casual work

Casual employees do not have any guarantee of the number of hours' work they will complete each week. Usually, the hours they work will vary from one week, or even one day, to the next. **Casual work** may be determined by a weekly roster, but there is no certainty that this roster will be the same each week. There is also the possibility that the casual worker may be offered fewer or extra hours. The employer does not have to offer work to each employee each week, and a casual worker does not have to agree to work the hours that are offered.

Unlike full-time and part-time workers, casual employees do not receive sick leave or annual leave. If a casual worker is sick and unable to work, they will not be paid for that shift. However, casual workers do receive a higher rate of pay per hour to take this into consideration; this is referred to as **casual loading**. The hospitality and retail industries employ large numbers of casual workers.

Working from home

An employee who works from home is not required to travel to an office or other work location. Instead, they complete their work while at home. These arrangements offer considerable flexibility about the hours they work.

Depending on the exact nature of the job, the employee may be able to structure their day so they are free at key times. For example, a work-from-home parent of school-aged children can organise their day so they can drop their children off and pick them up from school.

Work from home may be full-time, part-time or casual. Those working from home on a full-time or part-time basis are entitled to the same leave allowances as those working in offices and other formal workplaces. Industries that employ large numbers of people working from home include those that offer support services over the phone or internet, such as technical support officers and nurses providing health advice.

Contract work

A worker can be employed to complete a specific task without having any guarantee of work beyond completing that task. This is referred to as **contract work**. The worker, known as a 'contractor', agrees to complete the specified task by a particular date.

Usually, the contractor has a greater degree of control over how the work is done than a regular employee would have, as long as they maintain the terms of the contract. The contractor has the ability to choose the hours they work, as long as the agreed task is completed by the agreed date. Contractors do not receive any paid leave. Anyone with specialised skills can potentially complete contract work.

Activities

Remembering and understanding

1 List the various ways that work arrangements can be classified.
2 Identify the three types of leave to which full-time workers are entitled.
3 Define 'casual loading'.
4 What type of industry employs large numbers of people who work from home?

Applying and analysing

5 Using a Venn diagram, show the similarities and differences between full-time work and casual work.

Evaluating and creating

6 Evaluation of work arrangements:
   a Create a table similar to the one below to assess the different types of work arrangements. Use the information in the student book and conduct further research online. Your best source of information would be speaking with people in a variety of work arrangements.

Type of work arrangement	Key features	Advantages	Disadvantages

   b When your table is complete, write a sentence indicating which type of work arrangement you would prefer in the future and why.

7 Create a Facebook-style profile page of a worker that can be used to educate students about the personal impacts of the various types of work arrangements available. In your profile, include the worker's occupation and their work arrangements. Also try to indicate the way their work arrangements fit in with their lifestyle, and any disadvantages they experience resulting from their work arrangements. Include as many details as you can to make your profile look authentic, such as timeline entries and appropriate photos.

16.4 Workforce changes

Factors currently influencing work

According to the Australian Bureau of Statistics, there were more than 2.17 million active businesses in Australia in 2016. While the businesses operating in any particular industry may have significant similarities, the sheer number of businesses operating in Australia, let alone the world, means that there is great diversity in the way people work. For many businesses, work practices can change significantly over time as they must respond to changes in the business and social environment to stay competitive. Some of the most important influences at the moment include:

- technological change
- communication change
- outsourcing
- casualisation.

Technological change

Technology changes rapidly and is expensive to keep up to date. Businesses need to stay globally competitive and so must use the best available technology to continuously improve the productivity of their operations. This means workers need to have technological skills and be comfortable with technological change. Technology affects all areas of work.

Technology includes hardware such as computers, printers, mobile phones and other equipment. It also includes software such as computer programs, word-processing programs, spreadsheets, apps and social media. Technology can speed up work processes, improve product quality and consistency, and can reduce business costs. It can also be disruptive and cause business owners to experience stress associated with changing markets and changing forms of competition. However, technology also provides business with new opportunities, so workers need to keep their training current. Examples of technological change include e-commerce and the self-service checkout.

E-commerce

E-commerce, or electronic commerce, is the technology that allows people to buy and sell online. This means the use of websites by businesses to display and promote what they sell, as well as the ability to take and make secure payments over the internet. The use of PayPal, 'tap-and-go' cards and credit cards online are all examples of e-commerce.

Self-service checkout

Scanning technologies allow shoppers to self-scan products, reducing the need for staff in shops and related staffing costs. However, self-scanning technologies are not yet reliable, so staff still monitor the machines. Also, the level of shoplifting has increased because some people fail to scan items or they put them through at a lower cost per weight. This causes a significant security problem for businesses and results in unintended costs. Amazon Go is now trialling a store that has no checkout at all but rather works by automatic scanners as you leave the shop with your goods.

Did you know?

Aldi was one of the first businesses to use the conveyor belt counters in their stores to help move stock to the checkout person. However, they were one of the last to use barcoding. This is because Aldi carefully assesses all technologies before adopting them. They wanted the barcode technologies to be fully tested by other businesses before using it in their stores. This meant that staff had to memorise the price of every single item in the store! Now that the technology has proven reliable, Aldi uses the most advanced form of barcoding stock control in the world.

Technological change is continually affecting work. As new hardware and software are introduced, employees need to participate in training to ensure they are able to use this technology. For some employees, this continual change can be challenging, particularly if there is a perception that new systems are being implemented (introduced) without adequate preparation. For other workers, change brings fresh perspective to their work, while training provides a new challenge and develops transferable skills.

Communication change

Changes in the ways we communicate are affecting almost every aspect of business operations and work life. Wireless technology and cloud computing allow employees to be in contact with their workplace all day, every day; it is not uncommon for employees to receive work-related emails or text messages even very late at night. This has significant benefits for the business because employees no longer need to gather at a central office each day.

It is now easier than ever before to work from home, or for employees to stay in contact while they are travelling. The impact of these changes needs to be carefully managed by businesses. This may involve establishing clear expectations about work hours and emphasising the importance of maintaining an appropriate **work–life balance**.

Did you know?

Since January 2017, it has been illegal in France for companies with more than 50 workers to email a worker outside of set office hours. One of the lawmakers said this was to prevent workers being tied by a kind of electronic leash to their work 'like a dog'.

For many tradespeople and contractors, a very important element of these communication changes has been the introduction of new payment systems. Rather than having to wait for a paper cheque to be cleared, for example, a plumber can now be paid on site and instantly by using a mobile payment app. This greatly simplifies the finances of those who are self-employed, making it more attractive and easier for people to establish themselves as contractors.



16.4.1 Mobile payment systems using a tablet or smartphone allow increasing numbers of tradespeople to receive payment as soon as a job is complete.

Outsourcing

Outsourcing is the process of contracting part of a business's operations out to another business. For example, many large businesses outsource the process of finding new employees to recruitment agencies who manage the advertisements, collect applications and assist in the interview stage.

The great advantage of outsourcing is that it allows the business to focus on its core operation without needing to hire experts in areas such as IT (information technology), legal support, accounting, marketing and even caring for office plants. By hiring other organisations that are experts in these areas, the business may be able to obtain these services for significantly lower cost. This is because the highly paid workers only spend their time on core business and the business gains advantages from the specialist organisation's expertise and size.



16.4.2 Outsourcing of business support services such as IT can lead to cost reductions, but may not always produce positive outcomes for the business.

Outsourcing is, however, a controversial issue—meaning it can cause disapproval or disagreement. Establishing a new outsourcing arrangement often involves existing employees losing their jobs. While in some cases these employees may be hired by the specialist organisation, this is not always the case. Outsourcing customer support, such as a phone help line or call centre, can lead to complaints that the business does not care about its customers. Therefore, this change needs to be managed carefully. Finally, outsourcing can mean that external organisations have access to confidential information, which also requires careful management to ensure customer privacy.

Prominent examples of outsourcing by Australian businesses are Telstra, Optus and the major banks outsourcing some call centre and finance roles to India, the Philippines and China. This has led to significant cost reductions, but has been highly controversial as jobs have been lost in Australia. There have also been concerns about whether the standard of service given to customers has fallen.

Casualisation

Casualisation refers to workers being employed on short-term contracts or a casual basis rather than permanently. This lowers staffing costs and allows for flexibility when demand changes such as during the Christmas period. Casual work leads to greater uncertainty for employees because there is no guarantee that a short-term contract will be renewed, or that a casual worker will be rostered on. This lack of income security can make it more difficult to plan for the future and, in particular, can make banks very reluctant to lend money to those on short-term contracts, making home ownership difficult. Also, while casual workers are paid a higher hourly rate, they do not receive sick leave or annual leave.

16.4.3 The proportion of employed people in Australia who are working full-time has declined significantly in recent years but is now recovering.

Month	Proportion of employed people working full-time
December 1985	81.9%
December 1995	75.6%
December 2005	71.4%
December 2015	69.0%
December 2016	62.0%
December 2017	68.4%

However, the casualisation of the workforce can also lead to considerable benefits. It can provide the worker with a much greater degree of flexibility to choose their own working hours, to work for more than one business at a time, or to change jobs frequently. Even employees with permanent full-time jobs may occasionally take on additional work on a contract basis. Casualisation also means that employees bring a broad range of work skills to each workplace that employs them.

LS 16B

Balancing the positive and negative aspects of casual work can be difficult. A major challenge facing casual workers is that they set aside a proportion of their income so they have savings to draw on if they are unable to work for a time due to illness or other factors. With careful management, casual or short-term contract work can allow the worker to gain experience in a range of different environments, which may build their professional network and increase their chances of obtaining a permanent position in the future.

Activities

Remembering and understanding

1 State four important influences on work practices.

2 Propose two advantages of recent changes in workplace communication:
   - **a** for employees
   - **b** for employers.

Applying and analysing

3 Explain why outsourcing can be regarded as a controversial business practice.

4 Consider Table 16.4.3. Over the time period the table covers, the proportion of employed people working full time has consistently declined (with the exception of 2017). Research this trend and explain why this rate has decreased over time. Decide whether you believe this trend to be positive or a negative for Australian workers. Justify your response.

5 If the hourly rate for casual work is higher than the hourly rate for part-time or full-time work, explain how casualisation can still reduce staffing costs.

Evaluating and creating

6 Imagine that your school decided to outsource all of its teaching staff and rehire them as independent contractors, only paying teachers for the hours that they teach, mark or prepare work. Identify and explain two positive and two negative impacts that this policy would have for teachers and the students.

7 After giving at least two reasons for each side of the argument, conclude whether casualisation is an advantage or a disadvantage for workers, businesses and the economy as a whole.

16.5 Future work

Factors affecting future work

As society continues to change in the future, so will the nature of work. While we cannot be certain about the exact nature of these changes, some broad predictions seem reasonably likely.

Automation

Automation refers to the process of using machines to replace human effort. In 2017, a study by researchers at Price Waterhouse Coopers concluded that 30 per cent of jobs in the United Kingdom, 38 per cent in the United States of America, 35 per cent in Germany and 21 per cent in Japan could be at high risk of automation by the early 2030s. The risks appear highest in sectors such as transportation and storage (56 per cent), manufacturing (46 per cent), and wholesale and retail (44 per cent), but lower in sectors such as health and social work (17 per cent). Highly repetitive and low-qualified jobs such as telemarketing are most at risk (46 per cent), while careers based on creativity and a high degree of emotional intelligence and qualifications, such as doctors, are least at risk (12 per cent). While this means that some jobs and even industries may vanish, others will emerge to support the new technology.

Driverless vehicles

The development of driverless vehicles has the potential to revolutionise many industries. While the demand for drivers of all types may fall significantly, some employees may find they can spend less time in a central office as their travel time becomes an extension of office time because they can work in the car. Widespread adoption of this technology will bring about changes in the ways mechanics, delivery companies and road construction businesses operate. As with any change, those who are proactive (take immediate action) and flexible in responding to change may find exciting new opportunities, while others may suffer greatly as previously secure jobs become threatened.

Rio Tinto is the largest owner and operator of autonomous trucks in the world. Since the first deployment in 2012, the company now has three iron ore operations that use fully remote-controlled trucks to move the ore around. The trucks are controlled from their operations centre in Perth, 1500 kilometres away from the mine sites. Moving to driverless technology has had substantial benefits for the company. Productivity has risen as the trucks can be run all day every day, because there is no driver who needs a break. In addition, many of the health and safety risks associated



16.5.1 A driverless truck at an iron ore mine in the Pilbara, Western Australia

with driving mining trucks have been greatly reduced. For example, the possibility that tired drivers may make costly mistakes is now lower, and more workers can be based in urban areas with their families rather than working on a fly-in, fly-out basis.

Projects of this nature lead to substantial changes in the workforce. While there is now less demand for truck drivers at these mines, a number of new jobs have been created, including highly skilled technicians and programmers who run and maintain the system. This is part of a broad trend across the economy as many traditional manual jobs are being automated, creating a need for people with very different skill sets.

Artificial intelligence and adaptive learning systems

Artificial intelligence (AI) is the capacity of technology to learn when interacted with. An example of this is when people making online purchases find that a business they have previously bought from may make 'suggested purchases' and offers. These suggestions and offers are based on what the system has learnt from previous purchases made by the customer. Adaptive learning systems can read and assess consumer behaviour and likely choices. Amazon, Dymocks and many other businesses use adaptive learning systems to increase customer sales and to personalise the customer experience. AI and adaptive learning systems affect how marketing is done. It means that the systems do the market research and staff then need to understand what the consumer data tells the business. In this way, these technologies will disrupt current practices and change the shape of marketing and sales work.

Changes to work environments

One recent development made possible by technological change is the growth of business incubators. These are physical spaces that provide shared office facilities for multiple new businesses. These businesses have access to a range of services and business advice, all with the aim of helping the businesses grow and develop. For example, Hub Southern Cross, in Melbourne, offers facilities from simple desk space to meeting rooms, a gym, a cafe, high-speed internet, printing facilities, mentoring and opportunities for entrepreneurs to collaborate (work together).



16.5.2 Spacely, a recently launched website that lists commercial property for rent, makes it easier for businesses to find short-term serviced offices and shared work space such as this creative studio environment.

Collaborative spaces

It seems highly likely that future work environments will make increasing use of collaborative spaces, also referred to as 'co-working spaces'. Even well-established firms may increasingly share office space and services to reduce costs and encourage employees to share ideas. As is already occurring in some businesses, such as the Macquarie and Commonwealth banks, fewer employees will have their own desk. Employees may perhaps have a secure storage locker for their personal items, but move to different work spaces, depending on the task at hand and the people or equipment needed to do that job.

Did you know?

Not all future work spaces will feature the ultra-ergonomic, sleek furniture often seen in science-fiction movies. Many offices are starting to turn rooftops and other currently 'wasted' spaces into gardens where employees can relax. In the future, more offices are likely to embrace colour, comfort, natural light and shared spaces to create a stronger sense of community among employees and to encourage creativity.

Changing attitudes to work

Work–life balance refers to the relationship between the amount of time and effort spent on work and the amount spent on other aspects of life, such as family and leisure. Getting the mix right between work and personal time is important to promote health and wellbeing. The relationship between 'work' and 'life' may shift as increasing numbers of employers put strategies in place to promote the wellbeing of their employees. This may include initiatives such as a greater number of firms providing on-site childcare facilities, or the implementation of policies to actively encourage workers to take their annual leave. The boundary between education and work is also likely to blur in the future, as continuous learning becomes a central element of many careers. While wages and salaries will always be important, workers may move from one job or career to another more frequently, or they may freelance their services and skills as they seek a broader sense of job satisfaction, career development and independence.



16.5.3 In the future, ways of working will be very different from now. One change might be that many people will work from home and collaborate via technology.

Activities

Remembering and understanding

1. Define the term 'automation'.
2. Cite the percentages of jobs at high risk of automation in the next 15 years.
3. Rank these jobs from low to high in terms of their risk of automation: doctor, telemarketer, teacher, checkout operator.
4. Suggest two benefits of Rio Tinto's use of remote-controlled trucks.
5. Outline how adaptive learning systems can make suggestions to consumers who buy online.
6. Write a paragraph about how technological change can affect the workforce.

