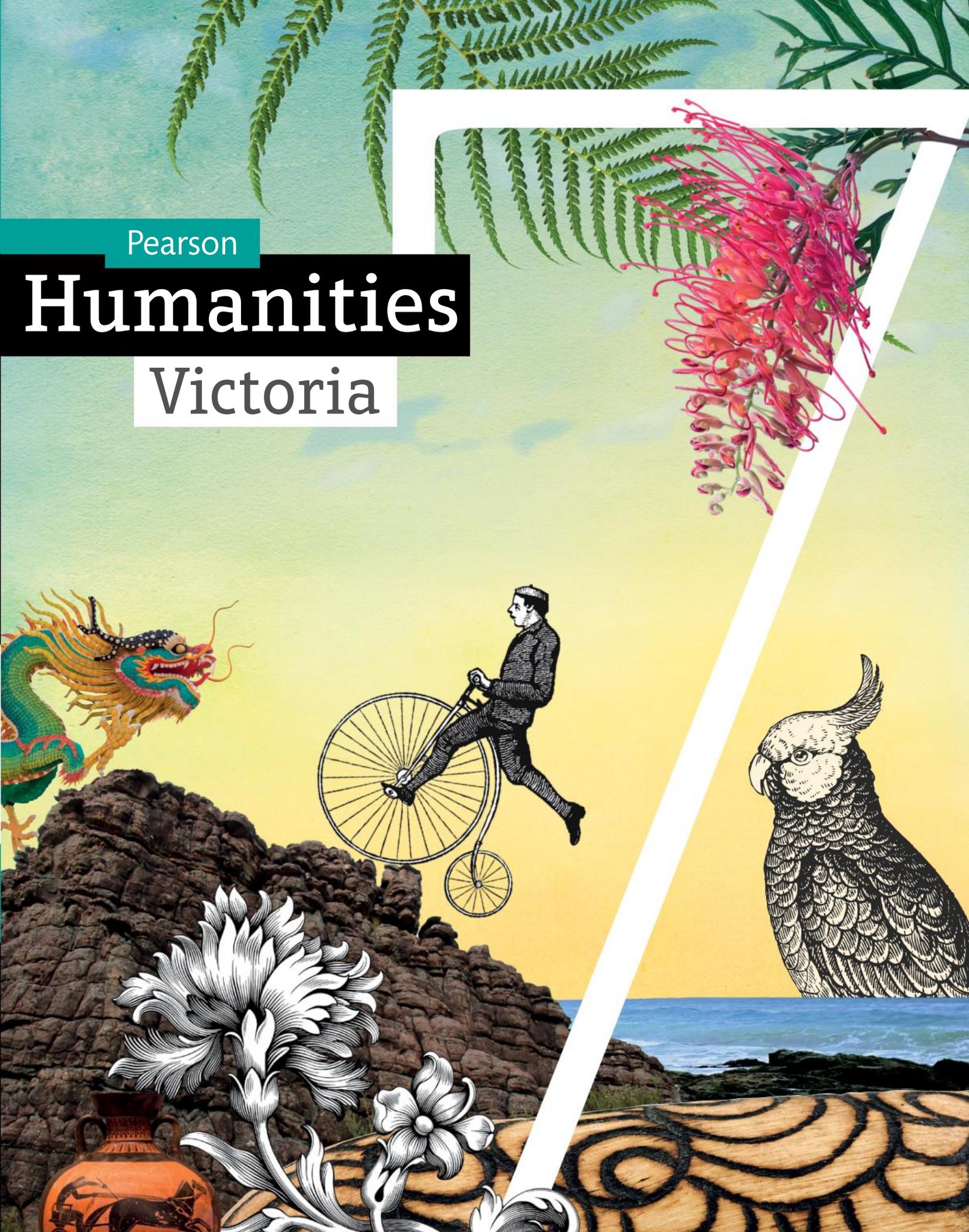


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Project Manager: Michelle Thomas

Production Editor: Casey McGrath

Series Lead Editor: Emma de Smit

Editor: Tanya Simmons

Designers: Anne Donald, Jennifer Johnston

Typesetter: iEnergizer Aptara Limited

Cover art: Jennifer Johnston

Illustrators: Bruce Rankin, Tina Puopolo, Anne Donald, Diacritech

Right & Permissions Editors: Samantha Russell-Tulip, Peta Hepburn

Proofreader: Camha Pham

Indexer: Bruce Gillespie

Senior Publishing Services Analyst: Rob Curulli

Production Controller: Dominic Harman

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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 Ancient Australians 17

- Timeline: Ancient Australia 18
- 2.1 Evidence for ancient Australia 20
- 2.2 Populating the continent of Australia 24
- 2.3 Social structures of Aboriginal people 26
- 2.4 Living off the land 28
- 2.5 Aboriginal settlement and farming:
New historical theories 30
- 2.6 Trade 32
- 2.7 Tools and weapons 34
- 2.8 Fire 36
- 2.9 Religion and spirituality 38
- 2.10 Sacred sites and ceremony 42
- 2.11 Songlines 44
- 2.12 Conserving ancient Australia 46

3 Ancient Egypt 49

- Timeline: Ancient Egypt 50
- 3.1 The geography of ancient Egypt 52
- 3.2 Government, law and religion 54
- 3.3 Key groups in ancient Egyptian society 58
- 3.4 Everyday life 60
- 3.5 Warfare 64
- 3.6 Death and funerary customs 66
- 3.7 Contact and conflict 70
- 3.8 Effects of contact and conflict 72
- 3.9 Significant individuals 74
- 3.10 The tomb of Tutankhamen 76
- 3.11 The legacy of ancient Egypt 78

4 Ancient Greece 81

- Timeline: Ancient Greece 82
- 4.1 Geography of Greece 84
- 4.2 Key groups in ancient Greek society 86
- 4.3 Government and law 88
- 4.4 Everyday life 90
- 4.5 Religion 94
- 4.6 Death and funerary customs 98
- 4.7 Warfare 100
- 4.8 Contact and conflict 102
- 4.9 A significant individual 108
- 4.10 Legacy of ancient Greece 110

■ 5	Ancient Rome	113	■ H1	Ancient India DIGITAL ONLY	1
	Timeline: Ancient Rome	114		Timeline: Ancient India	2
5.1	Geography of ancient Rome	116	H1.1	Geography of ancient India	4
5.2	From monarchy to republic	118	H1.2	Social organisation	6
5.3	Republic and empire	120	H1.3	Religion	8
5.4	Everyday life	124	H1.4	Law	12
5.5	Death and funerary customs	128	H1.5	Everyday life in southern India	14
5.6	The Roman army	130	H1.6	Death and funerary customs	18
5.7	Contact and conflict	132	H1.7	Warfare	20
5.8	The end of the republic and the growth of the empire	134	H1.8	Contact and conflict	22
5.9	Consequences of contact	136	H1.9	Significant individuals	24
5.10	Significant individuals	138	H1.10	Legacy of ancient India	28
5.11	Legacy of ancient Rome	142			
■ 6	Ancient China	145			
	Timeline: Ancient China	146			
6.1	Geography of ancient China	148			
6.2	Key groups in ancient Chinese society	150			
6.3	Law and religion	154			
6.4	Everyday life	156			
6.5	Warfare	160			
6.6	Death and funerary customs	162			
6.7	Contact and conflict	164			
6.8	Consequences of contact	166			
6.9	Significant individuals	168			
6.10	Legacy of ancient China	170			

Contents *continued*

SECTION 2

■ GEOGRAPHY

■ 7 Geography toolkit **173**

7.1	What is geography?	174
7.2	Key concept: Environments	176
7.3	Types of maps	178
7.4	Elements of maps	180
7.5	Grid and area references	182
7.6	Topography and relief maps	184
7.7	Topographic maps	186

■ 8 Water: A renewable natural resource **189**

8.1	The importance of water	190
8.2	Weather and climate	192
8.3	The water cycle	196
8.4	Precipitation	198
8.5	In the field: Measuring weather	202
8.6	Water in Australia	206
8.7	Water supply in Australia	208
8.8	Distribution of water	210
8.9	Water scarcity	212
8.10	Catchments	214
8.11	Case study: Importance of water: Aboriginal and Torres Strait Islander communities	216
8.12	Case study: Importance of water: Sayan village, Bali	218

■ 9 Water use and management **221**

9.1	Water use	222
9.2	Water footprint	224
9.3	Virtual water	226
9.4	Increasing water supply	228
9.5	Water management in Australia	232
9.6	Reducing household water use	234
9.7	Case study: The Murray–Darling Basin	236

■ 10 Atmospheric and hydrological hazards **241**

10.1	Hazards and disasters	242
10.2	Severe storms	246
10.3	Tropical cyclones	250
10.4	Tornadoes	254
10.5	Flooding	258
10.6	Heatwaves	262
10.7	Drought	264
10.8	Drought in Australia	266
10.9	Responding to hazards	268

■ 11 Liveability **271**

11.1	Deciding where to live	272
11.2	Liveability of places	274
11.3	Sense of place	276
11.4	Attachment to Country	280
11.5	Environmental quality and liveability	284
11.6	Access to services and facilities	286
11.7	Urban, rural and remote	288
11.8	Social connectedness	290
11.9	Measuring liveability	292

■ 12 Enhancing liveability **295**

12.1	Methods of enhancing liveability	296
12.2	Taking action	298
12.3	Better cities	300
12.4	Urban housing densities	302
12.5	Urban consolidation	304
12.6	Transport and cities	306
12.7	Better shopping centres	308
12.8	Better recreational spaces and schools	310
12.9	In the field: Investigating neighbourhoods	314

SECTION 3

■ CIVICS AND CITIZENSHIP

■ 13 Civics and citizenship toolkit 319

- 13.1 What skills do you need to be an active citizen? 320
- 13.2 Posing questions and conducting research 322
- 13.3 Researching civics and citizenship issues 324
- 13.4 Analysing and interpreting sources 325
- 13.5 Solving problems and making decisions 326
- 13.6 Communicating and reflecting 328

■ 14 Citizenship, diversity and identity 331

- 14.1 What is identity? 332
- 14.2 Multiculturalism: The changing face of Australia 336
- 14.3 Australia: A nation of many faiths 338
- 14.4 Australia's diversity 340
- 14.5 Australian values 344

SECTION 4

■ ECONOMICS AND BUSINESS

■ 15 Economics and business toolkit 349

- 15.1 What is economics and business? 350
- 15.2 Questioning and research 352
- 15.3 Analysis and interpretation 354
- 15.4 Economic reasoning, decision making and application 357
- 15.5 Communication and reflection 359

■ 16 Producing and consuming 361

- 16.1 Identifying producers and consumers 362
- 16.2 Responding to consumer demand 364
- 16.3 Price and demand 366
- 16.4 Responsibility in markets 370

■ 17 Becoming enterprising 373

- 17.1 Entrepreneurs 374
- 17.2 Enterprising behaviours 376
- 17.3 Business in Australia 380
- 17.4 Business opportunities 382
- 17.5 Case study: Australian businesses 386

Glossary 390

Attributions 396

Index 398

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 7. There are also additional graphic organisers and useful templates available for students via the Student Reader+.

7.3 Types of maps

Using maps

Geographers use many different types of maps. The physical environment. They are particularly useful. Geographers also use maps of culture, economics, and the world. Maps, satellite, weather, and other information. They are used to show the distribution of physical features, such as mountains, rivers, and oceans. They are also used to show the distribution of human features, such as cities, roads, and political boundaries.

Topographic maps

Topographic maps show the shape of the land. They use contour lines to show the shape of the land. They are used to show the shape of the land. They are used to show the shape of the land. They are used to show the shape of the land.

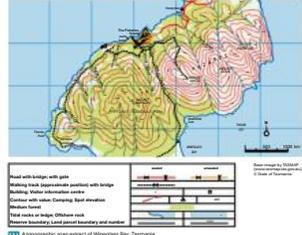


FIGURE 7.3.1 A topographic map of South America. The map shows the shape of the land and the elevation of the terrain.

Physical and human features maps

The map is an atlas or often called with human features. It shows the physical and human features of a region. It is used to show the physical and human features of a region. It is used to show the physical and human features of a region.

Thematic maps

Thematic maps are often used to show the distribution of a specific feature. They are used to show the distribution of a specific feature. They are used to show the distribution of a specific feature. They are used to show the distribution of a specific feature.

Choropleth maps

A choropleth map is a special type of thematic map that uses a color scale to show the distribution of a specific feature. It is used to show the distribution of a specific feature. It is used to show the distribution of a specific feature. It is used to show the distribution of a specific feature.

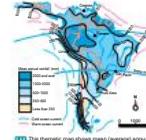


FIGURE 7.3.2 A choropleth map of South America. The map shows the distribution of population density across the continent.

Weather maps

Weather maps show weather conditions over a particular area. They are used to show the weather conditions over a particular area. They are used to show the weather conditions over a particular area. They are used to show the weather conditions over a particular area.



FIGURE 7.3.3 A weather map of South America. The map shows the weather conditions over the continent.

Activities

- Copy and complete the following table.

Map type	Information shown	Purpose
Topographic		
Physical		
Weather		
Choropleth		
- Study Figure 7.3.1. List at least three features of the topographic map and explain why these features are important.
- Study Figure 7.3.2. Identify the mean annual rainfall for each country.
 - State the rainfall for each country.
 - Explain why the rainfall is different for each country.
- Study Figure 7.3.3. Identify the mean annual rainfall for each country.
 - State the rainfall for each country.
 - Explain why the rainfall is different for each country.

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 7 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.

8.5 Measuring weather

Aim

The aim of this fieldwork activity is to measure and record weather and climate data. It is used to measure and record weather and climate data. It is used to measure and record weather and climate data. It is used to measure and record weather and climate data.

How to record weather data

- Use a handheld weather-recording device (see Figure 8.5.1).
- Use a handheld digital tool (such as a smartphone or tablet) to record weather data at your location. You may need to add weather-recording applications to your digital tool.

To ensure the accuracy of your weather data, ensure that the site you select to record your data is:

- in the open and not under cover
- free from obstructions, such as overhanging trees or walls and fences
- not close to heating or cooling units.



FIGURE 8.5.1 A handheld weather-recording device and a thermometer.

Temperature

A thermometer (see Figure 8.5.2) is used to record air temperature. It is used to record air temperature. It is used to record air temperature. It is used to record air temperature.

Method

Using a thermometer or handheld weather-recording device, record the temperature.

Note: If using a thermometer, do not hold it in the bulb as your body heat may affect the temperature reading.

Relative humidity

Relative humidity (see Figure 8.5.3) is used to measure and record relative humidity. It is used to measure and record relative humidity. It is used to measure and record relative humidity. It is used to measure and record relative humidity.



FIGURE 8.5.3 A relative humidity gauge.

Air pressure

A barometer (see Figure 8.5.4) is used to measure and record air pressure. It is used to measure and record air pressure. It is used to measure and record air pressure. It is used to measure and record air pressure.



FIGURE 8.5.4 A barometer.

Method

Using a barometer or handheld weather-recording device, record the air pressure.

Wind direction

A wind vane (see Figure 8.5.5) is used to measure wind direction. It is used to measure wind direction. It is used to measure wind direction. It is used to measure wind direction.



FIGURE 8.5.5 A wind vane.

Method

Using a wind vane or handheld weather-recording device, record the wind direction.

Wind speed

A wind speed gauge (see Figure 8.5.6) is used to measure wind speed. It is used to measure wind speed. It is used to measure wind speed. It is used to measure wind speed.



FIGURE 8.5.6 A wind speed gauge.

Method

Using a wind speed gauge or handheld weather-recording device, record the wind speed.

Note: You do not have an anemometer or handheld weather-recording device, estimate the approximate wind speed by observing the surrounding conditions and comparing them with the descriptions given in the Beaufort scale (see Table 8.5.7). This will give you the approximate wind speed.