Applying and analysing

7. Conduct some research into the new types of work environments. Describe how physical spaces are being redesigned to make businesses more efficient and productive. Present your findings in an annotated bird's-eye-view map on a poster to display in your classroom.

Evaluating and creating

8. Write an email designed to persuade an employer or an employee of the benefits that can be achieved by obtaining a better work–life balance.
9. Predict two possible outcomes for future workers in the areas of:
   - **a** changing attitudes to work–life balance
   - **b** the decline of some industries due to automation.
10. Occupation presentation:
    - **a** Brainstorm types of work you might like to do when you finish your schooling.
    - **b** Research one occupation.
    - **c** Identify the following:
      - what type of work you would carry out
      - what your responsibilities would be
      - what main skills or knowledge you would need
      - the typical hours involved
      - how much you might be paid (on average)
      - the benefits and disadvantages of the occupation.
    - **d** Write a 2-minute talk to present to your class on your chosen profession.
    - **e** After completing your research and listening to the presentations of your classmates, you may discover that another profession sounds more appealing or more suitable for you. Make a note of those that interest you.
    - **f** Write a reflection to evaluate which of the presented professions you are most suited to, matching your skills, talents, characteristics and motivations to those required in the occupation.

LS 16C

Glossary

A

ab urbe condita Latin for 'from the [time of the] founding of the city [of Rome]'

abrasion the wearing down or wearing away of rock by friction (rubbing) against other hard surfaces or materials

accession the occasion on which someone takes a position of authority, such as a king or a sultan

accumulation zone an area where snow and ice accumulate (collect) at a faster rate than they melt

accuse to claim that someone has done something wrong

AD/CE *anno Domini* (after the birth of Christ)/Common Era

adversarial system a legal system where two opposing sides present their case before a jury or judge

alluvial fan a low, cone-shaped deposit of sand and rock formed when a stream deposits its load on a low-lying plain; this usually happens as a result of a sudden change of slope

alternate attendance a system that forced the daimyo (lord), their armies and families to live in Edo with the shogun every second year

ancient history the period from when humans began to produce written records

anda a sworn blood brother

Angkor the capital of the Khmer Empire; the name comes from the Sanskrit word *nagara*, meaning 'holy city'

Angkor Wat the temple built by Khmer king Suryavarman I dedicated to the Hindu god Vishnu

apsaras in Hindu mythology, divine or celestial nymph dancers of perfect beauty

aquifer a layer of permeable rock (meaning that it allows liquid to pass through) that is capable of storing significant quantities of water

archaeologists professional workers who recover and analyse material remains such as artefacts

archipelago a large group of islands

arêtes sharp-sided ridges separating two cirques (valleys)

aspect the direction a slope faces

atoll a flat, often coral island with a lagoon inside the circling land

attrition the wearing away of material due to the friction caused by particles rubbing against each other

B

backwash the return flow of water down a beach after a wave has broken

bacteria tiny microbes that repeatedly multiply and spread; some bacteria can cause disease

bakufu the shogun's military government

baray a huge rectangular water reservoir

barter a system of trade where goods and services of equal value are swapped or exchanged without the use of money

bas-relief a style of sculpture in which the carved figures stick out slightly from their background

bastion a projecting part of a fort that allows for defensive fire in several directions

BC/BCE before the birth of Christ/before the Common Era

bed load material transported along the bed of a river

berm a small wall of earth or sand at the back of a swash zone (where the waves crash onto the beach)

berserkers the name given to brave Viking warriors who fought in an uncontrollable, frenzied (crazed-like) state

bias unfairly favouring one opinion or point of view

bicameral having two Houses of Parliament—the House of Representatives and the Senate

Bill a proposal for a new law

Black Death a devastating plague (disease) that killed millions of people in Europe between 1348 and 1353

blowouts gaps (or breaks) in dune systems, formed by the inland movement of sand; often caused by the destruction of dune vegetation

bodhisattva a person of wisdom; one who is close to achieving enlightenment but delays this in order to help others

bolson an inland desert basin surrounded by mountains

BP before the present

braided channels river channels (pathways) featuring a network of small channels separated by small and often temporary islands of sediment

breach to break through the wall or defence of the opponent

bubo a plague sore; typically a swelling that appeared under the armpits, on the neck or near the groin

buke shohatto a strict code of regulations aimed at weakening the daimyo (lords) (introduced by Tokugawa Ieyasu)

burden of proof the responsibility of proving that something is true in a court of law

bureaucracy the system of appointed state officials who provided administrative support to the sultan

bushido 'way of the warrior'; the code that all samurai lived by

butte a flat-topped landform feature that is taller than it is wide

C

Cabinet a group of senior ministers who, with the prime minister, make government policy

caldera crater a volcanic landform feature formed when a violent eruption blasts away the top of an existing volcanic cone or shield

camicia a Renaissance shirt

casual loading being paid more per hour than a full-time employee to compensate for the uncertainty of future work shifts and a lack of entitlements

casual work work that has irregular hours and is not guaranteed for the worker, with no entitlements such as paid sick leave or annual leave

catchments areas drained by rivers and their tributaries; an alternative term for 'river basin' or 'drainage basin'

chakravartin a Khmer title meaning 'supreme king'

Cham inhabitants of Champa, a coastal region of modern Vietnam, and main enemies of the Khmers

chemise an undergarment that women of the Renaissance wore under their dress

chinampas land reclaimed for farming by anchoring cages filled with rocks and dirt to the lake floor and then planting trees; also called 'floating gardens'

chivalry a set of behaviours that guided the action of knights, including bravery, honour and courtesy

Christendom refers to the countries in Europe where Christianity was the main religion

chronology the order (sequence) of events

cirque a small valley that is shaped like an amphitheatre (stadium)

citizen a person who legally belongs to a country, and has the rights and protection of that country

citizenship the position or status of being a citizen of a country

city-state a region that is ruled by a major city

civics the study of the rights, responsibilities and duties of citizens, and how the government works

civil law laws that relate to personal matters

civilisation when large groups of people live together in complex and well-developed ways

clergy men and women who take vows to devote their lives to God and religious duties

clinometer an instrument for measuring the angles of slopes

colonisation to take over an area of land and settle

colony a country or area under the political control of another country, and occupied by settlers from that country

combustion the process of burning; involves the production of heat and light

common law laws made in court, based on decisions by judges in court cases (also known as case law)

Commonwealth / Commonwealth of Australia the official title of the Australian nation or its government, adopted at Federation in 1901; 'the Commonwealth' also refers to the organisation of countries formerly under political control of the UK

competition rivalry among sellers to sell their goods and services to increase their profits and share of the market

conquistadors Spanish for 'conqueror'; refers to soldiers from sixteenth-century Spain who helped take control of the Americas

conscription forced military service

conservation the development and application of management practices to conserve, protect and (where possible) restore landscapes

constitution a set of principles according to which a country agrees to be governed

constitutional monarchy a government headed by a monarch (king or queen) with powers limited by a constitution

consumers people or groups that are the final users of goods or services

contiguous sharing a common border

contour interval the difference in height between two contour lines on a map

contour lines lines on a map that join places of equal height above sea level

contract work where a person is employed to complete a specific task without having any guarantee of work after completing that task

Copernican theory a theory proposed by Polish astronomer Copernicus in 1543 that the sun was at the centre of the universe

corrasion the process of surging water bombarding a cliff with rock fragments and dragging other fragments backwards and forwards over rock surfaces, wearing them away; also called abrasion

corroborating verifying information by searching a range of sources

corselet a close-fitting garment worn under clothing and tightened to give women more curves

corvée a compulsory period of work for peasants

criminal law laws that deal with crimes and their punishments

crust the thin outer layer of the Earth (the lithosphere)

customary law rules and practices that have developed over time to guide people on how to live and behave

D

daimyo feudal lords who controlled major regions during the rule of the shogun

Danelaw the area of England ruled by the 'Danes' (Vikings)

deciphered decoded or translated

defamation the act of damaging someone's good reputation

defendant a person sued or accused in a court of law

deflation the process whereby material is removed from a surface by wind

deltas extensive deposits of alluvial material (sediment) at the mouth of a river

democracy a form of government in which people choose leaders by voting, and in which everyone is treated equally and has equal rights

deposition the accumulation or build-up of sediment by the action of erosional agents (water and wind)

depositional coasts coastlines dominated by landforms made up of layers of eroded materials

depression in economics, an extreme form of recession, when there is a downturn in economic activity for a very long period of time

desert a very dry environment in which evaporation is greater than precipitation or precipitation is less than 250 millimetres a year

desertification the process by which productive land in arid areas is changed into desert

devaraja a Sanskrit word meaning 'the god who is king'; the term refers to the cult of the god kings established by Khmer king Jayavarman II whereby kings were believed to be gods on Earth

developing world the poor and middle-income countries of the world

discharge the amount of water that flows from a river catchment and into another river system, a lake or the sea

distribution patterns the spatial arrangement of the population or number of objects per unit of area

dormant volcano a volcano that is said to be 'sleeping', as it has not erupted for a period of time but may still erupt

doublet a coat worn by men in the Renaissance

E

ecology the study of the environment and how plants, animals and humans live together and affect each other

economic growth an increase in the capacity of a country's economy to produce goods and services per person over a period of time (e.g. a year)

economic problem of scarcity the basic economic problem of having unlimited human wants in a world that has limited resources

El Dorado a mythical city made of gold, believed by the Spanish to be somewhere in the Americas

elevation the height of a point or place above sea level

employment agreement a written contract that sets out the terms and conditions of a work agreement, including pay rates, leave entitlements and how to legally end the contract

encomienda a system whereby Spanish colonists in the Americas forced indigenous people to work for them and took the natural resources of the area

endemic unique to a particular geographical location

enlightenment in Buddhism, a state of perfect knowledge

entrepreneurship a willingness to set up new businesses by investing one's own money, time and energy, with the aim of making a profit in return

environment our total surroundings, such as the living and non-living features of the Earth's surface and atmosphere; this includes features that are altered or created by people

epicentre a point on the Earth's surface that is directly above the centre (focus) of an earthquake

epidemic a rapid outbreak of a disease, infecting a much higher number of people than usual

erg a desert surface covered with sand dunes

erosion the wearing down, transportation and deposition (removal) of material by water, wind and ice

erosional coasts coastlines dominated by landforms created by erosion (wearing away)

escarpment a long, steep slope that determines the edge of a plateau or separates areas of land at different heights

etymologist a person who studies the history of words and their origins, and how they have changed over time

evaluate to judge the accuracy or reliability of a source

evidence primary and secondary sources

extinct volcanoes volcanoes that have not erupted for a long period and will not erupt again

F

factors of production the four types of inputs used to produce a good or service—land, labour, capital and entrepreneurship

fault the fracturing or breaking of rock along lines of physical weakness

Federation when Australia's independent colonies came together to form a single nation called the Commonwealth of Australia in 1901

feudal system a system of landownership in which a ruler claims ownership of all lands but rewards loyal nobles with control of a domain

feudalism a social system in medieval Europe, based on a number of legal and military customs

firn a compacted layer of new snow that survives the summer melt

fjords long, narrow, flooded valleys with steep sides, carved by glaciation

flagellants people from an extremist religious group in the Christian Church who whipped themselves as punishment for their sins

flood plain a nearly flat plain along the course of a river that is subject to flooding

focus a point under the Earth's surface at which a sudden movement in the Earth's crust occurs; the origin of an earthquake

fold the buckling of rock due to pressure

foredune the sand dune closest to the beach

fratricide the deliberate or intentional killing of one's brother or sister

freemen people who are not slaves

Freyr the Viking god of fertility and plenty

full-time work ongoing employment of about 38 hours each week

futhark a runic 'alphabet', which was the Vikings' system of writing; the individual marks or 'letters' were called runes

G

genetics a method of tracing ancestors by scientific examination of bone, blood and genes

ger a Mongol tent made of felt stretched over a circular wooden frame; still used in Mongolia

glaciers slow-moving rivers of compacted snow and ice

global economy a world economy in which there are few restrictions on the free movement of goods, services and labour across borders

gonfaloniere the head of the *signoria*, chosen every 2 months

goods things that are bought and sold

Gothic a style of medieval architecture that features tall pillars, high curved ceilings and pointed arches

government the elected group of people who control and make decisions for a country or state

governor-general Australia's head of state appointed by the Queen on the advice of the prime minister, with powers set out in the Constitution

gradient a measure of the steepness of a slope

grand vizier the most senior and most powerful Ottoman official, who made sure the sultan's orders were carried out

Great Exchange the transport of goods across the Atlantic between Europe, Africa and the Americas

greenfield site an area of land that has not been developed

gross domestic product (GDP) the monetary value of a country's goods and services produced per year

ground moraine rock debris deposited across a valley floor as a glacier retreats

ground-level photographs photographs taken from the ground

groundwater water found beneath the Earth's surface in pores or tiny spaces in the earth or rock

groynes walls of rocks or timber built to trap sand on a beach

guild an organisation of craftsmen and merchants that set standards of work and protected its members

H

habitats areas inhabited by a particular species of animal or plant

haciendas large farms set up during the sixteenth century by the Spanish in the Americas

haka a Maori dance accompanied by a chant

hamada a desert landscape dominated by exposed bedrock

hanging valleys valleys formed at the point where a smaller (tributary) glacier once joined a larger, deeper glacier

harem the part of the palace where the wives, concubines (mistresses), female relatives and children of the sultan lived

heresy a belief that contradicts a religious belief

historians professional workers who research and write about the past

horns the pyramid-shaped peaks of a mountain formed by three or more cirques (valleys); also pyramidal peaks

hot spot a location where hot, molten magma from deep within the Earth rises up through the crust to reach the surface

House of Representatives the elected Lower House of the Parliament of Australia

hukou system a Chinese household registration system that entitles the holder to a range of services such as health care and education; used to regulate the movement of people in China

humanism a concept that people should focus on the best values and behaviour of humankind rather than rely on God for guidance

I

iconic representing an idea, belief or culture—like a logo, symbol or insignia

income money or other benefits an employee receives in exchange for working

indigenous people(s) people who lived in a place for a very long time before other people came to live there

infiltration the movement of water from the land surface into the soil

infrastructure physical structures such as buildings, roads, water pipelines, sewers, electricity distribution systems, railways and airports

inquisitorial system a legal system where the judge runs the trial by asking questions directly of the opposing sides

inselberg a large erosion-resistant rock feature surrounded by an eroded plain

internal migration the movement of people within a country

international migration the movement of people between countries on a permanent or semi-permanent basis

interpretations the views of people after the period of study (often found in secondary sources)

investments items that are expected to earn an income for the owner in the future

involuntary migration the forced movement of people between countries on a permanent or semi-permanent basis due to war, civil unrest, drought and famine

J

jarl a rich Viking noble or landowner

jito land stewards who made sure everyone using the land paid their rent

jizya a 10 per cent tax that all non-Muslims paid

judiciary the branch of government responsible for interpreting laws and deciding how they are applied

justice administration of the law in maintaining equality and fairness

justify to support your argument or conclusion

K

kami 'spirits' in the Shinto religion said to inhabit (live in) all natural features

karl a Viking freeman who worked for the rich nobles and landowners

kava a plant used to make a drink that has a sedating (relaxing) effect

khan a chief of a Mongol clan

khnyum the Khmer word for 'slaves'

kinship system in Aboriginal culture, a system of laws governing social interactions and family relationships

knarr a Viking cargo ship

knight a noble who provided military service to a lord or a king

külliye a complex or group of buildings with a mosque at its centre

L

lahars mudflows formed when volcanic material mixes with water

land degradation the decrease in the productive capacity of land due to the activities of people

landforms natural features of the Earth's surface, such as mountains, valleys, lowlands and volcanoes

landscape the overall appearance of an area resulting from the interaction of landforms, soils, vegetation and changeable elements (such as weather) with human elements (such as transport networks and settlements)