IN THE FIELD

The Beaufort scale

Force	Wind speed (km/h)	Description
0	0-1	smoke drift vertically
1	2-5	smoke drifts horizontally or within 45° of vertical
2	6-10	light smoke drifts or is carried by wind
3	11-15	smoke from chimney is carried by wind
4	16-20	small branches move, dust and leaves are lifted
5	21-25	large branches move, water on ground is raised
6	26-30	twigs and small branches break off trees
7	31-35	small trees and shrubs begin to sway
8	36-40	broken twigs and branches are blown about
9	41-45	uprooted trees and considerable structural damage

Skills builder

Making a simple rain gauge

To make a rain gauge, you will need an empty clear plastic bottle, a ruler, a cork, a lid, and a measuring cylinder.

- Take the top of the empty clear plastic bottle. Cut the bottle to the width of the measuring cylinder. This will be the diameter of the rain gauge.
- On the inside of the bottle, measure and mark a scale in millimetres from the bottom of the bottle to the top of the bottle. This will be the height of the rain gauge.
- Place the bottle on a flat surface. The bottle should be level and the top of the bottle should be at the same level as the top of the measuring cylinder.
- Place the cork in the top of the bottle. This will be the lid of the rain gauge.
- Place the measuring cylinder in the top of the bottle. This will be the measuring cylinder.

FIGURE 8.5.7 Making a simple rain gauge.

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.

17.3 Business in Australia

Having a good idea for a product or service is an essential part of starting a business, but this does not guarantee success. After having the product, the entrepreneur needs to decide how to manage the business, how to respond to changing circumstances and how to manage employees. To make the business successful, the entrepreneur needs to have a clear vision of the business and a plan to achieve it. This is the business plan. The business plan is a document that outlines the entrepreneur's vision for the business and the steps they need to take to achieve it.

Business structures

A business is an organisation that is involved in buying and selling goods and services. This includes not only businesses but also organisations that are not-for-profit. There are several common business structures in Australia. These include:

- sole trader
- partnership
- corporation
- cooperative
- franchise

Sole trader

Being a sole trader is the simplest way to structure a business: one person owns the business and makes all the decisions about it. In a sole trader, the owner is responsible for all aspects of the business. The owner is also responsible for all aspects of the business. The owner is also responsible for all aspects of the business. The owner is also responsible for all aspects of the business.

Partnership

In a partnership, the business is owned by two or more people. These people share in the decision-making process. They generally have authority to make decisions about the business on their own. This means that the shareholders in the business are personally responsible for any business debts and share in any profits that are earned.

Cooperative

A cooperative is a business that is owned, controlled and operated by a small group of its members for their own benefit. It is a business that is owned, controlled and operated by a small group of its members for their own benefit. It is a business that is owned, controlled and operated by a small group of its members for their own benefit.

Franchise

A franchise is a special type of business relationship in which a parent business gives permission to independent people to operate under its name. This is based on a formal legal document called the franchise agreement. The franchise agreement is a legal document that outlines the terms of the franchise. The franchise agreement is a legal document that outlines the terms of the franchise.

Cooperative

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Did you know?

The Jiffy Group of franchises began with gardening services. The Jiffy Group of franchises began with gardening services. The Jiffy Group of franchises began with gardening services. The Jiffy Group of franchises began with gardening services.

Activities

Remembering and understanding

- List the different types of business structures.

Applying and analysing

- Study the features of a business partnership.

Evaluating and creating

- Compare a cooperative and a franchise. Explain the differences between the two structures.

Remembering and understanding

- Study the features of a business partnership.

Evaluating and creating

- Compare a cooperative and a franchise. Explain the differences between the two structures.

FIGURE 17.3.1 A sole trader is a business structure where one person owns and operates the business.

FIGURE 17.3.2 A partnership is a business structure where two or more people own and operate the business.

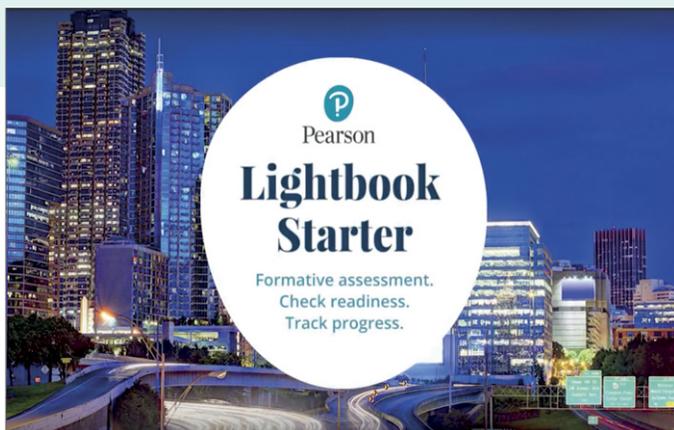
FIGURE 17.3.3 A cooperative is a business structure where a group of people own and operate the business.

FIGURE 17.3.4 A franchise is a business structure where a parent business gives permission to independent people to operate under its name.

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 alternate or additional assessment opportunity for students who enjoy the benefits of **instant feedback**, **hints** and **auto-correction**. There are handy icons in the student book to indicate the best time for students to engage with the Lightbook Starter.

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 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 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 skills continuum rubrics also available for each discipline. Further, students can be encouraged to track their progression on the continuum throughout their learning.

Be report-ready

The 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.





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?

1.0.1 A marine archaeologist holding an amphora (two-handled pottery jar), collected from the underwater excavation of the harbour at Caesarea Maritima, Israel. This ancient harbour was commissioned by King Herod the Great in 21 BC (BCE).

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 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 (history) 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 (history) 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

1.1 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 began around 3500 BC. 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 may 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 Sumer.

Activities

Remembering and understanding

- 1 Describe the difference between prehistory and history.
- 2 List three skills that can be gained by studying history.

Applying and analysing

- 3 Consider the types of tools that were needed to carve the cuneiform writing in the stone tablet (see Source 1.1.1). Make a list of tools that the ancient scribes might have used and compare them with the tools you need to write a letter today.

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



1.2.2 An artefact such as this glass perfume pot from ancient Greece is a primary source

it used to mean a crack in the glaze of pottery a hundred years ago.

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 Achaëa to the Greek city of Dyme, is a primary source. This inscription is in the Fitzwilliam Museum at the University of Cambridge, United Kingdom.

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. However, they can also be created by other people who represent the period, for example, 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



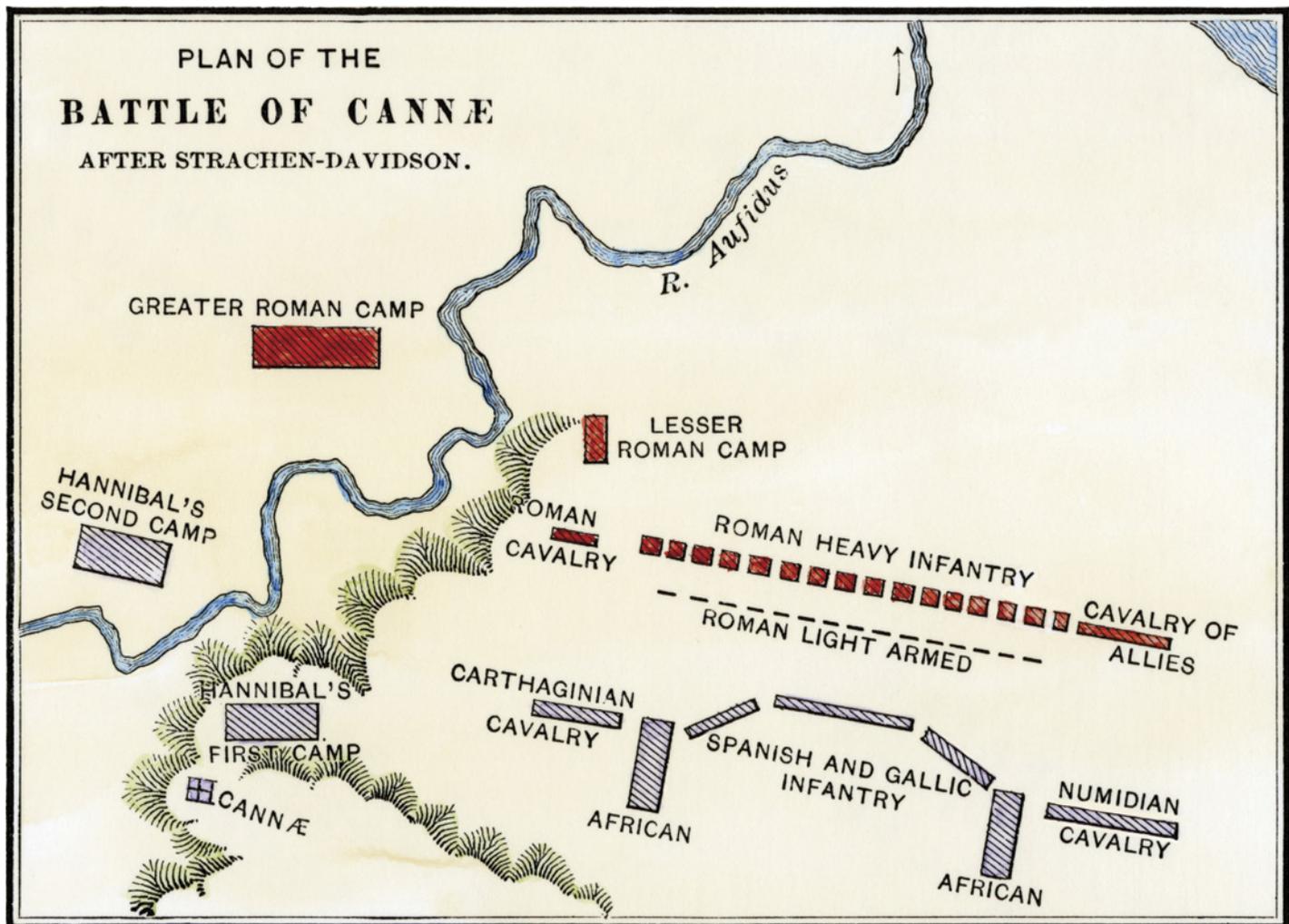
for example: Christopher Nolan (*Dunkirk*), Sofia Coppola (*Marie Antoinette*), Ridley Scott (*Gladiator*)

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.

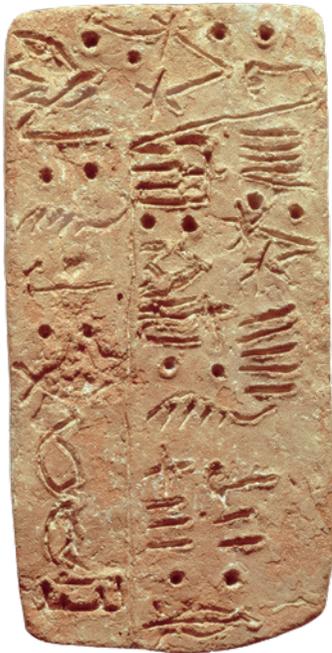
Interpreting sources

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 which 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]'.

1.2.4 Secondary sources

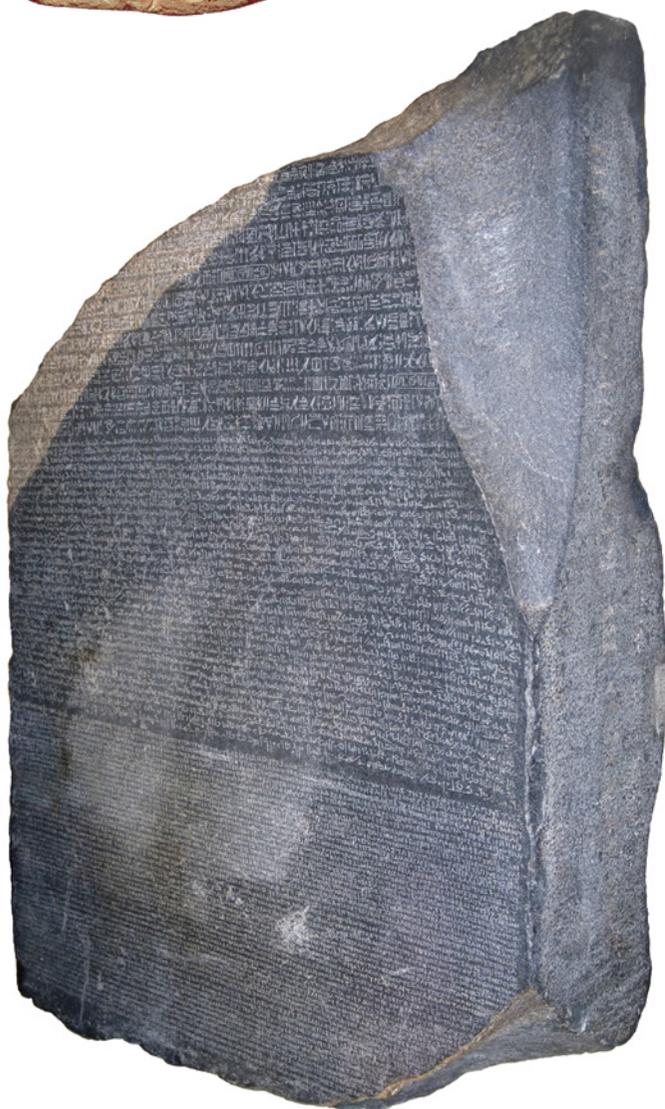


1.2.5 This map is a secondary source. It deals with the Battle of Cannae, in which Hannibal (a famous general from Carthage) defeated the Romans during the Second Punic War in 216 bc.



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

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. The hieroglyphs were then able to be known.



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.

Activities

Remembering and understanding

- 1 Draw two tables of two columns with six to eight rows each.
 - a In the first table, head the columns ‘Primary source’ and ‘Example’.
 - b In the second table, head the columns ‘Secondary source’ and ‘Example’.
 - c Fill in both tables using the information in this unit.
 - d Add to each table two or three of your own examples of each type of source.

Applying and analysing

- 2 Write a 150-word factual description of the Rosetta Stone. Note the main reason why the preservation and translation of this primary source was significant for our understanding of the past.

Historical skills

- 3 What hypothesis (which means to come up with a theory based on the available evidence) could you make about ancient Greek society from examining the perfume pot in Source 1.2.2?
- 4 How does the map in Source 1.2.5 help you to understand why Hannibal won the Battle of Cannae?
- 5 Imagine that you are the archaeologist who has uncovered the Rosetta Stone. What would have excited you and other historians as soon as you saw it?

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:

- when an event occurred
- how we know about the event
- how the event changed things
- why the event occurred
- 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 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 were large groups of Aboriginal and Torres Strait Islander children 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 below.

- 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 first meeting between Cleopatra, Queen of Egypt, and Mark Antony, Roman general, in Tarsus in 41 BC (see Source 1.3.2).



Cleopatra, Queen of Egypt, meets Mark Antony, Roman general, in 41 BC

1.3.2 Historical thinking concepts



Chronology

When did it happen?
What happened before and after?



Sources as evidence

What do ancient 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 them to meet?
What were the consequences of the meeting?



Historical significance

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

Activities

Remembering and understanding

- 1 What does 'corroborating' mean in relation to history sources?

Historical skills

- 2 Summarise the five main historical thinking concepts in your own words.

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**. The term 'BC' is an abbreviation for 'before Christ'; the term '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 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, they are placed in the order of when they occurred, from the earliest to the most recent. Dates that are before 1 AD are recorded in descending order, counting down towards an imaginary 'year zero'. Dates from AD are recorded in ascending order from 1 AD.

Did you know?

- **You may not have been born when you think you were**
- The use of **BCE** and **CE** in place of **BC** and **AD** is sometimes considered an improvement to dating. This is not just because these terms are more inclusive of non-Christians, but also because historians now believe that Jesus Christ was born in about 3 or 4 BC!