Lapita a style of early pottery carried by voyagers into Polynesia

lapse rate the rate at which air temperature declines with elevation (increasing height or level), because it expands

lateen a type of sail, inverted (with the point to the bottom) and shaped like a crab's claw

lateral moraine the rock that accumulates along the edge of a glacier

lava molten rock at the Earth's surface

law of demand an economic law which states that the quantity demanded for a good or service increases with a fall in price, and decreases with a rise in price

law of supply an economic law which states that the quantity supplied for a good or service increases with a rise in price, and decreases with a fall in price

laws rules within a country or community that deal with people's behaviour and activities

legend the part of a map that explains the meaning of the symbols used in the map; sometimes referred to as the key

lidar a type of laser technology that uses infra-red light to detect distant objects and determine their position

location the position of a feature or place on the Earth's surface

longship a long, narrow ship used by the Vikings for war and exploration

longshore drift the process of sand moving along a beach shoreline as a result of waves approaching the shore at an angle; also called littoral drift

M

maar a broad, roughly circular, flat-floored volcanic crater with steep inner walls and a low surrounding rim made up of rock fragments that were blown out of the crater during eruptions

magma molten rock below the Earth's surface

Magna Carta a charter or official document by which King John of England gave some political and legal rights to the English people in June 1215

magnitude the energy released by an earthquake

mannerism a style of sculpture that featured distorted human anatomy

mantle the layer between the Earth's core and its crust

marae a communal and sacred meeting ground in the Polynesian societies of New Zealand and Tahiti (referred to as *malae* in Samoa)

maritime connected with the sea

market economy an economic system that coordinates the production and distribution of goods and services using markets

market forces economic factors, such as changes in income or supply costs, that affect the price and availability of goods and services

market price the current price that goods or services can be bought or sold for

market the organised exchange of goods and services by buyers and sellers

meandering bending or curving in the course of a river

medial moraine the rock debris (rubble or broken pieces) found in the centre of a valley, resulting from the merging of two lateral moraines when two glaciers merge

mediate to negotiate in a dispute so that an agreement or reconciliation can be reached

Medici family a significant banking family who ruled Florence for 300 years until 1737

megacity a city with more than 10 million people

Melanesia a region of Oceania extending from New Guinea in the south-western Pacific Ocean to the Arafura Sea and eastwards to Fiji

melting zone an area where snow and ice melt at a rate faster than they accumulate; the end of a glacier

member of parliament (MP) a person elected by the people, to represent their area in government

merit goods goods or services that are of merit (do good), which the government provides free to all members of society

mesa a flat-topped landform feature that is wider than it is high

Mesoamerica literally 'middle America', a geographical and cultural area that included present-day Mexico and part of Central America (Guatemala, Honduras, El Salvador and Belize)

millet a system for organising non-Muslim groups into faith-based communities; *millets* were allowed to have separate legal courts to hear cases of personal law, and ran their own schools and welfare systems

mo'ai giant stone statues on Easter Island with human features

moa a large, flightless New Zealand bird that was hunted to extinction

mobilise to prepare and organise soldiers for active service

moko the Maori word for 'tattoo'

Moment Magnitude scale a scale used by seismologists (people who study earthquakes) to measure the energy released by an earthquake

monarch a king, queen or emperor who generally holds power by birth right

monastery a building or complex of buildings where monks live

Mongols a small nomadic tribe inhabiting the Mongolian Plateau

monopoly the exclusive control by one group or company of the market for a good or service

moraine the rock material deposited by a glacier

N

naga a multiheaded cobra; a mythical protector of Angkor

national identity qualities that develop over time and represent a country's society and people; common beliefs and ideas about identity that people feel they share with others in their society

natural justice the idea that all people have basic legal rights, such as being given a fair hearing in court

neak ta spirits who live in the trees and hills; the Khmer people believed them to be guardians of the Earth

negligence in law, a failure to take reasonable care to avoid causing injury or loss to another person

New World the Americas

nökör the voluntary attachment to another warrior

non-renewable resource something that cannot be readily replaced, such as fossil fuels (coal, petroleum, natural gas)

O

oasis a fertile or well-watered area within a desert

oblique photographs photographs taken from above the ground, with the camera pointed at an oblique (slanted) angle to the ground; often a horizon cannot be seen

ocean currents flows of water in the ocean with a different temperature or salinity from the water it is passing through

Odin the Viking god of war, poetry and wisdom

Old Norse the language of medieval Scandinavian (Viking) countries

Old World particularly Europe, but also Asia and Africa, which were known to Europeans before the discovery of the Americas

P

pandemic a widespread epidemic of infectious disease spread across a large region, often across continents

parliament the place where the government is centred; it contains the House of Representatives and the Senate

part-time work regular, ongoing employment of less than 38 hours each week

patriarch the oldest, most powerful or most respected man in a family or organisation

patron a person who supports and gives money to artists, writers or musicians

perspective a particular attitude or way of thinking; a point of view; a technique used to give depth and dimension in an artwork

perspectives (history) the views of people in the period of study (often found in primary sources)

phnom the Khmer word for 'hill' or 'mountain'

pilgrimage a journey to a religious shrine

plague an infection caused by the bacteria *Yersinia pestis*

plaintiff a person who accuses another in a court of law

plate margins the areas where the Earth's plates meet

plateau an area of mostly level high ground

plates segments of the Earth's crust that are slowly moving due to convection currents (movement generated by heat) in the mantle

playa lake a dried-up salt lake found in arid or semi-arid environments

polytheistic to believe in more than one god

population density the number of people living per square kilometre

population pyramid a graphical illustration that shows the spread of different age groups in a population; the shape forms a pyramid when the population is growing

pre-Columbian the period of time before the arrival of Christopher Columbus in the Americas

precedent an earlier case that is considered an example or guide for later cases that are similar

prehistory the time before human civilisations

preservation the protection of landscapes (and environments and habitats) from loss or damage

price mechanism an economic term referring to the system whereby the price of a good or service is determined by supply and demand for it

primary source a document or item created in the period of study

producers people and businesses who make or produce goods and services

profit the difference between the amount a business sells their product for and the amount it costs to make the product

public goods goods and services provided to all members of society either by a government or by an organisation

pumice a very light and porous (absorbent) volcanic rock

push and pull factors the factors that cause people to leave the places where they live and the factors that draw people to places

Q

qanats ancient irrigation systems of Persia

quality of life the happiness, wellbeing and satisfaction that a person experiences

quriltai an assembly of tribal leaders

R

rahui a restriction on an area that bans the harvesting of resources

rangaku 'Dutch learning'; ideas about Western science and medicine that came to Japan through the few Dutch permitted to live in Japan

rapid a section of a river with a relatively steep gradient (slope) that causes the velocity and turbulence of water to increase

realism the painting (and also sculpting) of subjects realistically or truthfully

recession slow or no economic growth for a period of time (usually up to 6 months)

reclaimed land land that has been gained from the sea or wetlands, such as waterlogged land that has been drained of water; or land that has been restored for human use, such as a former quarry that has been filled in

referendum a vote of the Australian electors on a proposed change to the Constitution

reg a stone-covered desert

regent a person who acts on behalf of a ruler because they are either too young, or physically or mentally unable to rule

regional centre a rural city that supports smaller surrounding towns with services

reliability a consideration of how trustworthy or accurate the sources you are investigating are

relief in geography, a term describing the shape of the land, including height and steepness

Renaissance from the French word for 'rebirth', a revival of interest in knowledge and learning, based on classical Greek and Roman philosophy and scientific explorations

renewable resource something that can be repeatedly used or replaced, such as solar energy or plantation wood

retail market places where goods and services are sold directly to consumers

riprap barrier a barrier built from large rocks or boulders to protect the shoreline

rock cycle the recycling of material in the Earth's crust

ronin masterless and unemployed samurai

rule of law basic principles or ideas that try to protect members of society and make sure justice is done

S

sagas stories about Viking voyages, feuds between Viking families and Viking gods and heroes

sakoku a policy of isolation from foreigners (no political or economic relationships with other countries) during the time of shogun rule

salary a fixed amount of money received by the worker, usually based on a yearly rate, regardless of the number of hours they actually work

samurai the noble warrior class

sand bars areas of sand deposited in shallow water

sand dune a hill of sand shaped by the wind

Sanskrit an Indian language used in Khmer inscriptions (inscriptions are often written records of great achievements or actions by important historical figures that have been carved onto stone monuments)

Sapa Inca Inca ruler

scale the relationship between distance on a map and actual distance on the Earth's surface

Scandinavia a region of northern Europe that consists of the modern countries Denmark, Norway and Sweden

sea change a relocation from the city to the coast

seamounts mountains or volcanoes rising from the sea floor

secondary source a document or item created well after the period of study

sediment rock-based material that has been broken down by weathering and erosion, and then transported by the action of wind, water or ice, and the force of gravity

Senate the Upper House of the Parliament of Australia

services systems supplying a public need, such as transport

shamanist a follower of shamanism, the traditional religion of the Mongols

sherd a fragment of a pot, found in an archaeological excavation

Shinto Japan's oldest religion

shoen rural districts

shogun a military ruler of Japan with full authority

shogunate a period of rule by shoguns

shugo protectors who were responsible for ensuring law and order of an area

siege a military operation whereby enemy forces cut off essential supplies to force surrender

signoria a council that ran the Florentine government

Silk Road the major land and sea trade route connecting eastern Asia and Europe

skald a bard or poet

source someone or something that provides information and evidence

spot heights the exact altitudes or heights above sea level of points on the Earth's surface

stakeholder a person or group that is involved in an issue

standard of living a measure of the economic wellbeing of people; the level of necessities, wealth and material comfort a person can achieve

statutory law laws that are made and passed in parliament

subjugate to bring under control, especially by force

subsistence farming when farmers grow only enough food to live on, but not enough to sell for profit

suburbanisation the process in which people and businesses move out from the central areas of cities and into the suburbs

succulent a plant capable of storing water in its tissues

suspended load fine particles of silt and clay carried in river water

swash the rush of water up a beach after a wave breaks

T

tapa cloth made from bark that has been softened through a process of soaking and beating

tapu a Polynesian concept meaning that something was sacred or forbidden ('taboo' in English)

tarn a lake at the base of a cirque (valley)

taxes money that you have to pay to the government, which it uses to provide public goods and services

terminal moraines the rock material exposed as a glacier melts and retreats

thematic maps maps designed to illustrate a particular theme (e.g. annual rainfall or the location of oil resources)

thing the Viking assembly that governed the community

Thor the Viking god of thunder, lightning and strength; his symbol was a hammer

thrall a Viking slave

tides the rise and fall of sea levels caused by the gravitational forces exerted by the moon and the sun, and the rotation of the Earth

tolerance a willingness to accept another person's beliefs or way of life even if you don't agree with them

topography the shape of the land

transferable skills skills such as communication, time management and leadership that can be used across a range of different jobs

transpiration the loss of water vapour from the leaves of plants

tree change a relocation from the city to a rural or regional area

treeline the elevation at which it is too cold for trees to grow; the edge of the habitat in which trees are able to grow

tribute a payment to a ruling force as a sign of submission or loyalty

tughra the calligraphic (artistically handwritten) emblem or signature of an Ottoman sultan

tumen a division of the Mongol army (10 000 men)

turbidity muddiness; high turbidity occurs when there are high levels of suspended sediment in water

U

U-shaped valleys valleys with a flat floor and steep sides, formed by the abrasive power of material embedded in a glacier

urban consolidation increased population densities in existing urban areas

urban decay the deterioration of the built environment; urban infrastructure falls into a state of disrepair and buildings are left empty for long periods of time

urban renewal the process in which an unused area of urban land such as an industrial site is restored, redeveloped and improved

urban sprawl the outward spread of a city and its suburbs as they grow

urbanisation the process by which an increasing proportion of a population lives in towns and cities

urbanised society a society in which the majority of the population live in towns and cities

V

V-shaped valleys valleys eroded by rivers

Valhalla in Viking mythology, Valhalla was an enormous hall located in Asgard and ruled over by Odin; Vikings believed the souls of brave Viking warriors went to Valhalla

vertical photographs photographs taken from above the ground, with the camera lens pointed directly down on the area being photographed

Vinland the Viking name for North America

volcanic cone a cone-shaped volcanic landform made up of layers of lava and volcanic ash

volcanism the processes associated with volcanoes and volcanic activity

volcanologists people who study volcanoes

volunteer work unpaid work or tasks for others

W

wadi a watercourse or gully that is dry except during periods of rainfall

wage income based on the number of hours worked by the employee

watershed a high area of land that divides the flow of water; the boundary between catchments

weathering the physical or chemical breakdown of rocks into smaller pieces that do not undergo transportation from their original position

work–life balance the relationship between the amount of time and effort spent on work and the amount spent on other aspects of life, such as family and leisure

X

xerophyte a drought-resistant plant adapted to the dry desert environment

Y

Yasa a set of written rules about ancestral traditions, customs and laws, introduced by Genghis Khan

Z

zud bad weather during the Mongolian winter

Attributions

Prelims **Pearson Australia:** Jennifer Johnston (Port Mebourne). **Shutterstock:** lynea (man); MoreVector (compass); Nirandorn Tongaroon (gargoyle).

Chapter 1 **123RF:** ymgerman, 1.6.1 (2009). **Alamy Stock Photo:** John Baran, 1.2.7; Mike Goldwater, 1.5.1; Images & Stories, 1.9.2; Niday Picture Library, 1.3.2; North Wind Picture Archives, 1.2.5; RGR Collection, 1.8.1; Stacy Walsh Rosenstock, 1.7.1; World History Archive, 1.7.3. **Bridgeman Images:** Fitzwilliam Museum, University of Cambridge, UK/By permission of the Master and Fellows, Trinity College/Cambridge, 1.2.3; Heini Schneebeli, 1.2.2. **Getty Images:** William West/AFP, 1.3.1. **Houghton Library:** [Typ 625.99.800], Harvard University, 1.5.3 (Aztec messenger). **Library of Congress:** 1.5.3 (spanish conquest). **National Library of Australia:** nla.pic-an23378504, 1.8.2. **Adrian Pingstone:** 1.9.1. **Science Photo Library:** Alexis Rosenfield, 1.0.1. **Shutterstock:** CHI-Photo/REX, 1.7.2; Gianni Dagli Orti/REX, 1.2.6; Kamira, 1.1.1. **State Library of Victoria:** [mp001258], 1.6.1 (1867).

Chapter 2 **AAP:** Paramount Pictures-Marvel Studios, Zade Rosenthal, 2.8.3. **Alamy Stock Photo:** Artokoloro/Artokoloro Quint Lox Limited, 2.2.4; Patrick Dieudonne/robertharding, 2.2.1; Everett Collection, 2.1.2; INTERFOTO/Fine Arts, 2.4.2; Danny Lawson, 2.5.7; lovethephoto, timeline (monastery); David Noyes/DanitaDelimont, 2.7.7; Graham Prentice, timeline (statue); sjbooks, 2.8.4; Colin Underhill, 2.8.2; World History Archive, 2.3.1. **Bridgeman Images:** Leif Eriksson Discovers America (oil on canvas), Dahl, Hans(1849–1937)/Private Collection/Photo © O. Vaering, 2.4.5. **DK Images:** Andy Crawford, 2.2.6; Nick Hewetson, timeline (house); 2.7.7; Liz McAulay, 2.2.5. **Fotolia:** demerzel21, 2.7.3. **Getty Images:** VisitBritain/John Coutts, 2.0.1; DEA/G. DAGLI ORTI/De Agostini Editorial, 2.4.3; French School, 2.6.2; DEA/M. SEEMULLER/De Agostini Editorial, timeline (tapestry); The Print Collector/Hulton Archive, 2.3.3; Alison Wright/Corbis Documentary, 2.3.4. **Mainstream Data Ltd/Newscom:** CM Dixon Heritage Images, 2.5.8. **J. Stevenson:** Simeon of Durham, quoted in *A history of the kings of England*, translated from the Latin by J. Stevenson in 1855, 2.5.2. **Penguin Group UK:** Snorri Sturluson (1179-1241), quoted in Robert Ferguson, The Hammer and the Cross: A New History of Vikings, Penguin 2010, 2.2.7. **Shutterstock:** Dave Head, 2.5.3; Steffen Hoejager, 2.1.6; imageBROKER/REX, 2.4.6; Photofusion, 2.5.9; Werner Forman Archive/REX, 2.2.8. **William Sessions Ltd:** Alcuin of York, quoted in *Alcuin of York: His Life and Letters*, by Steven Allott, William Sessions Ltd, York 1974, 2.5.4.

Chapter 3 **Age Fotostock:** BL/Robana Picture Library, 3.2.2. **Alamy Stock Photo:** Tibor Bognar, 3.10.2; FineArt, timeline (Yoshitsune Falls); Granger Historical Picture Archive, timeline (Portuguese merchants); Heritage Image Partnership Ltd, 3.4.4; Luca Tettoni/robertharding, 3.4.1. **DK Images:** Gary Ombler, 3.4.5. **Dreamstime:** Kuan Leong Yong, 3.5.2. **Getty Images:** Stefano Bianchetti, 3.6.2; Buyenlarge, 3.4.8; De Agostini, 3.3.1; Nicholas DeVore, 3.5.1; Fratelli Alinari IDEA S.p.A., timeline (shogun bodyguards); pasmal/a.collectionRF, 3.8.3; Print Collector/Hulton Archive, 3.0.1; Science & Society Picture Library, 3.7.1; John Stevenson/Corbis Historical, 3.2.1; Werner Forman Archive, 3.3.3; VCG Wilson/Corbis, 3.6.3; Artem Vorobiev, 3.1.2. **Shutterstock:** cowardlion, 3.8.1; Cozyta, 3.10.1; Granger/REX, 3.4.6, 3.9.2; The Art Archive/REX, timeline (American navy), 3.7.2; Universal History Archive/Universal Images Group/REX, 3.9.1; wada, 3.8.2.

Chapter 4 **Alamy Stock Photo:** Dennis Cox, 4.4.2; DIT Archive, timeline (Michelangelo); Fine Art Images/Heritage Image Partnership Ltd, 4.8.5; Friedrichsmeier, 4.7.2; GL Archive, 4.2.4, 4.5.2; Dennis Hallinan, 4.8.3; Iconotec, 4.3.1; Interfoto, 4.4.1, 4.7.1; Georgios Kollidas, 4.5.1; Painting, 4.8.2; World History Archive, timeline (St Peter's Basilica), 4.3.2, 4.6.1. **Bridgeman Images:** Leonardo looks forward (colour litho), English School,(20th century)/Private Collection/© Look and Learn, 4.0.1. **Fotolia:** Veronika Galkina, 4.3.4; Gary, 4.1.2; Georgios Kollidas, 4.8.1; susico, 4.3.3. **Getty Images:** Fratelli Alinari/Alinari Archives, timeline (Carta della Catena); Bridgeman Art Library, 4.8.8; DEA PICTURE LIBRARY/De Agostini Editorial, 4.1.4; Mondadori Portfolio, 4.2.1, 4.2.3; SuperStock, timeline (Lorenzo de' Medici); Time & Life Pictures, 4.8.7. **Shutterstock:** Granger/REX, 4.8.4.

Chapter 5 **Flickr:** Sam Bebe. Licensed under Creative Commons Attribution 2.0 Generic (CC BY 2.0) license., 5.1.3. **Getty Images:** Michael Hitoshi, 5.6.3. **Marita Tripp:** 5.1.1. **Shutterstock:** AndreAnita, 5.6.1; Bernd Leitner Fotodesign, 5.6.5; Tartalja, 5.6.2; Xin Qiu, 5.0.1.

Chapter 6 **Alamy Stock Photo:** AfriPics.com, 6.5.1; Danita Delimont, 6.3.1; John Warburton-Lee Photography, 6.10.1b; Juan Llanos, 6.12.1; Tim Moore, 6.4.2; Roman Garcia Mora/Stocktrek Images, 6.11.3; Tom Mueller/imagebroker, 6.9.3; Keith Taylor, 6.2.7; Darwin Wiggett/All Canada Photos, 6.12.4 (Wood Buffalo). **Auscape:** Wayne Lawler, 6.5.3. **Bill Bachman:** 6.8.1. **Department of Sustainability, Environment, Water, Population and Communities:** © Commonwealth of Australia 2012, 6.10.4. **Dreamstime:** Akiyoko74, 6.1.3 (industrial); Michal Baranski, 6.3.2 (igneuos); Clearviewstock, 6.5.5; Empire331, 6.3.2 (sedimentary); Howardliuphoto, 6.5.6; David Hyde, 6.9.4; Lockstock, 6.12.4 (Machu Picchu); Rafcha, 6.12.4 (Iguazú); Richard Semik, 6.9.2; Siim Sepp, 6.3.2 (metamorphic); Tracey Taylor, 6.1.3 (coastal); Lee Torrens, 6.9.7; Sergey Uryadnikov, 6.1.1 (living); **Getty Images:** Guenter Fischer, 6.5.7; Gamma-Rapho, 6.9.5; Walter Geiersperger, 6.0.1; Torleif Svensson/Corbis, 6.1.3 (savanna). **National Library of Australia:** nla.pic-an2962715-s20., 6.11.1. **Reg Mombassa:** Beachside Barbeque, charcoal and coloured pencil on paper, 22 x 31cm, 2015, 6.7.2. **Science Photo Library:** Martin Bond, 6.4.3; David Parker, 6.2.5. **Shutterstock:** 6.12.4 (Great Wall); AustralianCamera, 6.10.1a; Archana bhartia, 6.12.4 (Grand Canyon); Dariya64, 6.1.3 (agricultural); Pichugin Dmitry, 6.1.3 (mountainous); Josef Hanus, 6.1.3 (urban); IrinaK, 6.5.4; S. Ruslan Kerimov, 6.6.1; Kuelcue, 6.1.1 (changeable); Lizard, 6.1.1 (natural); Janelle Lugge, 6.8.2; Marko5, 6.9.1; Christopher Meder, 6.6.2; Doug Meek, 6.1.3 (river); Sean Pavone, 6.1.3 (karst); PHB.cz (Richard Semik), 6.1.1 (human); Armin Rose, 6.1.2; Samot, 6.7.1; skyearth, 6.9.6; WitR, 6.12.2. **UNESCO:** From List of World Heritage in Danger, 2017, UNESCO World Heritage Centre., 6.12.3.

Chapter 7 **Alamy Stock Photo:** Philip Game, 7.5.6; Oso Media, 7.4.5; Scubazoo/RGB Ventures/SuperStock, 7.4.3; David Wall, 7.3.3. **CSIRO:** Based on Global Mean Sea Level (GMSL) – 1880 to the end of 2014, CSIRO, 7.5.2. **Dreamstime:** Alexander Vershinin, 7.0.1. **Getty Images:** Auscape, 7.1.2; Barrett & MacKay/All Canada Photos, 7.2.3; Adam Burton, 7.1.1; Grant Dixon/Lonely Planet Images, 7.3.2; Daniel Munoz/Stringer, 7.5.3. **Grant Kleeman:** 7.5.7. **Shutterstock:** Ian Bracegirdle, 7.4.2; ChrisVanLennepPhoto, 7.6.2c; coronado, 7.6.2a; HWisch, 7.6.2b; Tamara Kulikova, 7.6.2d; Mike Liu, 7.4.4.

Chapter 8 **123RF:** Wacharachat Vaiyaboon, 8.5.5. **AAP:** AP/Kyodo News, 8.2.2. **Alamy Stock Photo:** Ashley Cooper/Global Warming Images, 8.10.6; J Stock/StockShot, 8.8.1; Mark Levitin, 8.4.1; David Wall, 8.8.3. **Country Fire Authority:** From 'How to prepare your property' © Country Fire Authority. Licensed under a Creative Commons Attribution 4.0 License., 8.11.1. **Department of Economic Development, Jobs, Transport and Resources:** © State of Victoria (Agriculture Victoria) 1996 - 2018. Licensed under Creative Commons Attribution 4.0 License, 8.5.4. **Dreamstime:** Juliengrondin, 8.3.1. **Flickr:** Altus Wilder, 8.9.2. **Getty Images:** VANDERLEI ALMEIDA, 8.7.2; Martin Bernetti, 8.1.3; Torsten Blackwood, 8.4.6; ChinaFotoPress, 8.6.5, 8.7.3; Nick Rains/Corbis Documentary, 8.5.2; Aizar Raldes/AFP, 8.7.1; David Ramos, 8.0.1. **NASA Images:** Courtesy of the NOAA Coastal Services Center, 8.4.8. **National Oceanic & Atmospheric Administration:** NOAA Center for Tsunami Research, 8.2.3. **Shutterstock:** Rainer Albiez, 8.3.2; Peter Gudella, 8.8.2; Christopher Meder, 8.5.3; S.R.Lee Photo Traveller, 8.3.4; ian woolcock, 8.5.6; Zheltyshev, 8.10.5.

Chapter 9 **AAP:** David Crosling, 9.9.1. **Airview Aerial Photography:** www.airviewonline.com, 9.5.3. **Alamy Stock Photo:** CulturalEyes-AusGS, 9.10.3 (dragon); EPA/epa european pressphoto agency b.v., 9.8.2; Paul Kingsley, 9.10.3 (painted man); Mamunur Rashid, 9.8.1; Andrew Watson, 9.11.3. **Australian Bureau of Statistics:** 9.3.4; Population Density June 2010, map, 9.3.1. **Chantelle Chapman:** www.chantellechapman.daportfolio.com, 9.8.6; **Department of Home Affairs:** Data from Fact sheet - Australia's Refugee and Humanitarian program, 2015–16 © Commonwealth of Australia, 9.9.3, 9.9.4; **Department of Immigration and Citizenship:** Data from 2011–12 Migration Program Report, Program year to 30 June 2012 © Commonwealth of Australia, 9.9.2. **Dreamstime:** Imagecom, 9.10.3 (drummers). **Getty Images:** Rick Friedman/Corbis, 9.8.5; Michel Porro/

AFP, 9.7.2; Penny Tweedie, 9.6.1; Ed Wray/Getty Images AsiaPac, 9.2.3. **Annette Hamilton:** A reflection on Aboriginal People in Central Australia, from A Hamilton, 'Coming and Going: Aboriginal Mobility in North-west South Australia, 1970–71' in Records of the South Australia Museum, Vol 20, pp 47–57, 9.6.3. **Population Reference Bureau:** Based on data from World Population Data Sheet, 2017, 9.1.1. **Shutterstock:** diak, 9.0.1; Joseph Kim, 9.10.3 (bagpipe band). **United Nations:** Based on data from World Urbanization Prospects, The 2011 Revision, United Nations, Department of Economic and Social Affairs, Population Division., 9.1.2.

Chapter 10 **AAP:** Lyn Durham, 10.6.3. **Adrian Smith & Gordon Gill Architecture LLP:** Rendering © Adrian Smith + Gordon Gill Architecture Design Architect's Adrian Smith and Gordon Gill, 10.1.4. **Alamy Stock Photo:** Arcaid Images, 10.6.2; Bryan Simpson, 10.3.6 (2010); David Adam, 10.1.3; Arco Images/TUNS/Arco Images GmbH, 10.4.1; RaymondAsiaPhotography, 10.7.4. **Australian Bureau of Statistics:** 10.3.1, 10.3.2, 10.5.1. **Dreamstime:** 10.7.2. **Fairfax Photo** Sales: Craig Abraham, The Age, 10.3.5; Joe Armao, 10.1.2. **Geoff Comfort Photography:** 10.6.5. **Getty Images:** Nigel Killeen/Moment, 10.0.1; Morales/age fotostock, 10.4.2; Qilai Shen/In Pictures/Corbis Historical, 10.7.3. **Hobart City Council:** © City of Hobart, 10.4.7. **National Archives of Australia:** A1, 1917/7242, 35772, 10.6.1. **National Bureau of Statistics of China:** 10.7.1. **National Capital Authority:** Images supplied courtesy of the National Capital Authority. © Commonwealth Copyright. All rights reserved., 10.6.4. **Newspix:** Elenor Tedenborg, 10.3.4. **Nic Granleese:** Design & Architect: Nest Architects, Photographer: Nic Granleese, 10.4.4. **Oz Aerial:** Daryl Jones, 10.5.2. **Pearson Australia:** Alice McBroom, 10.5.3. **State Library of Victoria:** Pictures Collection, State Library of Victoria [H91.160/256], 10.3.6 (1900s). **Sunshine Coast Regional Council:** 10.3.3. **Water Efficiency Labelling and Standards (WELS) Scheme:** Department of Agriculture and Water Resources © Commonwealth of Australia. Licensed under Creative Commons Attribution 3.0 Australia license, 10.4.6.

Chapter 11 **AAP:** Mick Tsikas, 11.2.3. **Getty Images:** Sergio Dionisio, 11.0.1. **National Library of Australia:** Australian Labour Party, New South Wales Branch, Theodore, E.G., 11.3.1. **Shutterstock:** Dave Hewison Photography, 11.4.2; Kurhan, 11.1.2; Kzenon, 11.1.1; Photoroyalty, 11.5.2; Rawpixel.com, 11.5.1; Nils Versemann, 11.4.3.

Chapter 12 **AAP:** Facebook, 12.10.5; Melbourne Metro Rail Authority, 12.3.4; National Gallery of Australia, 12.5.2; Julian Smith, 12.8.1; Tim Watters, 12.10.2. **Alamy Stock Photo:** Simon Crumpton, 12.4.4; manwithacamera.com.au, 12.3.3; Regis Martin, 12.10.3; Ray Warren Backgrounds, 12.0.1. **Department of Premier and Cabinet, State of Victoria:** Jacinta Allan, Minister for Public Transport, 'The Metro Tunnel: More Jobs, More Stations, More Trains', 16 July, 2017, p. 273; Daniel Andrews, Premier of Victoria, Speech delivered 23 Jul 2017, p. 273. **Fairfax Photo Sales:** Andrew Meares, 12.7.2; Andrew Taylor, 12.4.03. **Getty Images:** Marty Melville, 12.2.3; Michael Masters, 12.4.1; Martin Ollman, 12.2.2; Scott Olsen, 12.9.1; Darrian Traynor, 12.5.7. **Halls Creek Shire:** Bronwyn Little, 12.8.2. **High Court of Australia:** photographer Adam McGrath, 12.2.4. **Inkcinct Cartoons:** John Ditchburn, 12.6.3. **Institute for Governance & Policy Analysis:** We acknowledge the work of Mark Evans in How do Australians imagine their democracy? Australian survey of political engagement findings 2013. ANZSOG Institute for Governance, University of Canberra. pp. 6–7., 12.10.4. **FreedomWatch, Institute of Public Affairs:** 12.7.1. **Museums Victoria:** Badge - Australians No Conscription, A.E. Patrick, circa 1917 (SH 920215). Copyright Museums Victoria/CC BY. Photographer: Heath Warwick, 12.5.5. **National Archives of Australia:** Chief Electoral Office; A406, Correspondence files, annual single number series with 'E' prefix; E1967/30, 1967 Referendum - Constitution alteration - Main file [4cm], 1967–1968, 12.1.3. **National Library of Australia:** [3116836], 12.1.4. **Parliament House Art Collection:** King Edward I (1272–1307) Inspeximus issue of Magna Carta, 1297. Parliament House Art Collection, Canberra, ACT., 12.6.2. **Shutterstock:** AlexLMX, 12.1.2; Rainer Lesniewski, 12.3.5 (Victoria LGAs). **Warren Brown:** Daily Telegraph, 12.9.2.