Activities

Remembering and understanding

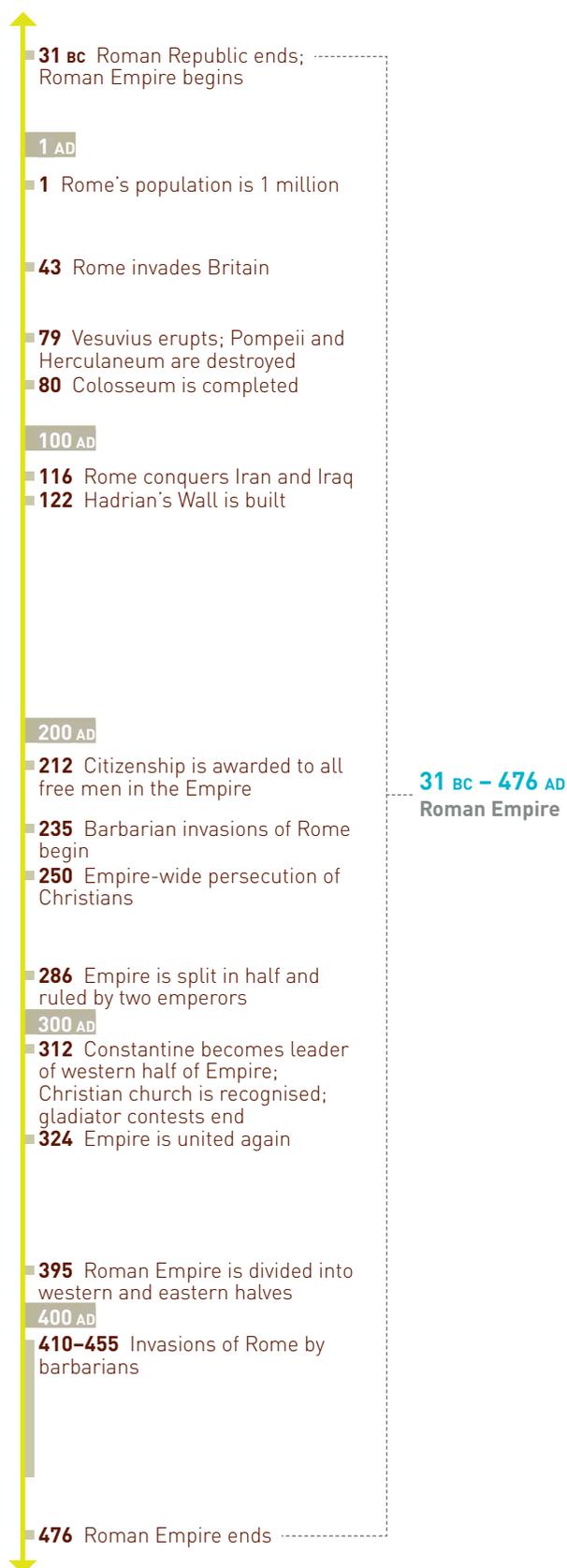
- 1 Why can using the **BP** dating system be a problem?

Applying and analysing

- 2 Write a paragraph explaining why some historians may choose to use the designations **BCE** and **CE** instead of **BC** and **AD**.

Historical skills

- 3 Write down, or sketch, three ideas for how you might format a timeline in a visually interesting way.



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.



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?)

Source

Context

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

Evaluation

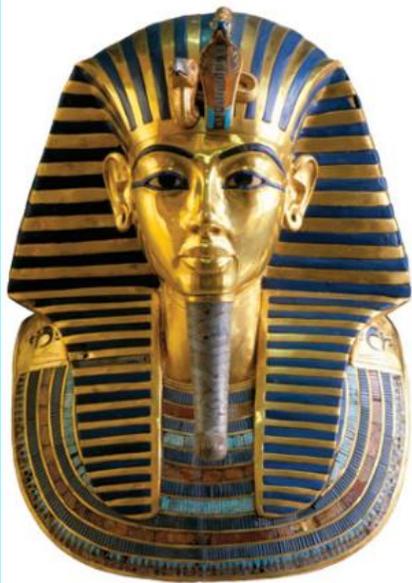
- How useful and reliable is it?
- Is it corroborated by other sources?

1.5.2 Asking questions of a source

Historical perspectives and interpretations

Historical sources often convey historical **perspectives** or **interpretations**. This is important to consider when you look at sources as evidence. In the context of studying history, perspectives refer to the views of people who were participants in the event; they are generally found in primary sources. Interpretations refer to the views of people commenting after the event; they are generally found in secondary sources. For example:

THE DISCOVERY OF TUTANKHAMEN'S TOMB



PERSPECTIVES



Howard Carter, archaeologist, 1922:

It was clear the place was a Pharaoh's tomb ... filled with magnificent equipment equal only to the wealth and splendour of the New Empire ... We were astonished by the beauty and refinement of the art displayed by the objects surpassing all we could have imagined.

INTERPRETATIONS



Dan Cruickshank, historian, 2004:

[Carter found] the sarcophagus of Tutankhamen with all the coffins inside it ... This was the first Royal tomb from ancient Egypt ever to be found intact, virtually untouched by tomb robbers. Carter must have been thrilled indeed.

1.5.3 Historical perspectives and interpretations

Activities

Remembering and understanding

- 1 Why is it important for historians to evaluate the accuracy and usefulness of a source whenever possible?

Applying and analysing

- 2 Create a poster that shows how you might evaluate and corroborate a source such as a letter home from a soldier during World War I. Use words and images.

Historical skills

- 3 Decide which of the following are historical perspectives and which are interpretations.
 - a Lenin gives a speech in 1917 arguing for revolution in Russia.
 - b A newspaper writes an editorial opposing Lenin and the Bolsheviks in 1917.
 - c A historian writes a sympathetic account of Lenin and the Bolsheviks in 1935.
 - d A historian writes a negative account of Lenin and the Bolsheviks in 1935.

1.6 Continuity and change

History often focuses on moments of dramatic change. For example, the Punic Wars between Rome and Carthage caused great social upheaval. However, aspects of political life in Rome stayed the same. For instance, an oligarchy (elite group) of nobles continued to control decision making in the Senate. This is an example of continuity.

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.



1.6.1 Continuity and change in Chinatown, Melbourne

Activities

Remembering and understanding

- a** Explain what historians mean by moments of change and continuity.
- b** Why might historians tend to focus on moments of change rather than continuity?

Applying and analysing

- 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 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. 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 people in the past made the choices they did. The only way we can know is if we have solid evidence about their decisions.

To see how a historian might identify the direct (short term) or indirect (long term) causes and effects of an event, consider the example provided in Source 1.7.3. This example is about the causes and effects of the rise of Alexander the Great, who was a ruler of ancient Macedonia in the fourth century BC.



1.7.2 US forces after their invasion of Afghanistan in October 2001

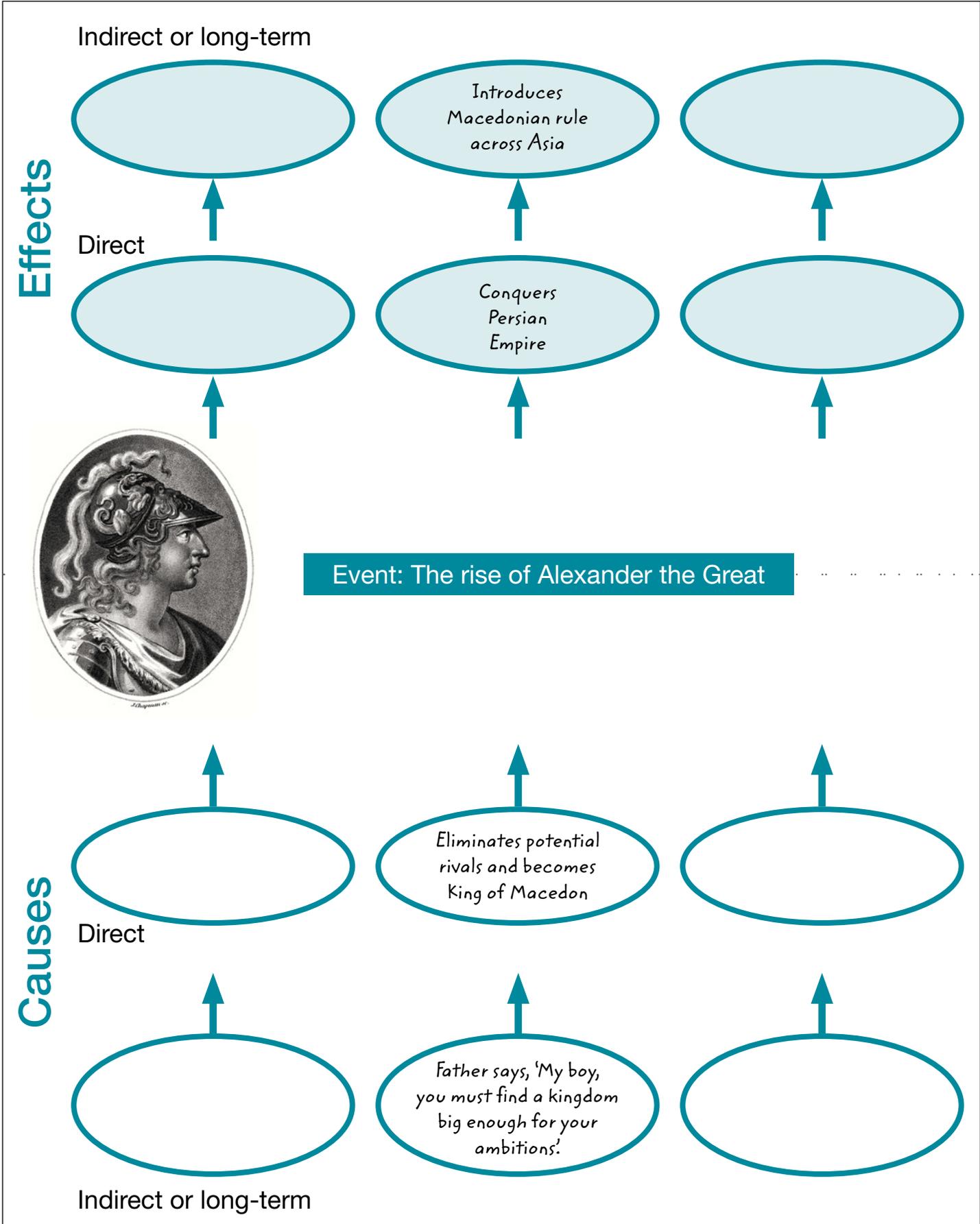
Activities

Remembering and understanding

- 1 What three aspects do historians need to be aware of when they are evaluating cause and effect?

Applying and analysing

- 2 Copy the cause and effect template into your exercise book and, working in pairs or small groups, complete the following activities.
 - a Find a direct and an indirect cause of Britain colonising Australia. Consider the immediate or short-term problems that the British believed a colony in Australia might solve, as well as the longer-term causes of these problems.
 - b Find a direct and an indirect effect or consequence of the British colonisation of Australia.



1.7.3 Cause and effect

1.8 Historical significance



1.8.1 The film *Gladiator* explores 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: How deeply were people affected?
- 3 Durability: How long were people affected?

Using this approach, one would say that World War I was more historically significant than Australian Federation, 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 is significant because it marks ‘Invasion Day’. 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

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 2 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 peoples.



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

Activities

Remembering and understanding

- 1 What are historical turning points?

Applying and analysing

- 2 Research and identify a historical event that had high significance in terms of quantity, profundity and durability.

- 3 Why has it been important to return the remains of Truganini and other Aboriginal and Torres Strait Islander peoples to their descendants?

Historical skills

- 4 In pairs, research the building of the pyramids of Giza and the building of the Great Wall of China. Compare the historical significance of the two projects.

1.9 The contribution of archaeology

Historians rely on archaeological findings when they study ancient civilisations. Archaeologists uncover most of this material evidence of ancient 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 often requires a lot of time and effort.



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.

Schliemann smuggled the artefacts he found 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 sauce boat 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 Çanakkale Museum in Turkey.

Activities

Remembering and understanding

- 1 Why does the study of ancient civilisations often rely on archaeology?

Applying and analysing

- 2 Explain why ancient artefacts can be difficult to trace and recover.

Evaluating and creating

- 3 Create a time capsule of your life and culture that could be used by historians or archaeologists in the future to understand the life you live today. Include five to ten items that give as much information as possible about your life and society. Attach a note to each item explaining its meaning and importance to you.

Historical skills

- 4 Examine Source 1.9.1.
 - a List all the 'tools of the archaeologist' that you see in this photograph.
 - b Do the diggers look trained or untrained? What evidence do you have to make this judgement?
 - c What are some of the advantages and disadvantages of trained and untrained diggers on an excavation site?



Ancient Australians 2

Australia is an ancient land. Aboriginal and Torres Strait Islander peoples were Australia's first people. They are the custodians of the oldest continuing culture in the world. Ancient Australian history is not yet as widely studied as the histories of other ancient societies, but new technologies and approaches are revealing more sources and making fresh historical insights possible. Gradually, we are building a better understanding of how ancient Australians lived, and becoming more knowledgeable about the rich histories and ongoing cultures of Aboriginal and Torres Strait Islander peoples.

OVERVIEW QUESTIONS

- 2A** What sources of evidence can help us to understand ancient Australia, and what do they reveal about Australia's ancient past?
- 2B** How did physical or geographical features influence the lives of Aboriginal and Torres Strait Islander peoples?
- 2C** What were the key beliefs, values and practices of Aboriginal and Torres Strait Islander peoples?
- 2D** Why is it important to conserve the remains of the ancient past, including the heritage, culture and artefacts of Aboriginal and Torres Strait Islander peoples?



Before you begin

2.0.1 Ancient Australian rock art provides some of the earliest known examples of ancient rock art in the world

GLOSSARY

anthropologists people who study the origin, development and varieties of human beings and their societies

artefacts objects made by humans (like pottery and flint spears) that are used by historians as evidence to learn about the past

colonisation the process of settling among and establishing control over the indigenous people of an area

Creator Ancestors spiritual beings who shaped the Earth during the Dreaming, providing life and laws to people

firestick farming controlled burning of the land by Indigenous Australians to help with hunting and to control native flora and fauna

heritage features belonging to the culture of a society from the past, such as traditions, languages or buildings

hunter-gatherers people who obtained food by hunting, fishing and foraging rather than by farming

lineage a direct line of descendants from an ancestor

moiety a Latin word meaning 'half'. In moiety societal systems, everything, including people and the environment, is split into two halves

oral tradition passing on knowledge, culture and history to the next generations by using spoken words often through stories or song

radiocarbon dating a technique used by scientists to learn the ages of ancient biological specimens (like wooden objects or human remains)

repatriation the process of returning an item of symbolic value, or the remains of a person, to its place of origin

rock shelters shallow cave-like openings at the base of a cliff; often the location of ancient archeological sites

shell middens places of archaeological interest where the rubbish from humans eating shellfish and other food has accumulated over time

Ancient Australians

The ancestors of Aboriginal and Torres Strait Islander peoples have left rich sources of evidence of their complex culture, way of life and significant achievements. Today, Indigenous peoples continue their ancestors' deep connection to and knowledge of the land, which historians and other experts study and learn from.

75 000+ BC

Evidence of stone tools found at a rock shelter called Madjedbebe in the Northern Territory

75 000+ BC (BCE)

35 000 BC

Rock engravings discovered in the Olary region of South Australia, the earliest dated petroglyphs (rock engravings) found in Australia

38 000–30 000 BC

29 000 BC

14 000–12 000 BC

8000 BC

6000 BC

4000–3000 BC

1500–1600 AD

1788 AD (CE)

1851 AD

Present day

1788 AD

First permanent settlement of non-Indigenous people (British) arriving on the First Fleet

1851 AD

The Port Phillip District officially becomes the Colony of Victoria (later the state of Victoria). Soon after gold is discovered at Mount Alexander, which sparks the gold rush and brings unprecedented wealth and population growth.

38 000 BC

Mungo Lady and Mungo Man are believed to have lived, died and been buried in the Lake Mungo area. They are some of the oldest remains of modern humans ever discovered outside of Africa. (See the image at the bottom of this page.)

29 000 BC

Charcoal found in a hearth suggests that Aboriginal people were living at the Keilor site in Victoria

14 000–12 000 BC

Sea levels begin to rise as ice caps melt. Inland lakes such as Lake Mungo have dried up; rock paintings in the Mitchell Plateau in the Kimberley region dated as being at least 16 000 years old.

12 000 BC

Remains discovered at an ancient burial site at Kow Swamp in northern Victoria are dated between 9500 and 14 000 years old; Tasmania is separated from the Australian mainland

8000 BC

Present-day Australian climate established

4000–3000 BC

The dingo arrives in Australia; evidence of Aboriginal occupation sites and toolmaking along the Nepean River at Penrith Lakes in NSW

4000 BC

The 'shape' of Australia's coastline is defined by its present-day sea level; Aboriginal occupation on the north-east coast of Tasmania

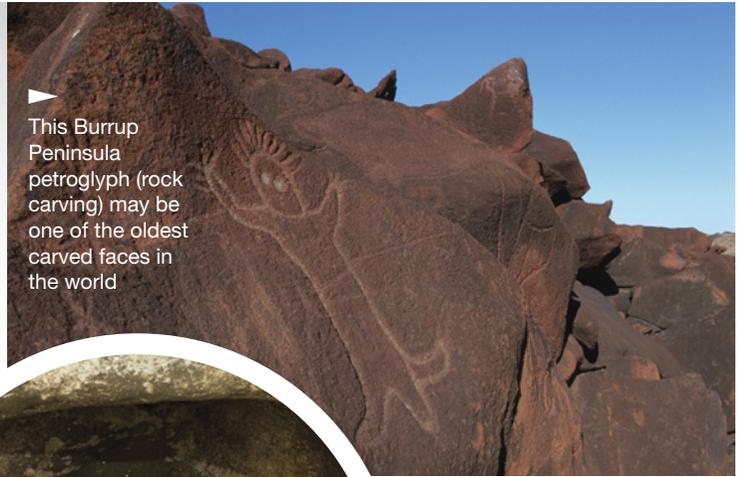
1500 AD

Dutch documents record the journey of Macassan trepangers (Indonesian sea cucumber traders) to Northern Australia for trade with local people. This trade continues until 1906.

1600 AD

Bone tool deposits at the Otway Peninsula, Victoria, suggest Aboriginal people were working with animal skins

The name of Kow Swamp comes from an Aboriginal word in the Yorta Yorta language (Ghow); it refers to the white gypsum soil found in the area



This Burrup Peninsula petroglyph (rock carving) may be one of the oldest carved faces in the world

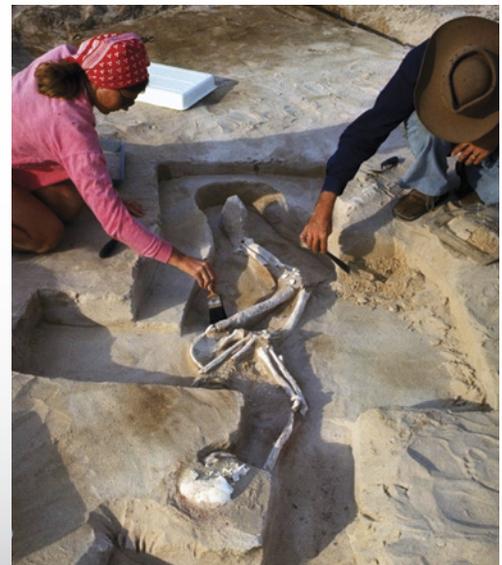


Aboriginal paintings of dingoes at Bunjil's Shelter in the Grampians National Park (Gariwerd) near Stawell, Victoria

6000 BC

The Torres Strait Islands are formed when the land bridge between Australia and New Guinea is flooded by rising seas

Mungo Man was discovered on the southern sector of the eroding Lake Mungo shoreline, south-west NSW



2.1 Evidence for ancient Australia

Origin and types of sources

Many sources reveal the lifestyle and practices of ancient Australians. Thousands of sites and **artefacts** across Australia have been discovered, and there are written European records from 1788 AD. In addition, there is the living **oral tradition** of Aboriginal and Torres Strait Islander peoples, which gives historians and other researchers important clues as to how people lived in ancient times. These sources provide evidence for the existence of a thriving, varied and rich culture that has existed for tens of thousands of years.

Modern society (post-European settlement) has emphasised the value of written histories produced by the European settlers and their descendants. Written records have therefore been preferred as sources for Australian history rather than the oral traditions of Indigenous peoples. Aboriginal and Torres Strait Islander peoples did not have a written culture, so what has been understood and studied in the past about ancient Australia has, in many cases, been limited or incorrect.

Recently, however, historians and other experts have used a broader range of sources to understand Australia's ancient past, including the oral traditions of Aboriginal and Torres Strait Islander peoples. Often the stories told in oral accounts can be backed by other evidence. This includes archaeological records such as rock art and settlement remains, scientific analysis such as the radiocarbon dating of bones and artefacts, and other accounts produced by Indigenous peoples and European observers in modern times.



2.1.1 An Aboriginal shell midden in South Australia. The shells are metres deep which suggests this ancient rubbish site had been used for some time.

Archaeological sources

Much of our knowledge about the earliest people in Australia comes from archaeology. The remains of ancient human activity are mostly human skeletons and artefacts, such as stone tools, rock art, ochre and **shell middens**. These human remains and artefacts are uncovered through archaeological digs.

More recent sources include elaborate stone fish and eel traps dating from before European **colonisation**, which can still be found in the landscape. These traps were constructed by Aboriginal and Torres Strait Islander peoples in streams to alter the flow of water and catch fish and eels.



2.1.2 Display cases of Aboriginal and Torres Strait Islander artefacts in the *Many Nations* exhibition at Museum Victoria



2.1.3 *Night Fishing*, *The Australian Sketchbook* by S.T. Gill, 1865, National Museum of Australia. Colonial records such as this, which observed the behaviours of Aboriginal and Torres Strait Islander peoples during early European colonisation, help historians to understand how ancient Australians would have lived.

Archaeological sources are able to provide us with rich information about ancient Australian culture. They continue to give us new information because the dating of human remains and artefacts is now more exact since there have been developments in scientific methods.

Material culture

Objects that are made by humans are known as material culture. These objects can offer a window into ancient Australian society and how ancient people would have lived. Items of Aboriginal and Torres Strait Islander material culture include boomerangs and shields, woven grass baskets, wooden bowls and fishing implements. These have either been preserved and studied by scientists and historians since the time of the first European settlers or recreated in modern times by using ancient knowledge.

Oral history

Aboriginal and Torres Strait Islander peoples use oral, ceremonial and visual ways to communicate and remember their past. Their histories have been kept alive through art, song cycles, dance and ceremonies. Oral histories of Aboriginal and Torres Strait Islander peoples are a

valuable source of evidence for historians seeking to better understand ancient Australia. At times, archaeological evidence has confirmed the oral stories passed down from one generation to the next since the time of an ancient event. For example, oral stories include how high the ocean levels were in the past, a fact supported by archaeological evidence.

Written record

Aboriginal and Torres Strait Islander peoples did not have a written culture, so there are no written historical accounts that give us information about ancient times. However, there are written sources from when Europeans first explored and colonised Australia. These sources include diaries, official reports, newspaper articles and published books. They were written by early settlers and explorers during colonial times, and they help historians build a picture of how ancient Australians would have lived. The accounts are sometimes supported by paintings and drawings by Europeans and Indigenous peoples from those times. The written sources provide us with further evidence of things like ceremonies and ways of living for ancient Australians.

Lake Mungo

Lake Mungo contains valuable clues to an ancient past that is significant nationally and internationally.

Mungo Lady

In 1968, the geologist Jim Bowler discovered human bones around Lake Mungo in south-western New South Wales. The varied sources of evidence uncovered at this site suggest that the area was occupied up to 45 000 years ago. During that time, the lake was part of the Willandra Lakes system. The lakes contained plenty of fish and shellfish, which provided people living in the area with a valuable source of food. Lake Mungo has been dry for the past 16 000 years and is now a desert.

Bowler and his colleagues named the remains of the Aboriginal woman they found 'Mungo Lady'. They discovered that she had been ritually cremated and buried. The bones of Mungo Lady are approximately 40 000 to 42 000 years old, which makes the remains the oldest human found anywhere in Australia. Mungo Lady is also one of the earliest finds of a modern human that has been discovered in the world.

Mungo Man

In 1974, Jim Bowler found more bones at Lake Mungo. These proved to be the skeleton of a male and was named 'Mungo Man'. The man had been ritually buried by being placed on his back, with his hands crossed in his lap, and his body sprinkled with red ochre. Just as Mungo Lady was one of the earliest examples of cremation discovered anywhere in the world, the ceremonial burial of Mungo Man, complete with the application of red ochre, is one of the earliest instances of this type of cultural practice. Like Mungo Lady, the remains of Mungo Man are approximately 40 000 to 42 000 years old.

The significance of Mungo Lady and Mungo Man

The remains of Mungo Lady and Mungo Man give a rare insight into the cultural practices and belief systems in 38 000 BC. These two famous burials show us that sophisticated ceremonies, like present-day funerals, were carried out by society at that time. As people do today, ancient Australians were making deliberate cultural decisions on how to say farewell to the dead based on their beliefs. Mungo Lady and Mungo Man are evidence that behaviour we associate with modern humans was also present in Australia tens of thousands of years ago.



2.1.4 The dry landscape around Lake Mungo where Mungo Lady and Mungo Man were found

Additional discoveries

In 2003, nearly 460 footprints were discovered in the clay around the Lake Mungo area. This is the largest collection of its kind in the world. The fossilised footprints have been dated to 20 000 years ago and are some of the oldest in existence.

The Willandra Lakes region became a UNESCO World Heritage site in 1981. This is a formal recognition of the site's global and cultural importance.



2.1.5 These footprints were made in the surface of Lake Mungo by a child about 20 000 years ago. They came to the attention of archaeologists in 2003, but local Aboriginal people say they had known about them for much longer.

Did you know?

Mungo Man finally returns to Country after 43 years

The remains of Mungo Man were stored in various locations since its discovery in 1974, but the bones were returned to their homeland in November 2017. The local elders have not made a formal decision yet on where the remains will ultimately rest, but Mungo Man's return to his ancestral Country is an important step for the local Aboriginal communities. Mungo Lady, who was brought back to Lake Mungo in 1992, is stored in a vault near the visitor centre.

Activities

Remembering and understanding

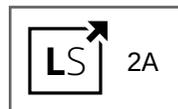
- 1 List the sources researchers use to learn more about ancient Australia.
- 2 Define 'artefact' in your own words. Provide examples of three forms of artefacts that could give researchers information about ancient Australians.

Applying and analysing

- 3 Identify what sites like shell middens might reveal about the lives of ancient Australians.
- 4 How could European sources such as paintings or written accounts help us to understand how Aboriginal and Torres Strait Islander peoples might have lived?

Evaluating and creating

- 5 How much can a simple artefact tell us about the way of life of the person who owned and used the item? Think about an artefact that is important to you, your family or your family's past.
 - Where does it come from?
 - How old it is?
 - Who owned it?
 - Why has it been kept and handed down?Create a profile on a piece of family jewellery, a war medal, a special book, unique coins or souvenirs from travel. If there are questions you can't answer, have a guess!



2.2 Populating the continent of Australia

Origins of the First Australians

Scientists argue about the origins of the modern human, known as *Homo sapiens* (a name in Latin meaning ‘wise man’). One theory says that *Homo sapiens* migrated across the world from a single point in Africa. Another theory says that multiple populations of *Homo sapiens* independently evolved from *Homo erectus* (an older species of human) in regions beyond Africa.

In the same way, experts have debated for many years about how ancient people first came to populate the continent now known as Australia.

The out-of-Africa theory

The most widely accepted theory of the origins of Australia’s first people is that they came as migrating *Homo sapiens* from South-East Asia. The theory proposes that these people belonged to a single genetic **lineage** and were the descendants of a population in Africa. They came from Africa to Asia, moved through South-East Asia, and then came to Australia.

Crossing from Asia to Australia: a great achievement

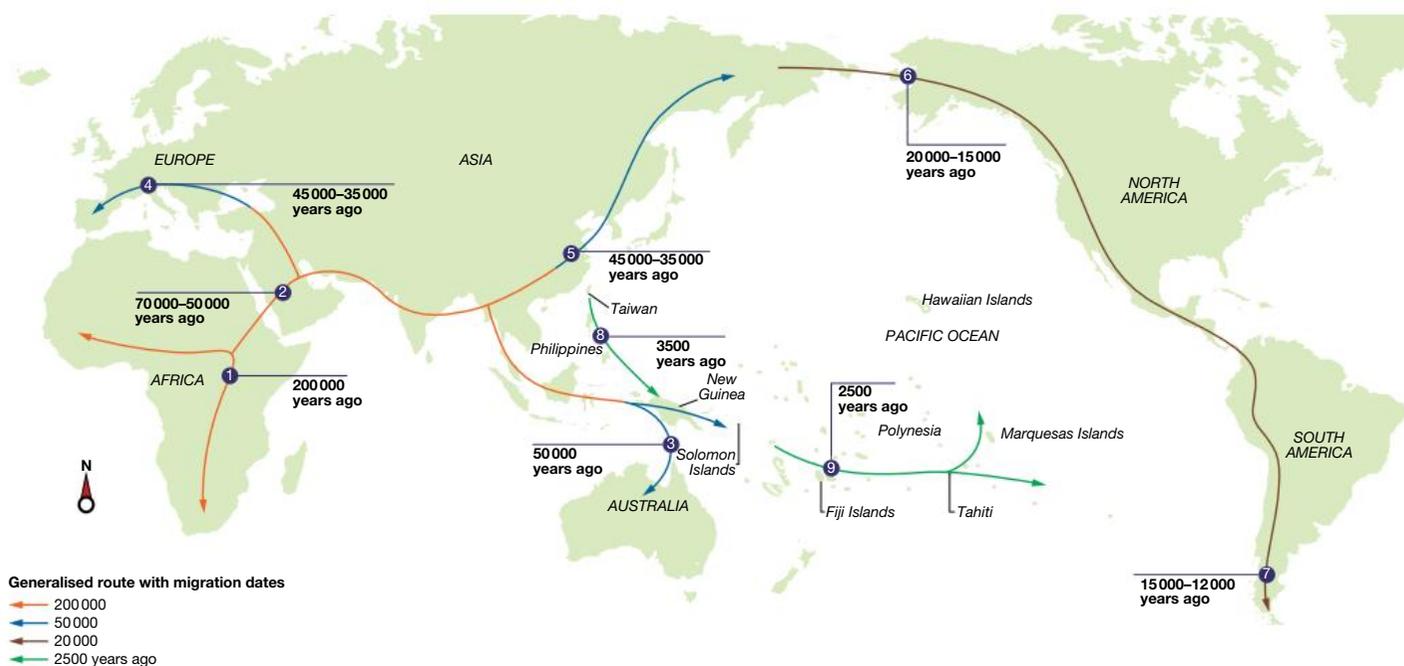
About 8000 years ago the landmass known as Australia was joined to New Guinea and formed a landmass called Sahul. It is likely that ancient peoples moved from Asia via land

or sea bridges into Sahul. The settlement of Australia by these first groups of people would have required a major sea crossing from Asia. This crossing is one of the greatest achievements of early humans.

Scientists do not know why these First Australians chose to travel and settle. They might have deliberately migrated or their arrival might have come from their accidental discovery of the land. None of the ancient boats that these early settlers would have used have survived for archaeologists to analyse. However, historians have suggested that these people might have used rafts made from bamboo, which grows widely in Asia.

The early occupation of Australia

The earliest known evidence of human occupation in Australia is a rock shelter in the Northern Territory called the Madjedbebe rock shelter. The site is widely believed to be about 55 000 years old, but a study produced in 2017 has claimed that artefacts found there could be up to 80 000 years old! Researchers have discovered hundreds of thousands of new artefacts, including technologies like the world’s oldest ground-edge stone axes, grindstones for crushing seeds, and stone points that could be spear tips for hunting. The claim of the very old age of the artefacts is yet to be widely proven, but could rewrite history.



2.2.1 Map showing the out-of-Africa theory



2.2.2 Excavation site at the Madjedbebe rock shelter with local Djurrubu Aboriginal rangers, Kakadu National Park, Northern Territory

The discovery and analysis of other archaeological sites across Australia suggest that most of Australia was occupied by the Aboriginal and Torres Strait Islander peoples approximately 30 000 years ago. This includes Tasmania, which only became isolated from the mainland around 11 000 years ago, after the last ice age flooded the expanse of sea now known as Bass Strait. There is the possibility that earlier occupation sites were destroyed by rising sea levels.