Chapter 13 **Age Fotostock:** Robert Daly, 13.4.2. **Alamy Stock Photo:** Ian Allenden, 13.5.2; Ozimages, 13.6.1; Andrew Sole, 13.3.2; Bjorn Svensson/age fotostock, 13.1.1. **Fremantle Arts Centre Press:** Peter Stevens, quoted in Karijini Mirlimirli: Aboriginal Histories from the Pilbara, edited by Noel Olive, Fremantle Arts Centre Press, 1997, 13.6.2. **Getty Images:** Sean Davey, 13.1.4. **News Limited:** 'Things that go 'plop' in the night trigger Gold Coast duplex battle' by Kay Dibben, *The Sunday Mail*, 5 March 2016. The use of this work has been licensed by Copyright Agency except as permitted by the Copyright Act, you must not re-use this work without the permission of the copyright owner or Copyright Agency, 13.3.4. **Rule of Law Institute of Australia:** Rule of Law Pyramid, Nick Clark and Jackie Charles, www.ruleoflaw.org.au, 13.4.1. **Shutterstock:** Frenzel, 13.5.1; Gorosi, 13.0.1, ileana_bt, 13.1.2; Shuang Li, 13.2.2.

Chapter 14 **Alamy Stock Photo:** William Caram, 14.3.4; Iain Masterton, 14.2.4; Christine Osborne, 14.3.3; Dmitriy Shironosov, 14.4.1; Björn Wylezich, 14.3.2. **Department of Industry, Innovation and Science:** Data from Industry Monitor 2018, Office of the Chief Economist, 14.2.2. **Shutterstock:** fizkes, 14.1.1, 14.4.2; Vasin Lee, 14.3.5; Monkey Business Images, 14.0.1; ProDesign studio, 14.1.2.

Chapter 15 **123RF:** csakisti, 15.3.1 (ipod). **Age Fotostock:** Mark Newman/FLPA, 15.7.1. **Fotolia:** valentint, 15.1.3. **Getty Images:** Dave and Les Jacobs, 15.2.2. **Haigh's Chocolates:** Image courtesy of Haigh's Chocolates, 15.4.2. **Shutterstock:** Bloomua, 15.1.1; Andrei Kholmov, 15.3.2; Mediagram, 15.4.1; Passion Images, 15.6.1; Rajesh Pattabiraman, 15.3.1 (walkman); Denys Prykhodov, 15.5.1; ra2studio, 15.3.1 (record player); Rawpixel.com, 15.3.1 (phone); spatuletail, 15.3.5 (stamp); takoburito, 15.0.1; ymgerman, 15.3.4, 15.3.5 (Australia Post).

Chapter 16 **123RF:** Dmitry Travnikov, 16.1.1; Wavebreak Media Ltd, 16.3.1. AAP: Lloyd Jones, 16.2.1; Medianet Images/REA Group, 16.5.2. **Alamy Stock Photo:** Viacheslav Iakobchuk, 16.1.3; Tetra Images, 16.3.2. **Business Victoria:** Based on Child employment laws and requirements. DEDJTR 2018, State Government of Victoria., 16.2.4. **Fairfax Photo Sales:** Louie Douvis, 16.5.1. **Getty Images:** Auscape, 16.1.2. **Shutterstock:** bleakstar, 16.4.2; Catalin Petolea, 16.2.3; Stasique, 16.2.5; stockfour, 16.0.1; Syda Productions, 16.5.3; thodonal88, 16.4.1; Quan Zheng, 16.2.6.

Chapter H1 **Alamy Stock Photo:** Crossrail/Amer Ghazzal/Alamy Live News, H1.9.3; The Print Collector, H1.3.4; **Bridgeman Images:** The Flagellants at Doornik in 1349, copy of a miniature from the Chronicle of Aegidius Li Muisis / Private Collection, H1.8.3; Ms Fr 226 The Use of Leeches, from 'The Decameron', by Giovanni Boccaccio (1313–75) (vellum), French School, (15th century)/Bibliotheque Nationale, Paris, France/ Archives Charmet, H1.8.2; Jews burnt at the stake, from the Nuremberg Chronicle by Hartmann Schedel (1440–1514), 1493 (colour woodcut), German School, (15th century)/Bibliotheque Mazarine, Paris, France/ Archives Charmet, H1.8.4; Black Death, Venetian miniature, Middle Ages, Italy, 14th century/De Agostini Picture Library/A. Dagli Orti, H1.9.2; Blood letting, from 'Tractatus de Pestilencia' (vellum), Albik, M, (15th century)/ Private Collection/Archives Charmet, H1.2.6; 124-0633321/1 A Moor and a Christian playing the lute, miniature in a book of music from the 'Cantigas' of Alfonso X 'the Wise' (1221–84) (vellum), Spanish School, (13th century)/ Monasterio de El Escorial, El Escorial, Spain/Index, H1.3.1; MS. 6,fol.197v Execution of the Despencers, from the St Alban's Chronicle (vellum), English School, (15th century)/© Lambeth Palace Library, London, UK, H1.4.2; Marriage of Philip d'Artois and Lady Mary de Berry (engraving), English School, (19th century)/Private Collection/© Look and Learn, H1.2.1; **British Library:** H1.5.2; H1.5.3; H1.2.5; H1.9.5. **DK Images:** Demetrio Carrasco, timeline (castle); Peter Dennis, timeline (knight); Lynne McPeake, H1.6.5, H1.6.6; Steve Noon, H1.6.4; Eric Thomas, timeline (black death). Fotolia: ale_rizzo, H1.3.2. **Getty Images:** De Agostini/G. Dagli Orti, H1.2.3; German School/The Bridgeman Art Library, H1.2.2; Hulton Archive, H1.2.7; Print Collector, H1.10.5; Science Source, H1.11.1; Alan Spencer, H1.0.1; The Print Collector, H1.4.1; Universal Images Group, H1.10.2;. **HRI Online Publications:** John Foxe, The Unabridged Acts and Monuments Online or TAMO (1576 edition), HRI Online Publications, Sheffield 2011, H1.4.3. **Nature Picture Library:** Paul D Stewart, H1.7.1. **Henry Knighton:** *Knighton's Chronicon,* 1652, H1.9.1. **Palgrave:** John Aberth, *The Black Death: The Great Mortality of 1348-1350: A Brief History with Documents.* Palgrave Macmillan US, 2005, p. 49, H1.8.1. **Shutterstock:** British Library/Robana/ REX, H1.2.4; Alessandro Colle, H1.11.2; Granger/REX, H1.7.4 ; Universal History Archive/UIG, H1.9.4.

Chapter H2 **Alamy Stock Photo:** Fine Art Images/Heritage Image Partnership Ltd, H2.7.1; Granger, NYC./Granger Historical Picture Archive, timeline (Osman I); Heritage Image Partnership Ltd, H2.1.2; Image Asset Management Ltd, H2.6.1; INTERFOTO, H2.7.3; Lebrecht/Lebrecht Music and Arts Photo Library, H2.5.1; North Wind Picture Archive, H2.5.4, H2.6.3. **Bridgeman Images:** H 1517 f.17v Enthronement of Suleyman the

Magnificent (1494–1566) from the 'Suleymanname' by Arifi, 1558 (gouache on paper), Turkish School, (16th century)/Topkapi Palace Museum, Istanbul, Turkey/Dost Yayinlari/Giraudon, H2.0.1; Reception at the Court of Sultan Selim III (1761–1807) at the Topkapi Palace, late 18th century (gouache on paper), Ottoman School, (18th century)/Topkapi Palace Museum, Istanbul, Turkey/Giraudon, H2.2.1; The Ottoman Fleet Blocking the Port of Marseille in 1454 (vellum), Al-Silahi, Nasuh (Matraki) (16th Century) / Topkapi Palace Museum, Istanbul, Turkey/Giraudon, H2.2.2; Ms D-212 fol.28b The Turkish Bath, from 'Khusrau and Shirin' by Elyas Nezami (1140-1209) c.1550 (gouache on paper), Islamic School, (16th century)/Institute of Oriental Studies, St. Petersburg, Russia/Giraudon, H2.3.1; Ms 1671 A Bazaar in Istanbul, c.1580 (gouache on paper), Islamic School, (16th century)/Museo Correr, Venice, Italy, H2.3.2; Prince playing polo, illustration from Divan-i Nevai, collected poems by Ali Sir Nevai (vellum), Ottoman School, (16th century)/Private Collection, H2.4.8. **DK Images:** Bruno Derobillard, timeline (girl); Richard Hook, timeline (Suleiman the Magnificent). **Fotolia:** Luciano Mortula-LGM, timeline (Hagia Sophia), H2.4.1, H2.4.5; Jan Schuler, H2.4.2; Valerie Potapova, H2.4.3. **Getty Images:** De Agostini, H2.4.6. **Library of Congress:** Prints & Photographs Division, Photochrom Collection, [LC-DIG-ppmsc-06068], H2.1.3. **Shutterstock:** Alfredo Dagli Orti/REX, H2.2.3; Gianni Dagli Orti/REX, H2.4.9, H2.5.3, H2.7.4; Historia/REX, H2.4.7; Universal History Archive/Universal Images Group/REX, H2.5.2.

Chapter H3 **Alamy Stock Photo:** Josef Beck/imageBROKER, H3.1.6; Charles O. Cecil, H3.4.2; Guenter Fischer/imageBROKER, H3.1.3; Michel & Gabrielle Therin-Weise, H3.7.3; maurizio virgili/MARKA, wanderworldimages, H3.1.2; H3.7.2. Ariadne van Zandbergen, H3.3.2. **Bridgeman Images:** The carving process of bas-relief murals in the Bayon Temple, 2009 (colour litho), Morser, Bruce (21st century)/National Geographic Creative, H3.5.4. **DK Images:** Jamie Marshall, timeline (village); T. Gautam Trivedi, H3.5.3. **Fairfax Photo Sales:** Nick Moir, H3.9.2. **Fotolia:** 12ee12, H3.7.1; BasPhoto, H3.3.1; Jeanette Dietl, H3.6.1 (Buddha); DmitryIndus, H3.2.3; Malgorzata Kistryn, H3.6.1 (Vishnu); Ilia Torlin, H3.4.3; tuulijumala, H3.8.3. **Getty Images:** Macduff Everton/Corbis Documentary, H3.3.3; Luis Castaneda Inc, H3.5.5. **Nature Picture Library:** Gavin Hellier, H3.0.1. **Shutterstock:** Blanscape, timeline (Angkor Thom); Elite Studio, timeline (floating village); steve estvanik, H3.8.2; GTW/imageBROKER, H3.4.4; SergeBertasiusPhotography, H3.5.2; Lukasz Stefanski, H3.9.1; Edward Simpson, H3.1.4; Olena Tur, H3.1.5, H3.2.5; Universal History Archive/Universal Images Group/REX, H3.6.1 (Shiva). **The Siam Society:** Originally appeared in Chou Ta-Kuan (Zhou Daguan). Translated into English from the French version by Paul Pelliot of Chou's Chinese original by J. Gilman d'Arcy Paul. The Customs of Cambodia, 1993, 3rd edition, The Siam Society**:** Bangkok, 9748298256. pp. 21, 33., H3.2.2, H3.3.4.

Chapter H4 **Alamy Stock Photo:** Tor Eigeland, H4.7.3; Granger, NYC./Granger Historical Picture Archive, H4.5.6; Thomas L. Kelly/Aurora Photos, H4.2.4; Lou-Foto, H4.6.3; Photo Researchers/Science History Images, H4.7.2; Photos 12, H4.4.2; World History Archive, H4.0.1. **Bridgeman Images:** Genghis Khan in his tent by Rashid al-Din (1247–1318), Islamic School, (14th century)/Bibliotheque Nationale, Paris, France, H4.3.6; Ms.Sup.Pers.1113.f.180v-181 Mongols under the leadership of Hulagu Khan storming and capturing Baghdad in 1258 (manuscript)/Bibliotheque Nationale, Paris, France, H4.5.5; Or 2780 fol.61 Genghis Khan addressing a congregation at the mosque in Bukhara, from a Shahanshahnama, c.1397–98 (vellum), Persian School, (14th century)/British Library, London, UK, H4.5.3; Genghis Khan captures a Chinese town, miniature from the 'Persian History of Genghis Khan' completed in 1596, Persian School, (16th century)/Private Collection/Peter Newark Military Pictures, H4.4.8. **DK Images:** Barnabas Kindersley, timeline (landscape), H4.1.6; Dorling Kindersley, timeline (ger); Sergio Momo, timeline (archer). **Getty Images:** Dean Conger/Corbis Documentary, H4.2.3; Richard Manning, H4.3.5; Keren Su/Corbis Documentary, H4.3.1, H4.6.2. **Shutterstock:** Apolla, H4.1.2; Granger, H4.7.4; Granger/REX, H4.3.7, H4.5.1; mr.wijannarongk kunchit, H4.2.1. **Wikimedia Commons:** Staatsbibliothek Berlin/Schacht, H4.4.7; Usiwakamaru, H4.7.1.

Chapter H5 **Alamy Stock Photo:** Florilegius, H5.4.3; David Schrichte/Photo Resource Hawaii, H5.1.2. **Alexander Turnbull Library:** Ref: B-052-008. Alexander Turnbull Library, Wellington, New Zealand. / records/23060327, H5.5.4; Ref: A-293-001. Alexander Turnbull Library, Wellington, New Zealand. /records/23028641 **Bridgeman Images:** The Maori War-Dance (engraving), English School, (19th century)/Private Collection/© Look and Learn, H5.5.6; Maori girl with moko chin (photo), New Zealander Photographer (19th century)/Private Collection/Prismatic Pictures, H5.6.2. **Cambridge University Press:** Philippa Mein-Smith, *A concise history of New Zealand* 1st edition, 2005, New York: Cambridge University Press, pp. 13–14, H5.4.1. **Dreamstime:** King Ho Yim, timeline (mo'ai statues). **Fotolia:** Marcel Hurni, H5.0.1; nstanev, H5.3.6; Aleksei Potov, H5.1.3; Undy, H5.5.2; Ignatius Tan, H5.4.4; Undy, Timeline (hei tiki). **Getty Images:** Stephen Alvarez, H5.2.2; James L. Amos/Corbis Documentary, H5.4.5; Richard Cummins/Lonely Planet Images, H5.5.1; George Steinmetz/Corbis Documentary, H5.6.1; Chris Jackson, H5.6.5; John Banagan/Lonely Planet Images, timeline (Ha'amonga-a-Maui). **Miscellaneous:** Edited by TA Joyce and NW Thomas AH Hingston "The women of Polynesia" in Women of all Nations London: Cassell 1908 1st ed p. 40, H5.5.5. **National Library of Australia:** Merrett, Joseph Jenner. (1845). War dance, New Zealand Retrieved May 4, 2018, from http://nla.gov.au/nla.obj-134600110, H5.6.3. **Shutterstock:** Marco Iacobucci EPP, H5.6.4; Chris Howey, H5.5.3; REX, H5.3.2. **Museum of New Zealand Te Papa Tongarewa:** Peter Adds, "Ancestral connections to the Pacific" in *Tangata O Le Moana: New Zealand and the people of the Pacific*, 1 ed, edited by Sean Mellon, Kolokesa Mahina and Damon Salesa, Te Papa Press 2012, p. 24, H5.2.1; Janet Davidson, "Explorers and pioneers: the first Pacific People in New Zealand, in Tangata O Le Moana: New Zealand and the people of the Pacific, 1 ed, edited by Sean Mellon, Kolokesa Mahina and Damon Salesa, Te Papa Press 2012, pp. 51–2, H5.4.2; Negative number B.002123, H5.3.4; Photograph by Thomas Andrew, negative number PA.000094, H5.3.5. **The British Museum Images:** © The Trustees of the British Museum. All rights reserved, timeline (Ku). **University of Hawaii:** Fedor Shemelin, quoted in Twelve days at Nuku Hiva: Russian encounters and mutiny in the South Pacific, by Elena Govor, University of Hawaii Press 2010, H5.3.1.