Some estimate the population of Indigenous peoples before European settlement to be as high as 1 million people. Most groups lived in south-eastern Australia, and a more widely spaced population of peoples lived further inland in the harsher desert environments.

The environmental impact of the arrival of humans

The arrival of the first humans in Australia began dramatic and irreversible changes to the landscape and its wildlife. Roughly sixty species of the continent's large mammals and birds became extinct around 45 000 to 50 000 years ago.

One theory suggests that the devastation was the result of massive fires, possibly set by the early humans. The purpose



2.2.3 *Diprotodon optatum* was Australia's largest marsupial. It was 4 metres long, weighed 2800 kilograms and was widespread when the first people arrived, but became extinct about 25 000 years ago.

of these fires is unknown, but they might have been used to clear land, drive out animals during hunts or signal to other language groups. The fires altered the Australian landscape forever. It was transformed from being covered in drought-adapted plants to being covered with fire-resistant plants, such as the eucalypts that exist today.

Many scientists claim that the early humans might have played a key role in driving some of Australia's large land animals to extinction. Animals like giant kangaroos and other large animals known as megafauna are believed to have been destroyed through over-hunting. This is often debated by historians.

Origins of Torres Strait Islander peoples

Around 7000 years ago, people from Melanesia in the Pacific Ocean migrated to islands in the Torres Strait. This chain of islands formed when the land bridge between the Australian continent and New Guinea was flooded by rising seas 10 000 years ago. In time, the Torres Strait Islanders came to be a distinct cultural group. These peoples have a seafaring culture based on a deep connection and knowledge of the land, sea, stars and wind.

Activities

Remembering and understanding

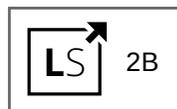
- 1 What does the Latin term *Homo sapiens* literally mean?
- 2 What is the name given to the ancient landmass that was formed from the landmasses now known as New Guinea and Australia?

Applying and analysing

- 3 Examine the map in Source 2.2.1 which details the out-of-Africa human migration theory. According to this source, which region of the world was the last to be populated by *Homo sapiens*?
- 4 Why do you think that the Aboriginal population were most concentrated in south-eastern Australia?

Evaluating and creating

- 5 Research online the Madjedbebe rock shelter in the Northern Territory. Draw a selection of the artefacts that have been uncovered by archaeologists at the rock shelter and label your drawings to help identify the items.



2.3 Social structures of Aboriginal people

Aboriginal society

More than 250 Aboriginal language groups existed in Australia before the Europeans arrived. Refer to Figure 11.4.1 on page 281 to see a large and detailed map of the different Aboriginal language groups of Australia. Each society had its own **Creator Ancestor** and their ways of life varied according to where they lived.

Clans

Aboriginal society was made up of differently sized social units. The most important group was the clan, which had twenty-five to sixty people and was made up of family groups or bands. Members of a clan were born in an estate (area of land) which supported that clan. Aboriginal peoples had strong links to their own Country and were committed to their estates; this determined their lifelong responsibilities, including care for the environment and its animals.

If several clans spoke the same language and their estates shared borders, they were known as a language group. Language groups, in turn, formed cultural groupings, called nations. Nations were based on their members speaking closely related languages.

Aboriginal people in Victoria

Across the land now known as Victoria there were at least four nations: the Kulin in central Victoria, the Gunai/Kurnai in Gippsland, the Mara in south-western Victoria, and the

Wotjoballuk in the north-west. The names of each of these nations meant 'human being' in the language groups that made up these nations.

The Kulin

The Kulin peoples are made up of five language groups, whose combined territory once stretched across the majority of central Victoria. The languages spoken by these groups were closely related. The people were also connected by common spiritual beliefs and alliances formed through marriage. Marriage connections were very important. They ensured that the clan would continue as new generations of children were born. They also helped to establish new relationships with other clans, which increased the resources and support available to the clan.

Did you know?

The special meaning of Country for Aboriginal people

Aboriginal people have a special bond with their Country, which is always written with a capital C. Country is not just the mountains, deserts, plains and waterways; it is all living things. Country also includes the stories and the Creation Spirits associated with an area.



KEY

- Dja Dja Wurrung
- Wathaurung
- Taungerung
- Wolwurrung (Wurundjeri)
- Boon Wurrung

2.3.1 This map shows the territories of the Kulin in central Victoria. The names in red are those of nations in the surrounding regions in Victoria.

When a man from a Kulin clan looked for a marriage partner, he tried to choose from another clan, ideally one as far away as possible. This assisted with the healthy development of offspring by preventing relationships from the same family units. When a woman married, she would leave the clan where she had been born and live with her husband on his land. If the woman had children, they inherited a connection with their mother's clan. This is how bonds were forged between clans that lived in widely separate parts of the nation. In Aboriginal society, bonds brought responsibilities and obligations towards other group members and relatives.

Leadership

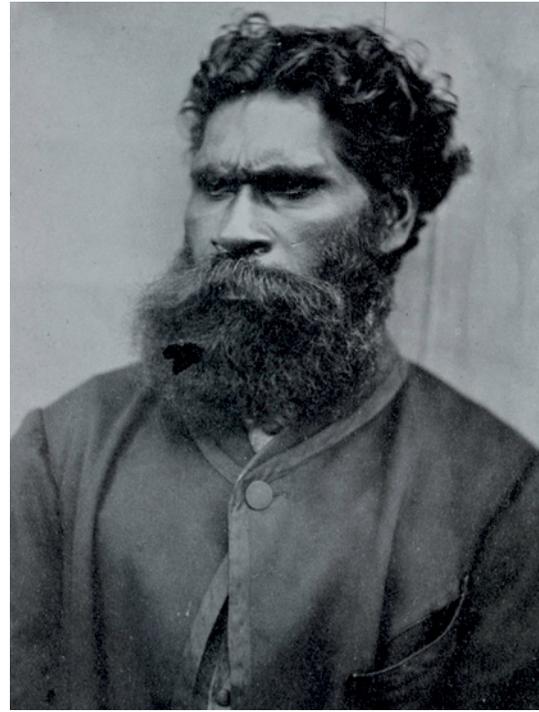
Elders were very important members of each Aboriginal cultural group. They led their people by being role models, and were often the most experienced and culturally knowledgeable members of a society, as they are today. Elders resolved disputes and led initiation ceremonies. They maintained the knowledge and stories that had been passed down across thousands of years for the benefit of future generations. This knowledge included bushcraft (using the natural environment for food, medicine and shelter) and the Dreaming (explored later in the chapter). Age was not what determined whether someone could be an elder. Just like it is today, elders needed to have earned the respect of their community and to have demonstrated their authority in a wide range of matters. In Victoria, the leader of the Wurundjeri clan's elders was known as the ngurungaeta (headman). A famed ngurungaeta during colonial times in Victoria was William Barak.

William Barak

William Barak was born into the Wurundjeri clan of the Woiwurrung people around 1823, in the area now known as Croydon, Melbourne. His father, Bebejan, was a ngurungaeta (clan head) and his Uncle Billibellary became the Narrm (Melbourne) region's most senior elder.

Barak worked tirelessly as a leader of his people as European settlement and extensive farming forced the Kulin peoples from their land. Many people died of starvation and disease. Barak worked to establish and protect Coranderrk, a self-sufficient Aboriginal farming community in Healesville, with his cousin Simon Wonga, who was a ngurungaeta.

When Wonga died in 1875, Barak became the ngurungaeta. He was a skilled negotiator and spokesperson, and campaigned for justice from the colonial government in Melbourne and to prevent authorities from removing residents from Coranderrk and sending them to other parts of Victoria. Tragically, these efforts were ultimately unsuccessful; Aboriginal people were progressively prevented from living at Coranderrk and it finally closed in 1924.



2.3.2 William Barak in 1866

During his time at Coranderrk, Barak created records of his culture through storytelling and art. He passed away in August 1903 at the time of the year he had predicted he would: as the wattle trees bloomed.

Activities

Remembering and understanding

- 1 Approximately how many different Aboriginal language groups inhabited Australia prior to European settlement?
- 2 Why is Country so important to Aboriginal peoples?
- 3 State the importance of elders to Aboriginal and Torres Strait Islander groups.

Applying and analysing

- 4 Look at Source 2.3.1 and identify the estates of language groups where Melbourne, Geelong, Bendigo, Bairnsdale, Echuca and Warrnambool now are.
- 5 How might an analysis of Barak's artwork help historians better understand Aboriginal histories and cultures?

Evaluating and creating

- 6 Research 'William Barak's artwork' online and create an oral presentation with a slideshow that provides an overview of his work.

2.4 Living off the land

Hunter-gatherers

Aboriginal and Torres Strait Islander peoples largely fulfilled their need for food by hunting and gathering, but there is also strong evidence that many groups also farmed (see page 30). Living as **hunter-gatherers** does not mean that Aboriginal and Torres Strait Islander peoples were nomadic (moved widely from place to place). In fact, Indigenous peoples are strongly linked to their own 'Country'. They moved within their estates and identified closely to its climate, landforms, animals and spirituality.

Hunter-gatherer communities across the world have a strict division of labour based on gender. Men hunt and fish for large animals, while women gather fruits and nuts, and hunt small animals and fish. Aboriginal and Torres Strait Islander peoples applied similar approaches to provide their family bands with regular food. Interestingly, it was the women's gathering that provided the bulk of the family band's food.

The hunter-gatherer method is an efficient means of acquiring food. Members of the group worked an average of 5 hours a day. They took advantage of seasonal food supplies and shelters, and had a vast bank of knowledge about the weather, flora and fauna of their Country.

The seasons

The Kulin people of Victoria had a precise understanding of the seasons and their environment. They had seven seasons in their calendar and it was linked to natural changes, the movement of the stars and changes in the weather. Each season was also signposted by changes in the life cycles of plants and animals (see Source 2.4.1).

The changing seasons played a part in deciding where people would be on their estate at any given time of year. The estate of every clan contained areas of high and low country, which would be visited at some time during the year. During the warmer seasons people spent their time in the lower, more open parts of their estates, along the rivers or on the open plains. As temperatures dropped, people would move into the higher lands where they could more readily find shelter.

JANUARY–FEBRUARY

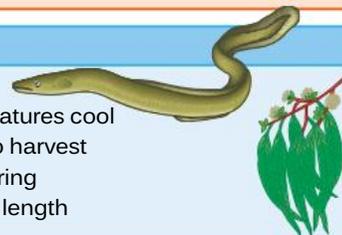
Biderap dry season

- hot, dry weather; high temperatures and low rainfall
- female common brown butterflies are flying
- *bowat* (tussock-grass) is long and dry
- the Southern Cross is high in the south at sunrise

MARCH

Iuk eel season

- hot winds cease and temperatures cool
- *iuk* (eels) are fat and ready to harvest
- *binap* (manna gum) is flowering
- days and nights are of equal length



APRIL–JULY

Waring wombat season

- the time of highest rainfall and lowest temperatures
- *waring* (wombats) emerge to graze in the sunshine
- hearts of *kombadik* (soft tree ferns) are the major food when no fruits are available
- days are short and nights are long

AUGUST

Guling orchid season

- cold weather is coming to an end
- *ae-noke* (caterpillars) of common brown butterfly feed on grasses at night
- *muyan* (silver wattles) are flowering
- *gurrborra* (koalas) begin mating; males bellow at night

SEPTEMBER–OCTOBER

Poorneet tadpole season

- temperatures are rising but the rain continues
- pied currawongs call loudly and often
- the flowering of plants, such as *murnong* (yam daisy), indicates the tubers are ready for eating
- days and nights are of equal length

NOVEMBER

Buath gurr grass flowering season

- the weather is warm, and it is often raining
- *buliyong* (bats) are catching insects in flight (Balayang, the Creation Being, is also referred to as the bat)
- male common brown butterflies are flying
- *coranderrk* (Victorian Christmas bush) is coming into flower



DECEMBER

Kangaroo-apple season

- changeable, thundery weather
- *dhuling* (goannas) are active
- days are long and nights are short
- *bunjil* (wedge-tailed eagles) are breeding (Bunjil, the Creation Being, is also referred to as the 'eaglehawk')

2.4.1 The Kulin seasons



2.4.2 The tubers of the yam daisy (*murnong*) can be eaten raw but were most often cooked in baskets. They were a significant source of energy and were available in spring, summer and autumn, but were less palatable in winter.

Murnong

The *murnong*, or yam daisy, has edible tuberous roots and was once an important source of food for the people of ancient Australia. The washed *murnong* tubers were put into purpose-made rush (grass) baskets. The *murnong* was prepared by roasting or pit baking them in the coals of a fire. The taste has been described as sweet and like coconut.

The introduction of sheep by European settlers, which grazed on the *murnong* and damaged the ground with their hard hooves, brought the *murnong* to near extinction. The loss of this important source of food had a disastrous effect on Aboriginal communities who depended upon the *murnong* for a large part of their diet.

Did you know?

Torres Strait Islanders and the Four Winds

Torres Strait Islanders relied on marine resources for their survival. The men especially spent a lot of time on the water, hunting for dugong, turtles and fish. They needed to know their position on the water, day or night, and how to get safely from one place to another. They read signs from the stars, land and sea, and developed a deep knowledge of the winds. This was necessary because winds marked the wet and dry seasons, and affected the weather, which could affect tides, currents and conditions on the sea. Torres Strait Islanders had names for the four major winds in the Strait. Each clan was linked to a wind from a direction, and each person identified with a wind name inherited from their father. The name played an important part in ceremonies and influenced their relationships with others, including marriage.

Activities

Remembering and understanding

- 1 Why is it wrong to classify the Aboriginal and Torres Strait Islander peoples who inhabited ancient Australia as 'nomadic'?
- 2 What was the general role of men in sourcing food for the group? What was the general role of the women?

Applying and analysing

- 3 Explain why the introduction to Australia of sheep and cattle by Europeans was disastrous to Aboriginal and Torres Strait Islander peoples.
- 4 How did an intimate knowledge of the weather, animals and plants assist Indigenous peoples in surviving the often harsh Australian conditions?

Evaluating and creating

- 5 The Kulin calendar is very different to today's calendar because time is defined in different ways. Create your own calendar over 12 months explaining periods of time and using events as markers. (Hint: use school holidays, sporting seasons, important family events, cultural celebrations and observations of nature.)
 - a Compare your calendar with your friends' calendars.
 - b Are each of your calendars unique or do you share observations/events?
 - c The Kulin use seven seasons. How many do you and your classmates have?
 - d Would someone else be able to chart the progress of time with your calendar?

2.5 Aboriginal settlement and farming: New historical theories

Shelters

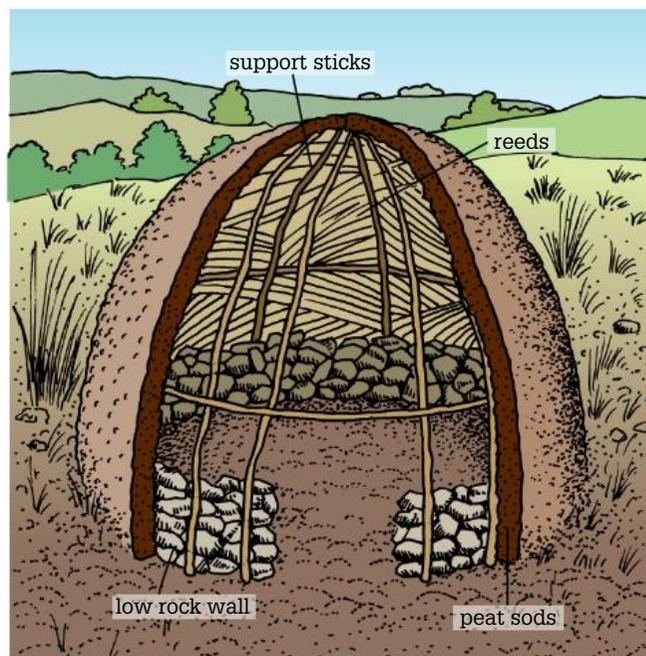
Archaeologists have been able to identify ancient Aboriginal and Torres Strait Islander campsites from shell middens, carved rocks or trees, paintings, worked stone artefacts and quarries. This evidence proves that ancient Australians lived in a variety of shelter types.