Chapter H6 **Alamy Stock Photo:** Historica Graphica Collection/Heritage Image Partnership Ltd, H6.0.1, timeline (Hernán Cortés); Image Asset Management Ltd, H6.7.2; Prisma Archivo, H6.2.1; Robert Harding Productions, H6.4.1; Joseph Sohm, timeline (Christopher Columbus); Werner Forman Archive/Heritage Image Partnership Ltd, H6.3.2. **DK Images:** Peter Dennis, H6.2.2. **Fotolia:** Alexander, H6.3.1. **Getty Images:** Bettman, H6.6.1; DEA/G. DAGLI ORTI/De Agostini Picture Library, H6.1.2; De Agostini, H6.4.2, H6.5.3; Julio Domoso/Sygma, H6.5.1; Hulton Archive, H6.8.3; Alexander Klein, H6.9.3. **Shutterstock:** British Library/Robana/REX, H6.6.4; Granger/REX, timeline (Tupa Amaru). **University of Oklahoma Press:** Diego Durán, quoted in *The History of the Indies of New Spain*, Heyden, D., trans., 1994, Norman, Oklahoma University Press, p. 530., H6.9.2. **Wikimedia Commons:** Ober, Frederick A., Vasco Nuñez de Balboa (New York, Harper, 1906), p. 84., H6.9.4. **Yale University Press:** Hernán Cortés, quoted in *Letters from Mexico*, Edited by Anthony Pagden, John Huxtable Elliott, Yale University Press, 2011, H6.9.1.

Chapter G1 **123RF:** Chris Putnam, G1.4.5. **Alamy Stock Photo:** Keith Levit/Design Pics Inc., G1.3.3; Rolf Nussbaumer Photography, G1.3.2; David Wall, G1.4.7. **Dreamstime:** Patrick Poendl, G1.1.2; Radomír Režný, G1.2.2; Tigrajr, G1.2.5. **Flickr:** Mick Stanic/Splatt, G1.4.2. **Getty Images:** Prisma Bildagentur/UIG, G1.0.1; Ted Mead, G1.2.4. **Grant Kleeman:** G1.5.2. **Newspix:** Chris Scott, G1.4.4. **Shutterstock:** gevision, G1.1.1.

Chapter G2 **Alamy Stock Photo:** Aerial Archives, G2.4.3; Bill Bachman, G2.2.5. **Banyule City Council:** G2.4.6. **DFSI Spatial Services:** © Department Finance, Services and Innovation 2018 spatialservices.finance.nsw.gov.au, G2.2.8 **Getty Images:** AFP, G2.4.2; Frank J Wicker, G2.5.2;. **Fisher and Fisher:** G2.4.7. **Shutterstock:** Beboy, G2.0.1; Budimir Jevtic, G2.1.1; Dr Morley Read, G2.2.1; Pongsakorn Teeraparpwong, G2.5.3.

Chapter G3 **Alamy Stock Photo:** Ashley Cooper/Global Warming Images, G3.6.4; Sean Gallagher/National Geographic Creative, G3.6.3; Martin Harvey, G3.3.9; NASA Image Collection, G3.3.3; Ingo Oeland, G3.5.8; Andrea Pistolesi/Tips Images, G3.4.1; Radius Images, G3.5.3; Ingo Schulz/imagebroker, G3.2.3; David Wall, G3.5.5. **Dreamstime:** 4july81, G3.5.4; William Michael Norton, G3.1.6; David Steele, G3.5.7. **Getty Images:** Franz Aberham/StockImage, G3.3.7; Ruth Eastham & Max Paoli, G3.2.2; Christopher Groenhout/Lonely Planet Images, G3.5.6; Hoberman Collection/Universal Images Group, G3.2.1; Frans Lemmens/Lonely Planet Images, G3.3.2, G3.3.8; Milton Wordley, G3.5.2. **Shutterstock**: kavram, G3.0.1.

Index

A

Aboriginal and Torres Strait Islander peoples
  ceremonies, social exchange and trade 214
  environmental impacts 141
  impact on megafauna 141
  Indigenous Protected Areas 141
  land management 140–1
  landscape and landform stories 130–1
  maintaining kin relationships 215
  mobility today 215
  movement across the land 214
  referendum of 1967 267, 281
  significance of place 215
  system of laws 300, 312–13
  traditional way of life 214
  use of fire 140, 141, 195
abrasion 123, 150, 152, [G1, 1, 2], [G2, 1, 2]
access to legal advice 309
accession [H2, 1]
accumulation zone [G1, 1, 5]
accuse 297
accused 304
active citizen skills 254–5
active volcanism 176
active zone 115
adaptive learning systems 336, 359
Adelaide 208, 212, 224, 234, 236
adversarial system 297, 303
aesthetic value 126
agents of erosion 124, 125
agricultural land, loss 232
agricultural landscapes 113, 132
air pollution 233
alcohol 310
Aldi 355
alluvial fan [G3, 1, 7]
alpine climates [G1, 2, 9]
alpine ecosystems [G1, 8–9]
alpine environments
  cultural values [G1, 11]
  fragile [G1, 11]
  location [G1, 10]
  managing [G1, 10–13, 15]
  natural values [G1, 11]
alpine landforms [G1, 2–7, 14–15]
alpine landscapes [G1, 2, 4, 15]
alpine national parks [G1, 14–15]
alternate attendance 47, 57
Althing 44
altitude [G1, 8]
America 32, 41
analysis and interpretations 318–19
ancestral worship [H3, 24]
ancient history 1, 2
ancient Troy 15
anda [H4, 1, 7]
Angkor [H3, 1, 4]
Angkor/Khmer Empire [H3, 1–31]
  beginnings [H3, 4–5]
  burial customs [H3, 14]
  capital [H3, 4]
  crime and punishment [H3, 15]
  cultural achievements [H3, 19–23]
  daily life [H3, 12–15]
  decline of Angkor [H3, 28–9]
  economics [H3, 28]
  economy [H3, 14]
  economy and temples [H3, 17]
  environment [H3, 28–9]
  fashion [H3, 14]
  food [H3, 12–13]
  health and hygiene [H3, 14]
  housing and furniture [H3, 13]
  key sites [H3, 6–7]
  key social groups [H3, 8–11]
  king as god [H3, 16]
  legacy [H3, 30–1]
  legal system [H3, 14–15]
  markets [H3, 14]
  military action [H3, 29]
  military campaigns [H3, 17]
  political system [H3, 14]
  politics [H3, 28]
  power, wealth and trade [H3, 16–18, 28]
  religion [H3, 24–5, 28]
  taxation [H3, 18]
  timeline [H3, 2–3]
  water management [H3, 26–7]
Angkor Wat [H3, 1, 6–7, 20–3, 26]
animal weathering 149
animism [H3, 24]
Antarctica 112
anti-discrimination law 290
apsaras [H3, 1, 22, 24]
aquifer [G3, 1, 10]
archaeologists 1, 3
archaeology contribution 15, [H3, 30], [H5, 7]
arches 153
archipelago [H5, 1, 5]
arêtes [G1, 1, 2]
artificial intelligence (AI) 359
Ashikaga Takauji 53
Ashikaga Yoshimitsu 53
aspect 97, 103, [G1, 9]
assault 304
astronomy 84, 85
asylum seekers 220
atoll [H5, 1, 4]
attrition 123, 147, 150, 152, [G2, 1, 2]
Australia
  alpine national parks [G1, 14–15]
  bill of rights 285
  biosphere reserves 138
  bush as national identity 129
  bushfires 192–7
  cities 236–7
  climate change 195
  cultural diversity 224, 226–7
  democratic freedoms 284–5
  deserts [G3, 14–17]
  dry climate 194
  ecological footprint 241
  ethnic and cultural influences 227, 229
  eucalypt forest and woodland 194
  European settlement 195, 206, 207, 226, 229
  flora, adapting to fire 194
  flora, evolution 194
  food 229
  government and the market 340–1
  humanitarian migration 225
  internal migrations 212–13
  laws, development 298–301
  legal system 302–3
  legal system, development 299–300
  managing urbanisation 231–49
  marine protected areas 138
  migrant settlement 229
  migration 224–5, 226
  multicultural 224, 226–7
  National Landscapes Program 137
  national parks 136–7
  online markets 336–7
  participating in democracy 292–4
  political engagement 294–5
  population distribution 206–9
  population growth 244–5, 247
  protected constructed landscapes 139
  protected landscapes 136–9
  refugee intake 225, 226
  republic referendum 282
  rural 235
  stock market 338–9
  urbanisation 207–8, 228, 229
  volcanic landscapes 180
  wilderness areas 138
  see also Aboriginal and Torres Strait Islander peoples; Adelaide; Canberra; Darwin; Melbourne; Perth; Sydney
Australian Alps [G1, 14–15]
Australian Constitution 265, 266–7
  changing 280–3
  and freedom of religion 290
  and freedom of speech 286
Australian Securities Exchange (ASX) 338–9
automation 358
avalanches 188–9
Aztec life and society [H6, 4, 5, 6–7, 17]
  beliefs [H6, 10–11]

B

backwash 147, 149
bacteria [H1, 1, 19]
bakufu 47, 52, 53, 68
Balboa, Vasco Núñez de [H6, 23]
banishment 22
bans 340
baray [H3, 1, 6]
barter [H1, 1, 4], [H6, 1, 7]
bas-reliefs [H3, 1, 8, 22–3]
bastion [H2, 1, 5]
Battle of Hastings 38–9
Battle of Kosovo [H2, 16]
Battle of Stamford Bridge 38
Bayeux Tapestry 39
beach cliff 103
beaches 154, 160

bed load [G2, 1, 3]
Belgrade, siege [H2, 17]
berm 147, 154
berserkers 17, 31
bias 253, 256
Bible 85
bicameral 265, 276
bill 297, 300
bill of rights 285
biophysical landscape 112, 113, 136–8
Birdman Cult [H5, 15]
Black Death 73, [H1, 1, 4, 18–29]
  attempts to prevent [H1, 24]
  causes [H1, 22–3]
  impact [H1, 26–9]
  origins and spread of [H1, 18–21]
  responses to [H1, 25]
  treatments for [H1, 24]
block mountains 121
blowouts 147, 158
Blue Lake 183
bodhisattva [H3, 1, 24]
Bolivia 186
bolson [G3, 1, 7]
books 257
boreal forests 113
braided channels [G2, 1, 8]
Brazil 186
breach [H2, 1, 16]
Brisbane 206, 208, 209, 212, 224, 234, 236–7, 240
Brunelleschi, Filippo 83, 88
buboes [H1, 1, 22]
Buddhism [H3, 24]
buke shohatto 47, 56
burden of proof 297, 308–9
bureaucracy [H2, 1, 7]
bushfires, Australian 192–5
  causes 192
  how to prepare for 196–7
  human impact on 195
  surviving 196–7
bushido 47, 61
bushland 240
business incubators 359
business owners 350
butte [G3, 1, 7]
buyers 328–9, 331, 332
Byzantines [H2, 12, 16]

C

Cabinet 265, 268, 269
cactus [G3, 4]
caldera crater 169, 174
calderas volcanoes 174
camels [G3, 11]
camicia 73, 79
Canada 32, 118, [G2, 18–21]
Canberra 208, 210, 246–9, 271
  'bush capital' 247, 248
  planning for the future 248
capital 321, 328
carbon emissions 202
carpet weaving [H2, 14]
cartography [H2, 22–3]
castles [H1, 16–17]
casual loading 343, 353
casual work 343, 353
casualisation 357
cat curfew 240
catchments [G2, 1, 4]
cause and effect 6, 12–13, 67
central Victoria 214
ceramics [H2, 14]
chakravartin [H3, 1, 8]
challenges 345
Cham [H3, 1, 29]
change and continuity 6, 11
Charlemagne [H1, 30]
Chaucer, Geoffrey [H1, 13]
chemical weathering 123, 125
chemise 73, 79
China 68, 132, 134, 187
  agriculture [H4, 22]
  crime and inequality 219
  economic transformation 216
  economic growth 250
  economic specialisation 250, 251
  environmental effects 219
  future 217–18, 233
  government policy 216–17
  Green Wall of China [G3 , 19]
  hukou system 199, 216, 217
  internal migration 217
  middle class 218
  population growth 250
  population mobility 216
  social structure [H4, 22]
  urban development 218
  urban dwellers 218–19
  urban issues 251
  urban structure 250
chinampas [H6, 1, 4]
chivalry [H1, 1, 13]
Christendom [H1, 1, 9, 10]
Christianity 35, 42, 64
chronology 1, 6, 8, 91, [H6, 15]
cirque glaciers [G1, 1, 2, 5]
cities
  Australia 236–7
  capital 207–8
  Chinese 218–19
  and environmental impacts 232–3
  impacts 234–5
  inner city growth 245
  managing growth of 236–9
  non-capital 208–9
  rethinking 233
  sustainable 240–3
  see also Adelaide; Brisbane; Canberra; Darwin; Melbourne; Perth; Sydney
citizens 253, 254
citizenship 253, 254
city living
  social attractions 204
  social disadvantages 204
city-state 73
civics 253, 254
civil law 297, 299, 304, 305
civilisation 1, 2
clearfelling 132, 133
clergy [H1, 1]
climate change 141, 159, 161, 195, [G1, 12], [G2, 21]
clinometer 147, 166
co-working spaces 360
coastal development 157
coastal environments, managing 163
coastal landforms 147–67
  and climate change 161
  depositional 154–5
  erosional 152–3
  processes shaping 148–51
coastal landscapes 113
  degradation 156–9
  managing 160–3
coastal land uses, managing 163
coastal locations 207
coasts, investigating 164–7
collapsing wave 165
collision plate margins 116
colonisation [H6, 1, 12]
colony 265, 272
combustion 169, 192
common law 297, 298, 299, 301
Commonwealth 265
Commonwealth of Australia 265
communicating 262, 322
communication 263, 322–3
  change 355–6
compensation payment 22
competition 325, 329
Confucianism 61
conical mountain 103
conquistadors [H6, 1, 6]
conscription 47, 69
conservation 111, 136
conservative plate margins 117
Constantinople [H2, 5, 16]
constitution *see* Australian Constitution
constitutional monarchy 265, 268
constructed landscapes 139
constructive plate margins 115
constructive waves 149
consumers 325, 326, 328
contiguous [H4, 1]
continental drift 114
continents on the move 114
continuity and change 6, 11
contour interval 97, 102
contour lines 97, 102, 103
contour patterns 102
contract work 343, 353
contract workers 220
controls on imports 340
convergent plate boundary 115, 116–17
Copernican theory 73, 85, 94
Copernicus, Nicolaus 84, 85
corrasion 123, 147, 150, 152
corroborating 1, 6
corrosion 123, 150
corselet 73, 79
corvée [H3, 1, 8]
cosmopolitan urban lifestyles 228–9
'Country' importance 140
crime 204
criminal law 297, 299, 304
cross-sections 104–5
crust 111, 114, 115, 116, 118
cryptocurrencies 339
cultural enrichment 204

currents 150–1
customary laws 297, 312, 313, [H1, 14]

D

da Vinci, Leonardo 84, 85, 88, 92–3
daimyo 47, 54, 55, 56, 57, 58, 64, 68, 69
Danelaw 17, 35
Dark Ages [H1, 4]
Darwin 208, 236
data collection 316
debts 338
deciphered 1, 4
decision making 320–1
deep ecology movement 99
defamation 297, 305
defendant 297, 305
deflation [G3, 1, 6]
deltas [G2, 1, 9]
demand 221, 325, 330
demand factors 221
democracy 253, 255
democratic freedoms 284–5
democratic systems 44
deposition 111, 124–5, 150, [G2, 1, 3]
depositional coasts 147, 148
depression 315, 319
desert [G3, 1, 2–5]
desert landforms [G3, 6–17]
desert landscapes 113
desertification [G3, 1, 18–19]
Deshima 64, 65
destructive plate margins 116–17
destructive waves 149
devaraja [H3, 1, 16]
developing world 199, 202, 203
digital technology 262
direct action 293
discharge [G2, 1, 4]
distribution patterns 97, 100
divergent plate boundary 115
Docklands 245
doctors 234
dormant volcano 169, 176, 182
double majority 280
doublet 73, 79
Dreaming Stories 130–1
driverless vehicles 358–9
drowned coastline 103
duopoly 333
durability 14
Dutch East India Company 64, 65
'Dutch learning' 47, 65

E

e-commerce 336, 355
Earth, changing structure 114–17
earthflows 185
earthquakes 115, 116, 117, 170–1
  prediction 190
  risk management 190
  surviving 191
East African Rift Valley 115
East Japan 173
Easter Island [H5, 10, 14–15]
eating 229
ecology 97, 98
economic costs 236
economic cycles 319
economic data, collecting and interpreting 318
economic growth 315, 317
economic migration 212
economic problem of scarcity 325, 326
economic reasoning 320–1
economic value 127
education/work blurred boundary 360
effect and cause 6, 12–13
El Dorado [H6, 1, 14]
Eleanor of Aquitaine [H1, 31]
elevation 97, 103, 120
ember attack 192
emotional value 126
employment agreement 343, 353
encomienda [H6, 1, 20]
endemic [G1, 1, 11]
energy efficiencies 233
energy infrastructure landscapes 135
England
  impact of Vikings on 35, 36–7
  Norman invasion 38–9
  Renaissance 90
  ruled by Vikings 38
enlightenment [H3, 1, 25]
enquiry 84
enterprise 328
entrepreneurship 315, 320, 321, 328, 359
environment 97
environmental costs 237
environmental impacts 141, 202, 232–3
environmental projects, funding 233
environmental worldviews 98–9
epicentre 169, 170
epidemic [H1, 1, 8], [H6, 1, 20]
equilibrium 331
equities 338
erg [G3, 1, 8]
Erik the Red 40, 42, 43
erosion 111, 114, 123–4, 125, 150
erosional coasts 147, 148
escarpment 103, [G3, 1, 7]
eta 57, 59
etymologist [H4, 1, 12]
Europe, Muslim populations in [H2, 23]
evaluate 1, 9
evidence 1, 2
  using sources as 6, 9–10
executive 268–9
experimentation 84
external affairs power 290
extinct volcanoes 169, 176

F

factors of production 315, 320, 328
fate 28, 32
fault 111, 116, 120, 121
Federal government roles 266, 271, 272, 274
Federation 265, 266
feudal system 47, 57–9
feudalism [H1, 1, 5]
filial piety 61
financial products 338
fire front 192, 193
firn [G1, 1, 4]
five Ws 259
fjords [G1, 1, 3]
flagellants [H1, 1, 25]
flood detention basin [G2, 16, 17]
flood plain 103, [G2, 1, 3]
Florence 76, 77, 88–9
focus 169, 170
fold 111, 120–1
fold mountains 115, 116, 121
food 229
foredune 147, 154
forestry practice landscapes 132, 133
Foundation for Deep Ecology 99
Foxconn 251
fraticide [H2, 1, 6]
freedom of assembly 284, 288–9
freedom of association 284, 288
freedom of information 284
freedom of movement 284, 291
freedom of religion 284, 290
freedom of speech 284, 286–7
freemen 17
freeze–thaw action 122, 125
Freyr 17, 28
fudai daimyo 56
fuel 192
Fujiwara family 51
Fukushima 173
full-time work 343, 352
futhark 17, 26–7
futures, work 343–61

G

Galilei, Galileo 85, 88, 93–4
gallows [H1, 14–15]
Gemmei 50
genetics [H5, 1, 6]
Genghis Khan [H4, 9–12]
Genpei War 52
geomorphic hazards 169–97
ger [H4, 1, 7]
glaciers [G1, 1, 2–3]
  deposition of rocks [G1, 6–7]
  erosion [G1, 5]
  formation [G1, 4]
  inputs and outputs [G1, 5]
  transportation of rocks [G1, 6]
  types [G1, 4, 6]
Glass House Mountains 180
global economy 199, 217
global migration 221
  see also international migration
global warming 147
glossary 262
Go-Daigo 53
Gondwanaland 114
gonfaloniere 73, 88
goods 325, 326
Gothic [H1, 1]
Gothic Revival [H1, 33]
government 253, 256, 265, 266
  and financial markets 339
  and the market 340–1
  three branches 268–70
  three levels 271–5
government business enterprises (GBEs) 341
governor-general 265, 268–9
gradient [G2, 1, 4]

graffiti 311
grand vizier [H2, 1, 7]
grassfires 193
grazing [G1, 11]
Great Exchange [H6, 1, 18]
Green Wall of China [G3, 19]
greenfield site 231, 237
Greenland 40–1, 42, 43
Griffin, Walter Burley 246, 248
gross domestic product (GDP) 199, 217, 315, 317, 348
ground-level photographs 97, 108
ground moraine [G1, 1, 6]
groundwater [G2, 1, 16]
groynes 147, 162
guest workers 221, 222
guild 73, 78, [H1, 1, 7]
Gutenberg, Johannes 85

H

habitats 111, 132
  loss 232, 240
haciendas [H6, 1, 20]
haka [H5, 1, 21–3]
hamada [G3, 1, 8]
Hanging Rock 214
hanging valleys [G1, 1, 2]
happiness 345
Harald Hardrada 38
harem [H2, 1, 6]
hashtags 262
Hawaii 179
Hawaiian islands [H5, 10]
hazards
  predicting 190
  severity of bushfire 194
Heian period 51
height 102, 103, 120
heresy 73, 94
Heritage Council Victoria 139
High Court 270, 271
High Middle Ages [H1, 4]
Hinduism [H3, 24]
historical thinking 6–7
  concepts 6–7
history 2
Hobart 208, 242
hoodoos 118
horns [G1, 1, 2, 6]
hot spot 169, 179, 180
House of Representatives 265, 268, 276–7, 279
Houses of Parliament 268, 269, 276–9
housing
  design, better 241
  design, passive 241–2
  planning 236, 249
hukou system 199, 216, 217
human-centred worldview 98, 99
humanism 73, 82, 86
humanitarian aid 172
hydraulic action (or pressure) 123, 150, 152

I

ice 124
iconic [H5, 1, 6]
icy polar landscapes 112, 113
igneous rocks 118, 119
ignition 192
illegal immigrants 220
illegal sex industry 223
imports, controls 340
Inca life and society [H6, 4, 5, 8–9, 17]
  beliefs [H6, 10–11]
incentives 340
income 343, 344, 349–51
Indian Ocean 172
Indigenous Australians *see* Aboriginal and Torres Strait Islander peoples
indigenous peoples [H6, 1]
Indigenous Protected Areas (IPAs) 141
Indonesia 204–5
industrial landscapes 113, 134
infiltration [G2, 1, 4]
infrastructure 199, 231, 233, 245
inner core 115
innocent, assumed 308
inquiry questions 316
inquisitorial system 297, 303
inselberg [G3, 1, 7]
interlocking spurs 103
internal migration 199, 212
International Date Line (IDL) 106
international migration 199, 220–3, 224–5, 226, 228–9
internet 257
interpretations 1, 10
  and analysis 318–19
investments 343, 351
investors 339
involuntary migration 199, 220
Iona 34–5
irrigation [G2, 20]
isolation 204
Italy *see* Renaissance Italy

J

Janissaries [H2, 7–8]
Janissary music [H2, 17]
Japan
  arrival of Europeans 54
  books 51, 64, 65
  children, compulsory education 69
  children's roles 62
  civil war 53, 54, 69
  controlling commoners 59
  craftspeople and artisans 57, 58
  daimyo 47, 54, 55, 56, 57, 58, 64, 68, 69
  deforestation 66
  democracy 69
  eta 57, 59
  Genpei War 52
  geographical influences 50
  Heian period 51
  Kamakura period 52–3
  land use 66–7
  Meiji Restoration 69
  men's roles 62
  merchants 57, 58, 63
  Mongol invasions 52–3
  Muromachi period 53
  Nara period 50–1
  origins of the shogunate 52–3
  peasants 57, 58
  reforestation 67
  religion 50, 60
  rural production 63
  samurai 47, 52, 57–8, 60, 61
  shogun 47, 52, 57
  shogunate 47, 53, 68–9
  before the shoguns 50–1
  under the shoguns 47–71
  timeline 48–9
  Tokugawa 56–9
  Tokugawa, cultural features 60–1
  Tokugawa, decline and legacy 68–9
  Tokugawa, economic growth 63
  Tokugawa, everyday life 62
  Tokugawa, foreign trade 64–5
  Tokugawa, land use 66–7
  Tokugawa, social hierarchy 57–9
  towns, transport and trade 63
  unification of Japan 54–5
  Warring States period 54
  women's roles 62
jarl 17, 21
Jayavarman II [H3, 4, 30]
Jews [H2, 21]
jito 47, 52
jizya [H2, 1, 20]
Jorvik 36–7
judiciary 265, 268, 270, 302–3
justice 297, 299
  principles of 307–9
justify 253

K

Kaempfer, Engelbert 65
Kamakura period 52–3
kami 47, 50
Kammu 51
Kanagawa, treaty of 68
karl 17, 21
karst landscapes 113
kava [H5, 1]
Kepler, Johannes 85
khan [H4, 1, 7]
Khmer *see* Angkor/Khmer Empire
Khmer society [H3, 8–11]
  army [H3, 9–10]
  bureaucrats [H3, 8]
  gods [H3, 24–5]
  navy [H3, 11]
  peasants and workers [H3, 8]
  professionals [H3, 8]
  royal family [H3, 8]
  slaves [H3, 9]
  war elephants [H3, 10]
  women [H3, 9]
khnyum [H3, 1, 9]
King Harold 38
kinship system 297, 312
knarr 17
knight [H1, 1, 4]
Knights Hospitaller [H1, 12]
Knights Templar [H1, 12]
Kublai Khan 53, [H4, 21–3]
külliye [H2, 1, 10]

L

labour 320, 328
lahars 169, 174
land 320, 328
land-based erosion 150
land degradation 147, 156
land reclamation 157
landforms 103, 111, 112
  Indigenous perspectives 130–1
  creating new 114
  depositional 124
  from mountain building 120–1
  from plate tectonics 114–17
  from rock cycle 117–18
  shading 103
landscapes
  Indigenous perspectives 130–1
  changing 125
  and culture 112
  defined 111, 112
  human impacts on 132–5
  and national identity 128–9
  protecting 136–9
  types 112, 113
  valuing 126–7
  volcanic, Australian 180–3
  volcanoes transforming 176–80
landslides 186
language 44
language usage 262
L'Anse aux Meadows 32–3
Lapita [H5, 1, 7]
lapse rate [G1, 1, 9]
Late Middle Ages [H1, 4]
lateen [H5, 1, 6]
lateral moraine [G1, 1, 5, 7]
lattitude 106, 107
Laurasia 114
lava 169, 174
law, rule of 307
law of demand 325, 330
law of supply 325, 331
laws 297, 298
  Aboriginal and Torres Strait Islander 312–13
  applying 302
  civil 304–5
  criminal 304
  development 298–9
  negligence 305
  nuisance 306
  restricting freedom of association 288
  and young people 310–11
layer colouring 102
Legal Aid Commission 308
legal restrictions 310–11
legend 97, 100
Leif Eriksson 41–2, 43
lidar [H3, 1, 30]
lifestyle migration 212
limestone caves 123
Lindisfarne 34
lobby groups 292
local government areas, Victorian 274
local government roles 271, 275
location 97, 100
longitude 106, 107
longship 17, 21, 31
longshore drift 147, 151, 160, 162, 164
Luther, Martin 91

M

maar 169, 181
Machiavelli, Niccolò 86, 87
Machu Picchu [H6, 8]
magma 169, 174
Magna Carta 284, [H1, 1, 32]
magnitude 169, 170
Man and the Biosphere Programme 138
Mandurah 213
mangrove forests
  degradation 156
  degradation, causes 157–8
  importance 156
mannerism 73, 83
manslaughter 304
mantle 111, 114, 121
Maori society [H5, 16–23]
  and the environment [H5, 12–13]
maps 100–7
  cross-sections 104–5
  elements 100
  lattitude 106, 107
  longitude 106, 107
  patterns between 100–1
  quadrants 100
  thematic 97, 100
  topographic 100, 102–3, 104
  types 100
marae [H5, 1, 10]
maritime [H5, 1]
market economy 325, 328
market equilibrium 331
market forces 325, 330
market prices 325, 329
  setting 330–3
market structure, types 331–3
markets 325–41
  and the government 340–1
  types 326–7
mass 120
  movements 184–5
meandering [G2, 1, 3]
medial moraine [G1, 1, 6, 7]
mediate 253
Medici family 73, 76, 88–9
medicine [H2, 23]
medieval Europe [H1, 1–33]
  Black Death [H1, 1, 4, 18–29]
  burial pits [H1, 27]
  Christian and Islamic worlds [H1, 10]
  Church [H1, 9]
  courtly love [H1, 31]
  crime and punishment [H1, 14–15]
  crusades [H1, 10–13]
  everyday life [H1, 6–9]
  expanding trade routes [H1, 18, 19]
  families [H1, 6]
  food [H1, 7]
  health care [H1, 8]
  housing [H1, 7]
  Islamic perspectives [H1, 13]
  knowledge and universities [H1, 33]
  labour shortages [H1, 27]
  legacy [H1, 32–3]
  life on the land [H1, 6–7]
  medical knowledge [H1, 29]
  military and defence systems [H1, 16–17]
  monasteries and nunneries [H1, 9]
  peasant uprisings [H1, 28]
  reconquests of Spain [H1, 10–11]
  religion and clergy [H1, 28]
  social mobility [H1, 29]
  timeline [H1, 2–3]
  town life [H1, 7]
  travel [H1, 9]
  weakening of feudal system [H1, 28]
  women [H1, 6]
  world [H1, 4–5]
megacities 199, 201
Meiji Restoration 69
Mekong River [H3, 5]
Melanesia [H5, 1, 6]
Melbourne 206, 207, 208, 209, 212, 224, 228–9, 233, 234, 235, 236–7, 238, 239, 240, 242, 244–5, 271, 273
melting zone [G1, 1, 5]
member of parliament (MP) 253, 257
merit goods 325, 341
mesa [G3, 1, 7]
Mesoamerica [H6, 1]
metamorphic rocks 118, 119
Metro Rail Project 273, 274
Metro Tunnel 245
Michelangelo 82, 83, 88
Mid-Atlantic Ridge 115
mid-ocean ridge 115, 121
Middle Ages [H1, 4]
  lower classes [H1, 5]
  nobility [H1, 5]
  society [H1, 5]
middle class 218
migrant
  categories 220
  destinations 221–2
  types 224
Milan 76, 77
millet system [H2, 1, 21]
miniatures [H2, 14]
mining landscapes 132, 133
mining tax 292–3
mixed market economy 328, 340
moa [H5, 1, 12, 13]
mo'ai [H5, 1, 10]
mobilise [H4, 1, 14]
Moctezuma II [H6, 22]
moko [H5, 1, 20]
Molonglo Valley 249
marine protected areas 138
Moment Magnitude scale 169, 170
monarch 265, 268
monastery 17, 31
Mongol Empire expansion [H4, 1–27]
  army [H4, 13–16]
  artisans and merchants [H4, 23]
  changed world geography [H4, 24]
  clan relationships [H4, 7–8]
  and conquered peoples [H4, 17–20]
  consequences [H4, 24–7]

culture [H4, 23]
economy [H4, 8]
environmental impact [H4, 25]
European knowledge [H4, 25]
extension of commerce [H4, 24]
Genghis Khan [H4, 9–12]
geography [H4, 4–6]
horses [H4, 7]
Kublai Khan [H4, 21–3]
laws and policies [H4, 20]
nomadic life [H4, 7]
and peace [H4, 24]
politics [H4, 7–8]
religion [H4, 8, 23, 27]
rule in China [H4, 21–3]
society [H4, 7–8]
timeline [H4, 2–3]
weather [H4, 5–6]
women [H4, 8]
Mongolian Plateau [H4, 4–5]
Mongols [H4, 1]
monopolistic competition 332, 333
monopoly 325, 332, 333
Monument Valley [G3, 12–13]
moraine [G1, 1, 3]
mosques [H2, 13]
Mount St Helens 176–7
mountain building 120–1
mountain ranges 120
mountainous landscapes 113
mudflows 185, 186–7
mudslides 185, 186–7
multiculturalism 224, 226–7
Mutsuhito 69