Ancient Australians chose locations that provided protection from the weather and access to resources. On the east coast, early Europeans saw campsites mostly at the bottom of valleys and on the shoreline. Inland campsites were often along rivers, in caves or **rock shelters**, among sand dunes or on ridge tops.

In 1981, archaeologists found an Aboriginal 'village' at Lake Condah in south-west Victoria. The seventy-nine stone structures discovered were identified as hut foundations. The huts were 3–4.5 metres in diameter and beehive in shape. They had a stone foundation wall with a frame of boughs on top. This frame was covered with turf, mud or bark (see Source 2.5.1).

Farming

The remains of a complex system of eel traps and canals were found near the lake at Lake Condah. Discoveries like this give evidence of farming, which has challenged the common belief that Aboriginal and Torres Strait Islander peoples were solely hunter-gatherers. Some historians now believe that the First Australians might have managed the biggest farming estates in the world.



2.5.1 A reconstruction of a hut of the Gunditjmarra people of western Victoria

Australian historian Bill Gammage argues that the First Australians worked a complex system of land management. This is because they used **firestick farming** (controlled burning) techniques, and drew on their knowledge of plant life cycles and the local flow of water. They farmed to make sure they had enough wildlife and plants to sustain them throughout the year.



2.5.2 Lake Condah in the Budj Bim cultural landscape

If this theory is correct, ancient Aboriginal and Torres Strait Islander peoples farmed as an activity rather than as a lifestyle. This means that they did not stay and cultivate the land for the entire year like the Europeans did.

Crops

The ancient Aboriginal and Torres Strait Islander peoples grew crops of tubers such as yams, grains such as native millet, and collected other food sources such as macadamia nuts, fruits and berries. They bred dingoes, hunted possums, emus and cassowaries, and they moved caterpillars and fish across the country to populate new breeding areas. These farming activities ensured there was a continuous supply of nutrition for the group.



2.5.3 Grinding stones were used to grind seeds and nuts in many parts of Australia

Animals

Ancient Aboriginal and Torres Strait Islander peoples knew how to hunt and catch animals. European explorers noted how Indigenous peoples burnt the grass at a chosen site to encourage the regrowth of green shoots. The short grass attracted kangaroos, wallabies and other animals, and made them easier to hunt and catch.

Ancient Australians also knew through generations of observation that native bees preferred certain types of trees.

Therefore they knew where to locate a prized resource: an energy-boosting supply of delicious honeycomb. Aboriginal and Torres Strait Islander peoples were masters of adapting their lifestyles to suit the land, plants and animals around them.

Eel farming

The Gunditjmarra people at Lake Condah modified more than 100 square kilometres of the landscape to increase eel habitats and eel numbers. They made ponds in the grassy wetlands and dug channels to connect them. Occasionally they dug through rock to allow water to flow from swamp to swamp. Some channels stretched over a kilometre. The channels and ponds were filled with eel traps from blocks of basalt (a type of volcanic rock). **Radiocarbon dating** of this complex eel farm suggests it could be 6600 years old, which makes the site one of the most ancient of its type in the world.



2.5.4 The remains of an ancient eel trap at Lake Condah. Buried sections of the trap seen in the photo date back to at least 6600 years ago.

Activities

Remembering and understanding

- 1 How do archaeologists recognise ancient Aboriginal and Torres Strait Islander campsites?
- 2 List at least eight items that made up the diet of many ancient Australians.

Applying and analysing

- 3 How has the notion that ancient Australians were solely hunter-gatherers been challenged by more recent historical theories?
- 4 Explain some ways ancient Australian people used their knowledge of the land and the native flora and fauna to maintain a constant supply of food.

Evaluating and creating

- 5 Draw or print off a blank map of Australia (search online for 'blank outline map of Australia'). On your map, neatly label the following:
 - Lake Condah
 - Lake Mungo (Willandra Lakes region)
 - a Label the sites with a number and write an explanatory note about the importance of the site on the back of the map.
 - b Give your map a relevant title (think about what the map's purpose is).

Keep this map safely in your notes so you can add to it later in the chapter.

2.6 Trade

Barter

Trade was an important way for ancient Australian people to manage their resources and connect. Ancient Australians travelled on an extensive network of trade routes throughout Australia. Most trade involved the barter (exchange) of goods.

Trade enabled social interactions between different Aboriginal and Torres Strait Islander peoples. This created links between neighbouring groups and sometimes resulted in clan obligations (where members of a group receiving a precious item were in debt to another).

Sometimes raw materials were not available in a group's environment. Trade therefore helped groups get the raw and finished materials they needed for their survival. People exchanged valuable and everyday items such as tools, hatchets (axes) and boomerangs, shells and ochre.

Greenstone quarries

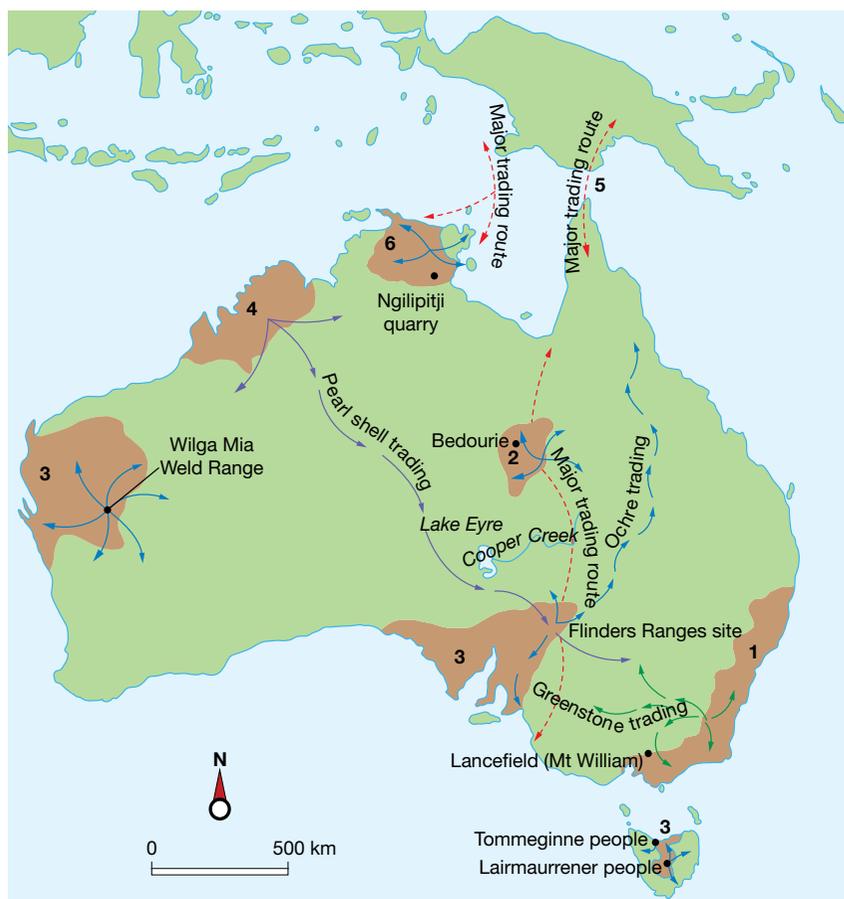
In central Victoria, Mount William (known as 'tomahawk place' in the Woiwurrung language) was famous for its highly valued greenstone hatchet heads. 'Greenstone' was a type of hard volcanic rock. The greenstone hatchets were traded over a wide region.

Stone hatchets were an essential tool for Aboriginal people in south-east Australia, with at least one stone hatchet in every camp group. Hatchets were often attached to a wooden handle. These stone axes were used for a variety of tasks including cutting sheets of bark off trees for huts or canoes, shaping lengths of wood into shields, making clubs and spears for hunting, and as weapons. They were also used to cut holes in trees to catch possums, or to split wood open to reach honeycomb, plump grubs or insect larvae.

Quarrying the stone

Evidence reveals that the Wurundjeri people, who operated the quarry at Mount William around 1500 years ago, dug deep pits to reach the valuable stone. Sometimes they heated the boulders above the ground to help fracture the underground rock and get the pieces they needed to make hatchet heads.

Each piece of hard greenstone was formed roughly into a hatchet head by striking it against a large boulder. This was then traded, and the new owner would shape and polish the hatchet by grinding it against another stone to make a cutting edge.



Key

1 Greenstone

Mount William was one of the largest of approximately 200 quarries in this greenstone region. Stone was the most common material used for toolmaking by Aboriginal people.

2 Pituri

Pituri is a narcotic. It is consumed in the form of a chewing tobacco, which is produced from the leaves, flowers and stalks of certain Australian native bushes. *Pituri* was highly prized by Aboriginal peoples as it could act as a stimulant or be used to lessen feelings of hunger or pain. The Pita Pita and Wangkamana groups produced *pituri*. The Dieri people from Cooper Creek, near Lake Eyre, controlled the *pituri* market in Central Australia.

3 Ochre

Some main sites were in South Australia (mined by the Adnyamathanha people of the Flinders Ranges); in Western Australia (mined by the Watjarrie people in the Weld Range); and in Tasmania (mined by the Tommeginne and Lairmaurrener people).

4 Pearl shell

This popular material from the Kimberley region spread far and wide over the continent, though it is not known to have reached Victoria or Tasmania.

5 Drum

Two types of cylindrical drums were traded from Papua New Guinea and then stylised by their new owners in Torres Strait.

6 Trade bundle

The Ngilipitji quarry was a major flint quarry site. Finished spearheads were packed into bark bundles for safe transport.

2.6.1 Map of Australia showing trading routes and materials traded over the past 1000 years



2.6.2 The remains of mining pits at Mount William quarry where Aboriginal people obtained greenstone and manufactured stone blanks for axe heads



2.6.3 Remnants of the quarried greenstone at Mount William, Lancefield, Victoria

Ochre

Ochre was an important trading commodity for Aboriginal peoples. It is coloured clay found in iron-rich earth. Ochre comes in a range of colours including yellow, brown, orange and red. It was made into paint by ancient Australians and used for many different activities.

The collection and preparation of ochre was very time-consuming. First, the ochre was heated up to change its colour. The level of temperature determined the depth of the colour that was achieved. Then, the ochre was ground into a powder. After that, it was mixed with sticky substances such as tree resin, bush honey, egg yolk or kangaroo blood. This helped to make the ochre hold together so it could be placed on different surfaces, such as a person's skin for ceremonial use.

Ochre was an important aspect of different ceremonies (see Mungo Man, page 22). It was an extremely durable material because it was not affected by direct light or extreme temperatures. This meant that it was an excellent material for decorating the ancient rock wall art that has been found all over Australia.

Mining ochre

Aboriginal people mined ochre at Wilga Mia up to tens of thousands of years ago (see Source 2.6.4). They crushed the surrounding rock with heavy stones, then used strong wooden wedges to dig out the ochre. It is believed that wooden scaffolds were propped against rock faces for hard-to-reach places. Over time, thousands of tonnes of rock were removed from sites like Wilga Mia across Australia.



2.6.4 Colin Hamlett at the 27 000-year-old Wilga Mia ochre mine in WA's Murchison region

Activities

Remembering and understanding

- 1 Outline why trade was so important to groups in ancient Australia.
- 2 Describe two tools and two natural items that were particularly prized by Australian Indigenous people.

Applying and analysing

- 3 Why was greenstone so valued as a material? How were tools made from greenstone used by Aboriginal people?

- 4 Look at the map of trade routes in Source 2.6.1. How far did the pearl shell trade cover?

Evaluating and creating

- 5 Add the following ancient Aboriginal sites with your descriptions to the map you created for Question 5 in the previous spread:
 - Mount William greenstone quarry
 - Wilga Mia ochre mine.

2.7 Tools and weapons

Technology

Aboriginal and Torres Strait Islander peoples designed and created items for use from natural materials such as wood, stone, shell and plants. The technology that was developed varied depending on the environment and food resources available to the groups.

Most tools were portable and could be used for multiple tasks; for example, a wooden bowl could be used to gather grass seeds, dig a hole to find water, or as a container and carrier.

A typical mainland 'toolkit' was made up of about thirty items. It included spears, spear-throwers, boomerangs, nets, traps, digging sticks, stone axes and knives, sewn cloaks, bags, bowls, nets and millstones. There are many examples of tools in museums collected by early Europeans, as well as recent finds by archaeologists.



2.7.1 A coolamon dish. These carved wooden dishes were used to gather food and when large enough, to carry a baby.

Stone tools and their creation

Stone tools in ancient Australia changed and developed through time like they did in other parts of the world. However, some of the earliest designs of tools are still in use today.

Archaeological evidence suggests that the oldest ground-stone tools appeared in Australia about 10 000 years before they appeared in Europe. Ground-stone tools like axe heads were made by the repeated grinding of a stone

(such as basalt or granite) with another hard stone. The discovery of such tools suggests that the early Australians were more technologically advanced in some of their tool-manufacturing techniques than was first realised by scientists and historians.

The ground-stone technique (see page 32) produced durable tools that had an even edge. Chipped-stone tools were created by striking sharp flakes off a larger stone; they were very sharp but quickly became blunt through use and had to be resharpened. Chipped-stone tools were used to shape objects made of wood, bark and bone. They were also used to scrape animal skins in preparation for making cloaks and other items. The stone made a good spear tip for hunting, and was a sharp knife to butcher animals.

Tools for hunting and fishing

Ancient Australian men fished with pronged spears and fish traps, and the women used hooks, lines and sinkers to fish from bark canoes. This method of fishing, and the division of labour between men and women, was observed and well documented by early European colonists.

The use of shell hooks evolved over the past 2000 years. They enabled the women to reach the fish living in deeper water because the hooks were strong and sharp and didn't need the person to be able to see the fish they were trying to catch. The later use of shell hooks potentially reflects the increased population's need for new food sources.

The men in ancient Australian societies used a variety of tools to hunt animals including spears, boomerangs, wooden clubs, ground-edge stone hatchets and traps. Men climbed trees to club possums and catch birds, and speared fish and land animals.



2.7.2 Detail of a primary source showing a stone axe from T. Prattent, 1789

Did you know?

Early innovators in tools

The world's oldest known example of an edge-ground axe was found in Australia in 2016. The tool has been dated at between 49 000 and 44 000 years old. It is the oldest example of the kind of axe that we would recognise today. It consists of a ground cutting edge which is mounted on a balanced handle.

The boomerang

Boomerangs are an internationally recognised symbol of Australia. For Aboriginal people, the boomerang represents their culture and is an example of their peoples' extensive histories. The boomerang appears in Aboriginal Creation stories so it is a tool that has existed since time began.

Variety

There are many different types of boomerangs because there were many different Aboriginal groups across Australia. It seems that larger, heavier boomerangs were used by people living inland and in desert areas, while lighter boomerangs were thrown by people living on the coast and in the high country. Despite how popular culture has portrayed the boomerang, most boomerangs did not return to their thrower.

Uses

Boomerangs have many uses. They were weapons for hunting birds and animals, such as emu, kangaroo and other marsupials. A skilled hunter could bring an animal down from 100 metres away by throwing the boomerang directly at it or at the ground and making the boomerang bounce up to hit the animal.

Boomerangs were also used as fighting weapons. A medium-weight boomerang was deadly if it was thrown at another person. When combat was hand to hand, two-metre tall boomerangs were used as fighting sticks.



2.7.4 A hunting boomerang

Boomerangs were used as digging sticks to search for root vegetables, or to scrape ashes away from a fire.

They also featured prominently in Aboriginal dance and music. They were a percussion instrument when a pair was rattled together, and an accessory to ceremonial dances.

Activities

Remembering and understanding

- 1 What sorts of tools might have been found in a typical ancient Australian 'toolkit'?
- 2 The production of which tool suggests that ancient Australians were more technologically advanced than previously thought? How were the tools made?