N

naga [H3, 1, 11]
Nagasaki Naval Training Centre 69
Naples 76, 77
Nara period 50–1
National Capital Plan 248
national identity 111, 128–9
National Landscapes Program 137
national parks 136–7
natural justice 297, 308
nature, living with 240
nature-centred worldview 98, 99
neak ta [H3, 1, 24]
negligence 297, 305
laws 305
network factors 221
New World [H6, 1, 19]
New Zealand [H5, 10, 12–13]
cultural legacies [H5, 20–3]
Maori society [H5, 16–23]
Newer Volcanic Province 182
Newfoundland 32
newspapers 257
nökör [H4, 1, 7]
non-renewable resources 315, 320
Norman invasion of England 38–9
nuisance laws 306
nunataks 112

O

oasis [G3, 1, 10]
oblique photographs 97, 108
observation 84
ocean currents 147, 150
ocean trenches 121
Oda Nobunaga 54, 55
Odin 17, 28
Old Norse 17, 31, 44
Old World [H6, 1, 18]
oligopoly 333
online markets 336–7
opportunities 345
organic action 122, 125
Osman Bey [H2, 4–5]
Ottoman Empire [H2, 1–23]
architecture [H2, 12–13]
art [H2, 14–15]
bureaucracy [H2, 7]
city life [H2, 10]
economic features [H2, 9]
everyday life [H2, 10–11]
expanding empire [H2, 16–19]
growth [H2, 4–5]
influence of the harem [H2, 6]
Islamic empire [H2, 20–1]
key features [H2, 6–9]
law [H2, 11]
legacy [H2, 22–3]
status of the sultan [H2, 6]
timeline [H2, 2–3]
tolerant society [H2, 20–1]
town life [H2, 10]
women [H2, 10–11]
outer core 115
outsourcing 356–7
oxidation 123
oxygen 192

P

Palmyra, Syria 142
pandemic [H1, 1, 26]
Pangaea 114
Papal States 77
parliament 265, 266, 268, [H1, 32]
Parliament of Australia 268, 276
part-time work 343, 353
patriarch [H2, 1, 20]
patron 73, 76
people 257
people trafficking 223
perfect competition 331, 333
perfectly competitive markets 331, 332
Perry, Commodore Matthew 68
perspective (artwork) 73, 82
perspectives (points of view) 1, 10, 253, 254
Perth 206, 208, 209, 213, 224, 234, 236–7
petitions 255, 260
Petrarca, Francesco 86
phnom [H3, 1, 4]
photo sketching 109
photographs
interpreting 108
types 108
physical weathering 122, 125
pilgrimage [H1, 1, 9]
plague [H1, 1, 8]
see also Black Death
plaintiff 297, 305
Plan–Do–Study–Act (PDSA) cycle 316–17
plant weathering 149
plate margins 111, 115
plate movements, types 115
plate tectonics 114
plateau [H4, 1, 4]
plates 111, 114
playa lake [G3, 1, 7]
plebiscite 282, 283
plunging wave 165
political action, types 292
pollution 157
Polynesian expansion [H5, 1–23]
climate [H5, 5]
cultural legacies [H5, 20–3]
environmental resources [H5, 4, 5, 12–15]
everyday Maori life [H5, 16–19]
geography [H5, 4–5]
kings, nobles and commoners [H5, 8]
origin and spread of settlers [H5, 6–7]
population distribution [H5, 5]
religion [H5, 15]
roles of men and women [H5, 9]
society [H5, 8–11]
timeline [H5, 2–3]
polytheistic 17, 28
popular culture 45
population density 199, 206
population expansion 157
population pyramid 231, 235
postal survey 283
precedent 297, 299, 301, [H1, 14]
prehistory 1, 2
preservation 111, 136
price mechanism 325, 334
price takers 332
prices 325, 329, 330–3, 334, 339
primary source 1, 3
primary stocks 338
Prime Meridian 106
prime minister 269
printing press 85, [H1, 32]
producers 325, 326, 328, 335
professionals 220
profit 320, 343, 350
profundity 14
protests 288–9, 293–4
public goods 325, 341
public interest 284
public services 341
public transport 239, 245
pumice 169, 178
push and pull factors 199, 200, 221

Q

qanats [H4, 1, 25]
Qanun (law) [H2, 22]
quadrants 100
quality of life 199, 202–3
quantity 14
quda [H4, 7]
Queen's role 268–9
questioning skills 316
Qur'an [H2, 20]
quriltai [H4, 1, 12]

R

Rabaul 178
rahui [H5, 1, 17]
raingardens [G2, 16, 17]
rangaku 47, 65
rapid [G2, 1, 6]
rapid movements 184–5
realism 73, 82
recession 315, 319
reclaimed land 169, 171
record player 330
recreational pressure 158
reef landscapes 113
referendum 265, 266, 280–2
reflecting 263, 322–3
Reformation 91
refugees 220, 225, 226, 236
reg [G3, 1, 8]
regent 47, 51
regional centres 199, 208
regulation of markets 340
regulators 302
reliability 253, 255
relief 97, 102, 120
Renaissance [H6, 1, 12]
Renaissance Italy 73–95
  architecture 83
  art 82–3
  city-states 76–7
  clothing 79
  culture 90
  economics 90
  everyday life 78–9
  food 78–9
  houses 80
  legacy 90–1
  literature 86–7
  painting 82
  politics 90
  science 84–5
  sculpture 83
  social classes 78
  technology 85
  thinking 86
  timeline 74–5
  women 81
renewable resources 315, 320
research and questioning 316
research questions, developing 256
resolving issues 260
resource allocation 329, 334–5
respect, deep 61
restrictions 340
retail market 325, 326
retirement migration 212
ridge 103
rift valleys 121
right to a fair trial 308
riprap barrier 147, 162
risk areas, living in 190–1
river landscapes 113
riverine landforms [G2, 1–21]
  downstream [G2, 7–9]
  protecting [G2, 16]
  river modifications [G2, 14–15]
  rivers [G2, 2–5, 10–13]
  upstream [G2, 6]
riverine landscapes, protecting [G2, 16]
rivers 124
rivers, work of [G1, 2]
rock cycle 111, 118–19
rock falls 184
rock pillars 118
rocks, types 118, 119
Rome 76, 77
ronin 47, 64, 68
Rosetta Stone 5
rule of law 307
rules 298

S

sagas 17, 22, 26, 45
Sahara Desert [G3, 5, 8–11]
sakoku 47, 64
salary 343, 349
salt-spray weathering 149
Samoa [H5, 9]
samurai 47, 52, 57–8, 60, 61
San Andreas Fault 117
sand bars 147, 150, 155
sand dune [G3, 1, 6]
sand dunes 147, 149, 154–5, 156
  degradation, causes 158–9
  importance 156
sand mining 158
sand replenishment, artificial 162
sand spits 150, 155
Sanskrit [H3, 1, 16]
Sapa Inca [H6, 1, 8]
savanna grassland landscapes 113
scale 97, 100
Scandinavia 17, 20, 31
scapegoats [H1, 25]
scarcity 325, 326
scientific principles 84–5
Scientific Revolution 84
Scotland, Vikings impact on 35
sea caves 153
sea change 199, 209, 212, 213
sea-level rise 161
sea walls 163
seafloor spreading 121
seamounts 169, 183
search engine optimisation (SEO) 336
secondary source 1, 4
  interpreting 4–5
secondary stocks 339
secured loan 338
sediment [G2, 1, 2]
sedimentary rocks 118, 119
self-esteem 344
self-service checkout 355
Selim I [H2, 22]
sellers 328–9, 331, 332
Senate 265, 268, 276, 278–9
separation of powers 268–70
services 325, 326
settlers 220, 224
sex industry, illegal 223
sexting 311
shamanist [H4, 1, 8]
share value 339
shares 351
Shenzhen 250–1
sherd [H5, 1, 7]
shield volcanoes 174
Shimabara rebellion 64
Shinto 47, 50, 60, 62
shock waves 170
shoen 47, 52
shogun 47, 52, 57
  see also Japan
shogunate 47, 53, 68–9
  see also Japan
shrimp aquaculture 158
shugo 47, 52, 53, 54
siege 47, [H1, 1, 12, 17], [H2, 1, 5], [H4, 1, 17]
significance, historical 6, 14
signoria 73, 88
Silk Road [H4, 1, 18]
skald 17, 26
slope 102, 103, [G1, 9]
slow movements 184
slumps 185
social costs 238
social element of work 345
social interaction 204
social media 257, 262, 336, 337
soil creep 184
solution 150
solving problems 260–1
sources 253, 255
  analysing and interpreting 258–9
  three-step investigation 259
  types 256–7
Spain 159
Spanish conquest of the Americas [H6, 1–23]
  arrival of Columbus [H6, 12–13]
  Aztec life and society [H6, 4, 5, 6–7, 17]
  colonisation effects [H6, 20–1]
  Cortés conquers Aztecs [H6, 13]
  first contact [H6, 16–17]
  geographical factors [H6, 14]
  impacts of [H6, 18–19]
  Inca life and society [H6, 4, 5, 8–9, 17]
  Pizarro conquers Incas [H6, 14]
  Spanish exploration [H6, 12]
  timeline [H6, 2–3]
spilling wave 165
spiritual value 126
spot heights 97, 102
squirrel gliders 240
stacks 153
stakeholders 253, 260
standard of living 199, 202–3, 343, 344
State government roles 266, 271, 273, 274
statutory law 297, 298, 299, 300
steepness 120
stewardship-based worldview 98, 99
stock market 338–9
storm activity, increased 161
stormwater 242, [G2, 16, 17]
strato volcanoes 174
stress 204
subject-specific language, using 262
subjugate [H2, 1, 17]
subsistence farming [H1, 1, 4]
suburbanisation 231
succulent [G3, 1, 4]

suicide 61
Suleiman the Magnificent [H2, 22]
Sunnah [H2, 20]
supply 221, 325, 331
supply factors 221
surf 149
surging wave 165
suspended load [G2, 1, 3]
sustainable cities 240–3
swash 147, 149
swash zone 154
Sydney 206, 207, 208, 209, 212, 224, 228–9, 234, 236–7

T

Tahita [H5, 10]
Taiho codes 51
tapa [H5, 1, 9]
tapu [H5, 1, 8]
tarn [G1, 1, 6]
tattooing [H5, 20–1]
taxes 325, 328, 340
technological change 355
technology 85
tectonic plates *see* plates
temperature change 122, 125
terminal moraines [G1, 1, 6, 7]
thematic maps 97, 100
thing 17, 22
Thingvellir 120
Thor 17, 28
thrall 17, 21
threats, adapting to 190–1
tides 147, 150–1
tobacco 311
Tokugawa Ieyasu 47, 54, 55, 56, 57, 64, 68, 70–1
    see also Japan, Tokugawa
Tokugawa Yoshinobu 69
tolerance [H2, 1]
Tolkien, J.R.R. 45
tombolos 155
Tompkins, Douglas 99
Tonga [H5, 9]
Topkapı Palace [H2, 1, 2, 6, 12–13]
topographic maps 100, 102–3, 104
topography 97, 102
tourism [G1, 11]
town watch [H1, 15]
Toyotomi Hideyoshi 54, 55
tozama daimyo 56
traffic congestion 238, 239, 245
transect, constructing a 166, 167
transferable skills 343, 346
transform plate boundary 115, 117
transpiration [G3, 1, 4]
transport, public 239, 245
transport infrastructure 237, 239, 245
    landscapes 132
treaty of Kanagawa 68
tree change 199, 209, 212
treeline [G1, 1, 2]
trial by ordeal 22, [H1, 15]
tribute [H2, 1, 16], [H6, 1, 20]
tropical forests 113
Troy, ancient 15
Truganini 14
truncated spurs 103
tsunamis 171, 172–3
    risk management 190–1
    warning systems 190
Tuamotu island chain [H5, 10]
Tuareg [G3, 11]
tughra [H2, 1, 14]
tumen [H4, 1]
turbidity [G2, 1, 11]

U

U-shaped valleys [G1, 1, 2]
undocumented workers 220
UNESCO (United Nations Educational, Scientific and Cultural Organization)
    Man and the Biosphere Programme 138
    World Heritage Convention 142, 143
    World Heritage List 142, 143, [H3, 31]
    World Heritage sites 142, 143, 144
unsecured loan 338
urban areas
    people living in 200–1
    stormwater drains in [G2, 16, 17]
urban concentrations 210, 228–9
    advantages 207
    benefits 233
    disadvantages 207
urban consolidation 231, 238, 245
urban decay 231, 245
urban development 159
urban heat island effect 202
urban landscapes 113, 134
urban lifestyles, cosmopolitan 228–9
urban renewal 231, 238
urban sprawl 199, 207, 231, 232, 238, 245
urban water use [G2, 20]
urbanisation 199–229, 231, 232
    growth and impacts 200–3
    managing 231–49
urbanised society 199, 206
USA (United States of America)
    changing urban populations 211
    climate and land use 211
    geography 211
    governance 211
    history 211
    location of cities 210–11
    Monument Valley [G3, 12–13]
    rise of the US city 210

V

V-shaped valleys [G1, 1, 2]
Valhalla 17, 28
valley glaciers [G1, 2–3, 4–5]
Venice 76, 77
vertical exaggeration, calculating 104
vertical photographs 97, 108
Vienna, siege [H2, 18]
Vikings 17–45
    artists and craft 26
    children's roles 25
    conquests 34–7
    death, burial and the afterlife 28–9
    defeat in England 38
    economy and trade 23
    entertainment 26
    everyday life 24–7
    exploration and settlement 30, 32–3
    farming 24
    government 21–2
    housing 24–5
    immortality and fame 32
    impact of Vikings on 35
    impact on England and Scotland 35, 36–7
    increasing population and poverty 31
    kings of England 38
    law and honour 22
    legacy 44–5
    literature 45
    men's roles 25
    mythical worlds 28
    Norse gods 28
    poets and poetry 26
    political unrest 31
    reasons for expansion 30–2
    religious conflict 31
    religious practice 28, 35
    rule over England 38
    runes 26–7
    sagas and storytelling 17, 22, 26, 45
    sea power 30–1
    shipbuilding 20–1, 30
    society 21
    timeline 18–19
    trade and economic benefit 32
    warfare and weapons 22–3
    women's roles 21, 25
    world 20–3
    writing 26–7
Vinland 17, 32, 33, 41
vocation 345
volcanic cone 169, 174
volcanism 169
volcanoes 115, 116, 120, 121, 174–9
    monitoring 190
    risk management 191
volcanologists 169, 178
volunteer work 343, 348, 349
voting 255, 261

W

wadi [G3, 1, 7]
wage 343, 349
war elephants [H3, 10]
warnings 340
Warrumbungle National Park 180
water 124, 184, 185
    consumption 202
    cycle [G2, 18, 19]
    landforms shaped by [G3, 7]
    management 242
    pollution 233
    stormwater 242
watershed [G2, 1, 4]
wave pounding 150
waves 124, 149, 152
    investigating 165
weathering 111, 114, 122–3, 149
wilderness areas 138
William, Duke of Normandy 38
wind 124, 151

and fire 193
landforms shaped by [G3, 6]
measuring direction and speed 164
wind farm landscape 135
work
factors affecting future 358–61
factors currently influencing 355–7
work environment 345
work futures 343–61
work–life balance 343, 353, 360
workforce changes 355–7
working, reasons for 344–6, 348
working from home 354
world cities 201
World Heritage Convention 142, 143
World Heritage listing 142–5, [H3, 30]
World Heritage sites 142, 143, 144
World War II, after 226
worldviews 98–9

X

xerophyte [G3, 1, 4]

Y

Yasa [H4, 1, 12]
Yoritomo 52
York 36–7
young workers 349, 350

Z

Zen Buddhism 60
zud [H4, 1, 5]