Applying and analysing

- 3 Identify the variety of uses that ancient Australians had for a boomerang. Describe a boomerang most people would recognise today. Is it capable of any of those ancient uses?
- 4 Spearing fish would not have been possible in deep water. How do you think Aboriginal and Torres Strait Islander peoples solved this problem?

Evaluating and creating

- 5 Imagine you have invented a time machine and can visit ancient Australia. You decide to only take items used by ancient Australians so that you don't disturb the course of history, but you only have room to take two. Carefully choose from the list below and justify your choice. How will they help you when you travel back in time?

- a greenstone hatchet
- a possum skin cloak
- a netting bag/basket made from grass
- a shaped wooden bowl
- a set of firesticks (see next section for more information)
- a spear
- two fish hooks made from shell
- a hunting boomerang.

Compare your choices with a classmate and share your reasonings. Did you make the same choices? Has someone else's justifications made you change your mind?

2.8 Fire

Fire

Fire made life for Aboriginal and Torres Strait Islander peoples easier by providing light and warmth. It was used to assist with hunting, and for cooking meals. Ancient Australians used fire to change and manage their environment. It was also useful in signalling other groups.

Controlled burning, which is also sometimes called firestick farming, helped to:

- ▶ create open forests and encourage new growth of grasses, which attracted grazing animals
- ▶ reduce the amount of leaf litter, which made firestorms less likely
- ▶ clear the bush to make travel easier and reduce the danger from hidden snakes
- ▶ encourage new growth of edible plants like the bracken fern or yam daisy.

In Tasmania, Aboriginal people used controlled burning on rainforests to increase the amount and diversity of food.

In Arnhem Land (in modern Australia's Northern Territory) jungle plants did not regenerate well after fires, so there were strict ritual prohibitions against burning. Jungle spirits were said to send smoke into the eyes of the fire lighters to blind them. Traditional owners carefully constructed firebreaks around these areas to protect them from grassland burning.

Did you know?

The firestick was one of the most important tools for Aboriginal people. Even though there were great regional differences, the firestick was used by all communities at the time of contact with Europeans. Firesticks work by using heat generated by friction. A round-ended stick held with both hands is quickly twirled in a hole in a wooden base. The point of contact ignites the dry grass or bark lying next to it.



2.8.1 Painted firesticks from Milingimbi, Northern Territory, c. 1960, from the National Museum of Australia collection



2.8.2 Joseph Lycett's painting *Aborigines Using Fire to Hunt Kangaroos* (c. 1817)

Farming with fire

Aboriginal peoples mainly used fire to manage the grasslands and open woodlands on their estates. Certain areas were burnt every 3 to 5 years. This process of caring for Country involved the whole family band. Chosen men would light the fires, and women would later dig out the tubers from the burnt plants. The digging helped to thin out the surrounding vegetation, aerate the soil and mix enriching ash into the earth. As a result, when the family band returned to the area the next year, they could expect an increased crop of tubers to feed the group.

Early European settlers noted how much of Australia's woodland looked like the hunting estates of northern Europe. There were treeless clearings with little undergrowth. These open spaces allowed hunters to move freely through forested areas in pursuit of animals. The colonists mistakenly thought Australia's clean landscapes were the land's natural state. The reality was that the spaces were the seasonal work of the Aboriginal people of each region. By shaping the land through fire, Aboriginal peoples unwittingly made the land appealing to European sheep farmers, who appreciated the vast spaces of grazing land.



2.8.3 *Gippsland, Sunday Night, February 20th, 1898*, by John Longstaff

Overgrown bushland

Anthropologists (people who study human societies) have discovered that the scrub and bushland are now overgrown because Aboriginal and Torres Strait Islander peoples have not been able to do their traditional burn-offs.

Increase in bushfires and impact on small mammals

The uncontrolled undergrowth in many places provides fuel for terrible bushfires. Victoria has suffered several over the years, such as the catastrophic fires of Black Saturday in 2009, which killed 173 people.



2.8.4 Warru ranger Elisha Roesch back-burns near the community of Ernabella (Pukatja) to control the introduced buffel grass

The thick overgrowth is difficult for small mammals to travel through. This is because there are plants, such as spinifex, which have sharp points that prevent the animals' movement. Also, a single lightning strike can send huge bushfires racing through hundreds of kilometres of bone-dry and overgrown country. This harms and kills the small mammals.

After a bushfire, there is a large fire scar on the landscape; everything that was there has been burnt away. This means that there are fewer resources for the mammals to survive on and they have less cover from their predators.

Australia's mammal populations are disappearing faster than anywhere else in the world. Many experts believe that this decline partly relates to the reduction in the traditional burning practices of Aboriginal peoples.

Activities

Remembering and understanding

- 1 List the main purposes of firestick farming by Aboriginal peoples.
- 2 What has happened to the undergrowth in many places in Australia since the disruption of firestick practices as a result of colonisation?

Applying and analysing

- 3 How did the actions of the women following a controlled back-burn benefit the family group?
- 4 Describe the ways that firestick farming is good for small mammals.

Evaluating and creating

- 5 Assess the usefulness to historians of a primary source like Joseph Lycett's painting *Aborigines Using Fire to Hunt Kangaroos*, which is shown in Source 2.8.2.

2.9 Religion and spirituality

Religion and spirituality

Spirituality for Aboriginal and Torres Strait Islander peoples took many forms, so there were many spiritual beliefs rather than just one. Some beliefs were commonly held, but there was also great variety from region to region. Ultimately, ancient Australians' beliefs helped them to understand creation, the purpose of life and how to behave, just like other religions in the world do.

Ancient Australian spiritual beliefs were based on the forces of nature. Their spirituality involved a deep respect and love for the land, and the influence of ancestral spiritual beings.

Today, many Aboriginal and Torres Strait Islander peoples refer to spirituality rather than religion. Their values and beliefs come from a sense of belonging to the land, the sea and nature; they see themselves as part of the natural world.

Key beliefs and roles

A specific member of each clan had a special knowledge that connected them to spirits and divinities (gods). Certain elders also held special knowledge of important stories, ceremonies and rituals. Some knowledge was seen as solely men's business or women's business, and was not shared between the groups; this separation continues today.

Totemism

Totemism was (and is) a spiritual-belief system where people identified with a specific animal, plant or natural feature. Totems contributed to the way people were grouped into clans. They guided local laws, such as which animals could be hunted, and they influenced ceremonies.

The Dreaming

The Aboriginal and Torres Strait Islanders' traditional view of creation is that their people have been in Australia since the land was created. On mainland Australia, the Dreaming is a system of belief held by many First Australians which tells the story of their origins. Prior to the Dreaming there was a 'land before time' when the Earth was flat. In the Dreaming stories, however, all-powerful ancestral beings moved across the land. They moulded the landscape and wildlife, and lay the structures for human society.

A consistent Creation story for many Aboriginal communities is the Rainbow Serpent. The Rainbow Serpent is an Ancestor Spirit and perhaps the oldest still-present spiritual/religious belief in the world. The story is of a large snake-like creature who inhabits deep waterholes. The Rainbow Serpent is a powerful symbol of the creative and destructive power of nature.

It is impossible to say how old the Dreaming belief system is. From an Australian Aboriginal perspective, the Dreaming has existed since the beginning of time. The Creation stories give Aboriginal peoples an unbroken connection with the past, present and future. The Dreaming is kept alive by spoken words, dances and works of art.

Death in the ancient world

Death was rarely thought to be a natural event. Even when the physical cause was known, Aboriginal people believed it was an evil spirit or sorcery. Campsites where a death occurred were abandoned and the dead person's name could not be mentioned. Complex ceremonies had to be carried out to drive away spirits; feasts and games were held, and a burial or cremation took place.

The artwork in Source 2.9.2 is modern, but shows the use of hollow logs as coffins. This is a burial practice of the Yolngu, who are from central and eastern Arnhem Land. The Yolngu burials would use larger logs, but sometimes smaller hollow logs were used to keep the bones of the deceased safe at the home of the family for a short period. The hollow logs in the installation represent the deceased person, and the designs on the log are the same as the designs painted on the body during the burial rites.

Ancient Australians believed a dead person's name could not be spoken because it would recall and disturb their spirit. This belief is still prevalent among many Aboriginal and Torres Strait Islander communities today. There are also restrictions on producing images of the deceased. Protocols now exist for media and public institutions to respect this belief when referencing Aboriginal and Torres Strait Islander peoples who have died.

The effect of colonisation/invasion

Traditional beliefs from ancient Australia have been greatly influenced by colonialism. Some Aboriginal and Torres Strait Islander peoples have adopted the beliefs of religions introduced to them from other cultures. In modern Australia, many Aboriginal and Torres Strait Islander peoples are Christian, while others follow other religions such as Islam.



2.9.1 The 5.5-metre rock art Rainbow Serpent at Mount Borradaile, Arnhem Land, Northern Territory



2.9.2 The *Aboriginal Memorial* at the National Gallery of Australia is an installation of 200 hollow log coffins to commemorate all who died since 1788 defending their land

Interpreting sources

The way people record the past is affected by their point of view. This can mean that additions and omissions are intentionally (and unintentionally) written into history.

Many of the historical accounts we rely on have survived because they are the stories of people who 'won' the battle or survived the disease. What often does not survive are the accounts of those who 'lost'. Therefore, a source may give us a limited, incorrect and one-sided understanding of the past. So, when we study history, it is important to look for accounts that only represent one side or that clearly neglect the perspectives of others. Our job is to fill the gaps in the way history has been recorded by reviewing a variety of sources of evidence.

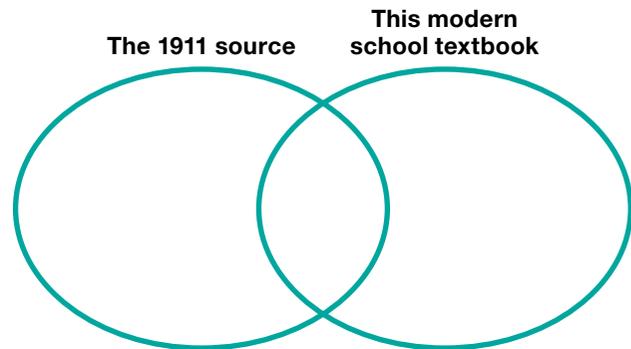
Compare accounts of ancient Australia

Read this extract from a book about the history of Australia that was published in 1911.

The aborigines of Australia were long thought to be very little superior to beasts of the fields. That is by no means the case. It is true that they had done absolutely nothing to improve the land in which they lived; they were cannibals, and had other horrible and blood-thirsty customs; that they esteemed [valued] as delicacies abominable things like beetles and ants; that if they obtained food, they gorged themselves without any thought of the morrow, and that they seemed to make hardly any progress ... They were in fact not men in a state of degradation, but men at the most primitive stage of development ... one might conclude from their condition that man appeared later in Australia than anywhere else; that, as we have already said, Australia was a younger part of the world.

Source: *A Short History of Australia*, by Thomas Bateson, published by Marshall & Son in 1911, pp. 23–24

- 1 How does the information in the extract from 1911 compare to the information you have read in this modern school textbook?
- 2 Draw a large Venn diagram. The left-hand circle represents the 1911 source, and the right-hand circle represents this modern school textbook. Label the circles.



- a Identify the differences in historical details the two texts present. In the outer two spaces write the information that is unique to each source.
 - b In the space where the two circles overlap, write the similarities you can identify (if there are any).
- 3 How does each source reflect the social attitudes of the time it was created? (Hint: think of the type of language used, the way the content talks about people, and so on.)



2.9.3 *Eagle* is a 25-metre sculpture of Bunjil in Docklands, Melbourne, sculpted by Bruce Armstrong in 2002

Did you know?

Bunjil, Waa and the Kulin

For the people of the Kulin nation, Bunjil is the ancestral wedge-tailed eagle, the Creator. Bunjil created much of south-eastern Australia, and the features and animals within it. He also created people by breathing life into figures moulded from clay. Waa is the ancestral crow, the Protector, who features in many stories as the trickster. All Kulin peoples were born into a **moiety**, determined by their mother's or father's side. Moiety is a Latin word meaning 'half'. In moiety systems, everything, including people and the environment, is split into two halves. A person's moiety decides his or her totem, which is either Bunjil or Waa. An individual's moiety dictates their behaviour, social relationships and marriage partners. Both men and women from a Bunjil clan, for example, had to seek marriage partners from a Waa clan. If they were from a Waa clan, they had to marry a person from a Bunjil clan.

Activities

Remembering and understanding

- 1 What is the basis of spiritual beliefs for many Aboriginal and Torres Strait Islander peoples?
- 2 Define 'totemism'.

Applying and analysing

- 3 Why is naming dead people offensive to many Aboriginal and Torres Strait Islander peoples?
- 4 How did the Yolngu people from central and eastern Arnhem Land treat their dead?

Evaluating and creating

- 5 The huge statue of Bunjil the Creator is an example of the representation of Aboriginal peoples' culture in modern society. What other examples can you think of in modern Australia? Consider place names, institutions, landmarks (natural and human-made) and events.
 - a Do you think these representations have helped to educate the broader community about Australia's Aboriginal and Torres Strait Islander heritage?
 - b How could we better educate people about ancient Australian history and cultures? What more might be needed to educate people about ancient Australian history and cultures?

2.10 Sacred sites and ceremony

Sacred sites and ceremony

There are links between the spiritual beliefs, laws and rituals of Aboriginal and Torres Strait Islander peoples. These links connect their culture to the past, present and future. Sacred sites (places where special spiritual events occur) and ceremony (formal group action to mark an important occasion) are important. Ceremonies and sacred sites emphasise the relationships between ancestors, family and descendants.

All aspects of ancient Australian life related to spirituality and ceremony. A significant focus was on fertility, rites of passage (important transitions in life) and death. Ceremonies that involved these aspects of life were conducted at sacred sites.

Sacred sites

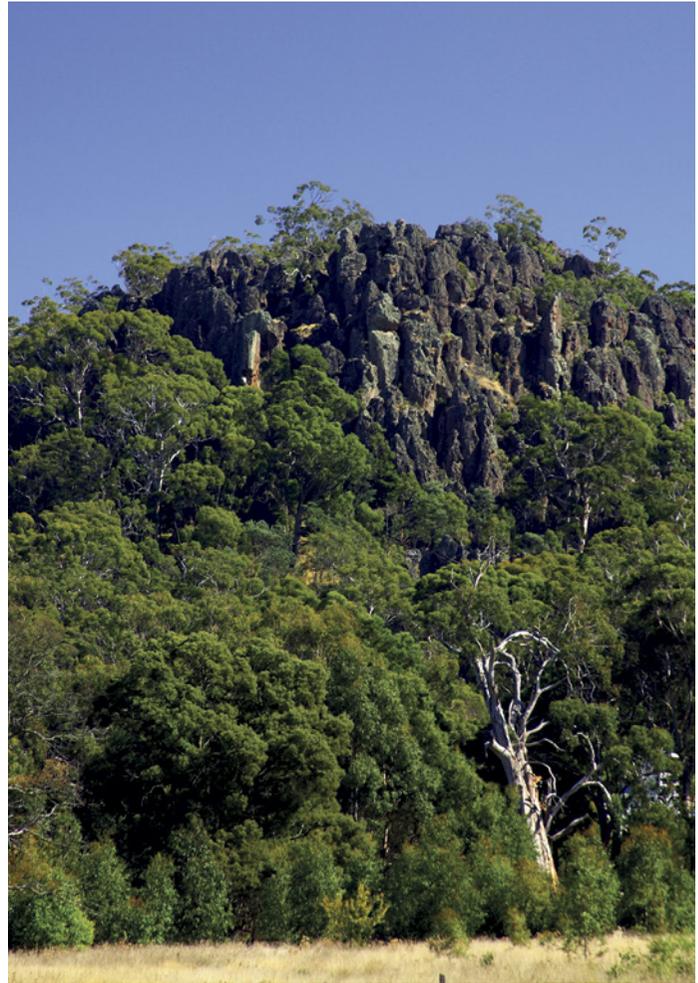
Several types of ancient Australian sacred sites have been identified:

- ▶ piles of bones (one example in the Northern Territory site was marked with crocodile bones placed in a star shape)
- ▶ bora grounds (cleared areas marked by circles of raised earth)
- ▶ clay figures and sand drawings up to 10-metres long
- ▶ tree trunks carved with geometric designs (such as those of the Wiradjuri people in New South Wales and the Kamilaroi people in Queensland)
- ▶ engraved or painted rock art
- ▶ piles of stones arranged in lines or heaps.

The knowledge about the purpose of these sacred sites is limited. In many cases, only the local Aboriginal and Torres Strait Islander communities know the stories involved, or the ceremonies conducted.

Hanging Rock

Hanging Rock, near Woodend in Victoria, was an important landmark in ancient Australia. It was at the border of four Aboriginal territories and was used for large tribal gatherings. Initiations, trade and marriage ceremonies all took place there. Hanging Rock is a 6-million-year-old, 105-metre-high rock formation. Aboriginal people refused to climb the rock, believing that harmful spirits lived in the crevices. Their people had long used the forested flats around Hanging Rock and are said to have been in the area for more than 26 000 years.



2.10.1 Hanging Rock in Victoria is a sacred site

Ceremonies

Initiation ceremonies

One of the most important ceremonies for ancient Australians was the initiation ceremony. This is when a child was recognised as an adult. These ceremonies involved song and dance. Part of the initiation included practices like the removal of a front tooth, a nose piercing, circumcision for boys, or scarification (making scars) for boys and girls. In the area around present-day Sydney, girls would have part of the little finger removed. These ceremonies occurred at bora grounds; however, today there are very few left due to land clearing and regrowth of vegetation.

Corroborees

Corroborees were sacred ceremonial meetings of Aboriginal peoples. During a corroboree, people interacted with the Dreaming through music, costume and dance. Participants painted their bodies and wore various decorations for the occasion. People from outside the community were not permitted to partake or observe it. There are many paintings and accounts of corroborees by European colonials, but it is possible what they observed might have been staged and not true ceremonies. At a corroboree at Fawkner Park in Melbourne in the 1850s, an onlooker described the scene:

they danced like skeletons around the blazing fire, shouting and brandishing their long spears while the lubras [an old colonial term for Aboriginal women now considered offensive] chanted and played on drums made of the wild skins of animals.

2.10.2 The description of a corroboree being held in Fawkner Park in South Yarra, Melbourne in the 1850s

William Barak's painting below provides an Aboriginal depiction of a corroboree. It shows two elders wearing possum skin cloaks and beating clapsticks. They are surrounded by rows of women. Above the elders are male dancers with tribal markings on their faces and performing with boomerangs.



2.10.3 Ceremony, William Barak, 1898, National Gallery of Victoria

Bora grounds

Bora grounds, found in various places across Australia, are Aboriginal ceremonial places. Their age is unknown. They are human-made formations which date from ancient times. They consist of circles of earth stamped down by many feet, surrounded by raised ridges.



2.10.4 A bora ground at Quiltys Mountain in the Budawang Ranges, Morton National Park, New South Wales

Bora grounds generally have two circles constructed from earth. There is a bigger circle about 22 metres in diameter and a smaller circle about 14 metres in diameter. These circles are close together, on gentle slopes and joined by a walkway.

The Wurundjeri people of Victoria believe the rings had ritual roles in male life (including important initiation ceremonies), female life and possibly in marriage. No one knows exactly what role they played, but it is highly likely they were used in important ceremonies. Unfortunately, only 94 of the 426 documented bora rings are still visible.

Activities

Remembering and understanding

1 What was the purpose of sacred sites to ancient Aboriginal and Torres Strait Islander peoples?

Applying and analysing

2 Why did Aboriginal communities in central Victoria refuse to climb Hanging Rock when they met there?

3 Describe what occurred at a corroboree. How do people today know this? What sources exist for historians to draw upon?

4 Why is it so difficult for historians and other experts to know with certainty what occurred at the sacred bora grounds of Aboriginal peoples?

Evaluating and creating

5 To what extent do you agree that people should be restricted from wandering through and over such sacred sites? Why?

2.11 Songlines

Songlines

Aboriginal and Torres Strait Islander peoples have an oral culture, and they use prompts from the landscape to remember and pass on important knowledge and cultural wisdom. Indigenous songlines are routes through the landscape (and sometimes across the sky) that relate the landmarks or constellations to events, and creation and contemporary stories.

Songlines trace the journeys of ancestral spirits as they created the land, animals and lore (traditional knowledge and learning). The elders travelled these 'Dreaming tracks' and taught the young people of the group how to sing their songlines in the right order. This helped the community to travel safely and easily.

Indigenous peoples have used songlines over thousands of years. Consequently, they have an in-depth memory of the landforms of their land, and the thousands of species of plants and animals that inhabit Country.

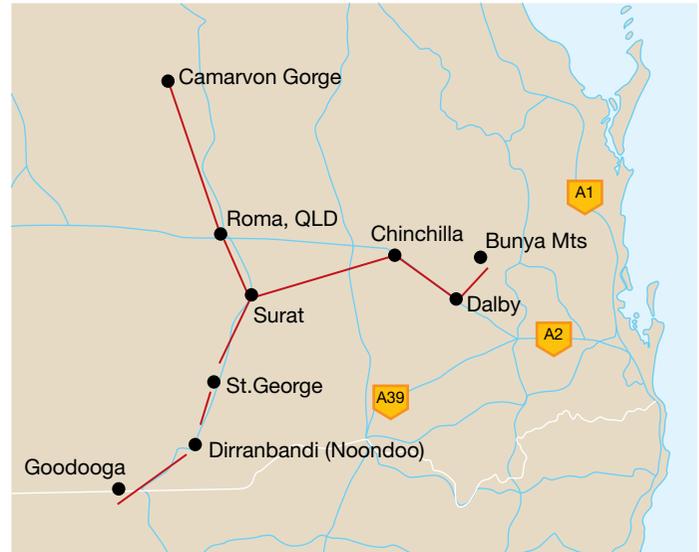
Archaeological primary sources like artefacts, shells and bones give evidence that the songlines sung today have been in constant use since ancient times.

How does it work?

Researcher Lynne Kelly has investigated how Aboriginal peoples accumulated such a vast knowledge about the natural world. Aboriginal elders have explained to her how they translate their knowledge into song, dance, story and place to help them remember and pass their knowledge on. This ancient understanding of how to associate memory with locations is recognised by modern scientists. It has led to some exciting theories about using oral history as archaeological evidence.

Aboriginal leader Ghillar Michael Anderson explained to Kelly how the Euahlayi people could travel long distances for trade and ceremonial purposes. The Euahlayi would memorise stars at night and learn the songs that described how they related to the land beneath. Each star was associated with a landscape feature, such as a waterhole, river or rock formation. Later, when they returned to that country, they would sing the songs they had memorised as they travelled in daylight.

An astronomer called Robert Fuller has recently made an amazing discovery. He overlaid the star-map routes of Aboriginal songlines over modern road maps. Fuller found that the songlines overlapped with the major roads of today. This is more than a coincidence and has a historical explanation.



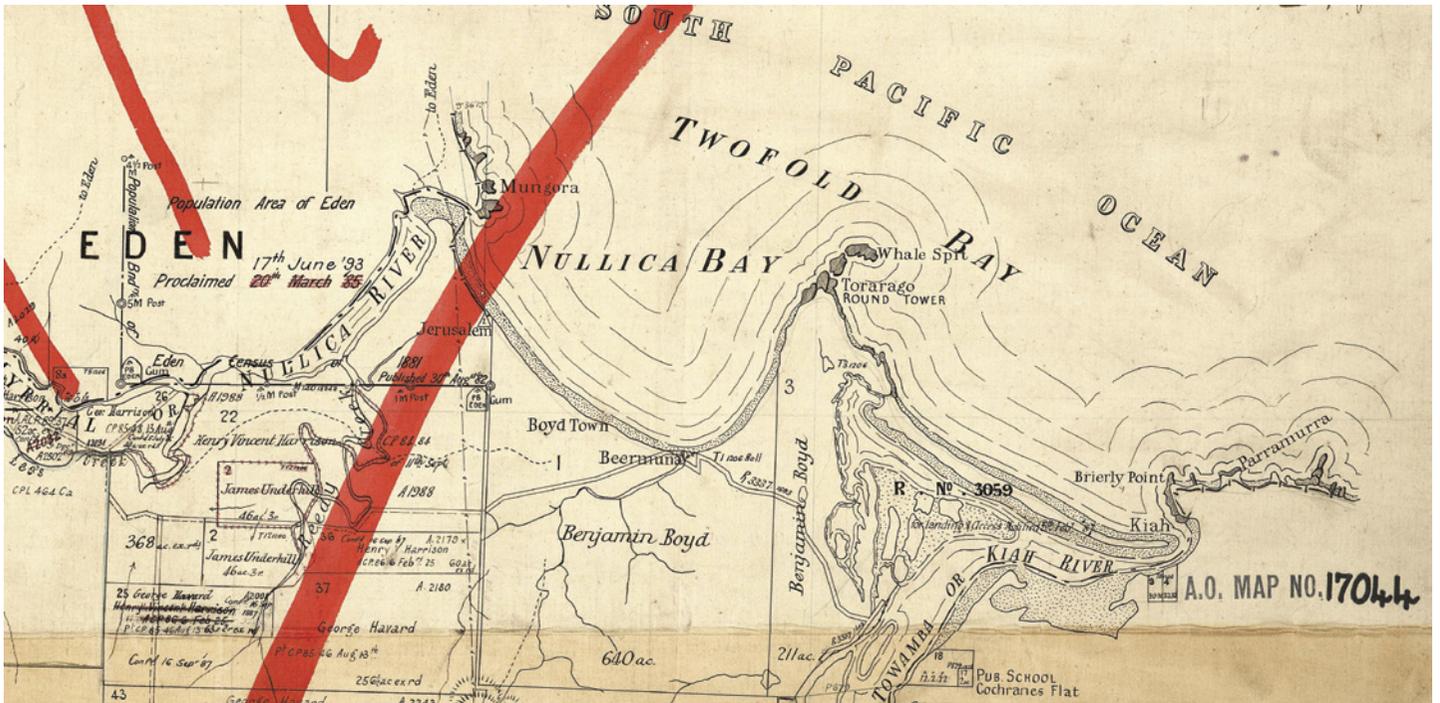
2.11.1 Aboriginal star-map from songlines overlaid over a modern road map shows an amazing connection between the ancient and modern world

The first European explorers used local Aboriginal people as guides and interpreters. The Aboriginal people are likely to have given directions using their ancient knowledge. The modern roads created at that time would have followed those pathways!

The Bundian Way

The Bundian Way is an example of a songline which was used for thousands of years by Aboriginal communities. This east-west pathway stretches approximately 365 kilometres. It runs from the snowy peaks of Targangal (now known as Mount Kosciuszko) to the New South Wales coast near the town of Eden. The songline is intersected by numerous north-south pathways on the coast and the high country. Early European settlers often widened these paths to give them access to the surrounding country.

Amateur historian John Blay has worked tirelessly to restore the songline, which had not been used for decades and could have vanished from memory. According to Blay, the track was used by ancient Aboriginal peoples to ascend into the high country and hunt for Bogong moths. At the end of the cold season, they would use the songline to head to the coast for whale meat, fish, lobster and abalone. There would be ceremonies and trade with other groups, and they would meet up with their friends and relatives. The trail is dotted with Aboriginal artefacts, including bits of worked stone, axe heads and shell middens.



2.11.2 Old parish maps from colonial days offer historians clues to the landscape



2.11.3 A group of Indigenous researchers surveying the Bundian Way overlook its route east towards the New South Wales–Victoria border



Activities

Remembering and understanding

- 1 What is another name for a 'songline'?
- 2 How did songlines enable Indigenous peoples to navigate the landscape with such precision?

Applying and analysing

- 3 What evidence exists now of the existence of ancient songlines?
- 4 Describe the resources the Bundian Way provided the ancient Australians who travelled it?

Evaluating and creating

- 5 Create your own songline using the environment around you.
 - a Establish visual and geographic prompts to 'link' to the items you want to remember. (Hint: you don't have to move around huge distances to do this. Try using this idea in your school grounds or at home in the backyard.)
 - b Using the memory technique of a songline and your chosen visual or geographic prompts, memorise a large list of items (for example, all of the capital cities of Europe in alphabetical order or the streets that make up the CBD of Melbourne).

2.12 Conserving ancient Australia

Protecting Australia's heritage

Australia's **heritage** is made up of natural areas and sites of cultural significance. It also includes the objects we see in museums, art galleries and libraries, and artefacts that are in the Australian landscape.

This heritage provides Australians with evidence to understand the land they live in. It offers historical insights and tells the story of human settlement from Australia's earliest peoples to its present day. In this way, the conservation (preservation) of Australia's heritage is a responsibility of everyone and is for the benefit of future generations.

Valuing what we have

In the past, Australian school students have been taught about the wonders of ancient Egypt or the purpose of Stonehenge, but they often did not learn much about Australian history. In some ways, Australia's ancient history is still waiting to be discovered. How many people know, for example, that stone eel traps built by the Gunditjmarra people are at least 2000 years older than Stonehenge? Or that the Aboriginal rock art found throughout the Kimberley region of Western Australia predates the hieroglyphics in the Great Pyramid of Giza by tens of thousands of years?

Many overseas places and artefacts of importance are protected by strict laws and expensive conservation processes. The equivalent sites and artefacts in Australia have often been disregarded. Australia's heritage has been damaged intentionally or through development such as mining and road building. It has also been disrespected through a lack of cultural knowledge; for example, some people choose to climb Uluru even when they have been asked not to.



2.12.1 Access to Uluru by climbers and walkers will be banned from October 2019 in recognition of its cultural significance

Preservation of historic sites and artefacts

Heritage is our legacy from the past, what we live with today, and what we pass onto future generations. Our cultural and natural heritage are both irreplaceable sources of life and inspiration.

2.12.2 A quote from the UNESCO website

Organisations like the United Nations Educational, Scientific and Cultural Organization (UNESCO) strive to protect places and objects of historical interest. Australia has nineteen sites on UNESCO's World Heritage List including the Willandra Lakes region of Australia (where Mungo Lady and Mungo Man were found). Inclusion on the UNESCO list does not guarantee protection, preservation or funding for the site. Also, countless other sites across Australia are not recognised. So, the responsibility of protecting and preserving Australia's heritage lies with the entire Australian community.



2.12.3 A display at Melbourne Museum's Bunjilaka Centre tells the story of Victoria's Aboriginal people

Repatriation

Aboriginal and Torres Strait Islander artefacts, and even human remains, have been objects of study in museums. Most of these artefacts were collected from the end of the nineteenth century.

Recently, ideas about who 'owns the past' have been challenged. There has been controversy over the cultural ownership of heritage. Many believe in the need to return cultural artefacts to their original owners. Some think this idea endangers the preservation of evidence, while others place cultural wishes first. Certainly, the **repatriation** of artefacts differs from the returning of human remains. Repatriation of a person's ancestors can be seen easily as a human right, but returning objects is more debatable. Consider the examples in Source 2.12.4.

Example A

In 1976, the Tasmanian Museum repatriated the 100-year-old remains of Truganini, an Aboriginal woman. Since 1990, over 1000 bones, and dried and pickled remains have been returned to Aboriginal communities for reburial.

Example B

Between 1801 and 1812, British archaeologists removed the so-called Elgin marbles from the Parthenon in Athens. The priceless marbles are still held in the British Museum. Despite attempts by the Greek Government to have the marbles returned to Greece, the British Museum has refused to repatriate them on the basis that Greece cannot guarantee the marbles' continued preservation.

2.12.4 Two examples related to the issue of repatriation



2.12.5 These bones were repatriated to their ancestral home and given a ceremonial reburial in Arnhem Land in July 2011. They were returned by the Smithsonian Institution in Washington where they had been held in the museum's collection for over 60 years.

Spotlight

The Gweagal shield

Aboriginal activist Rodney Kelly has been leading the campaign for the repatriation of the Gweagal shield, which is currently held in the collection of the British Museum. The shield was stolen by Captain Cook and his men after shooting its owner, the Gweagal warrior Cooman, during first contact between the British and the local people at Botany Bay on 29 April 1770. The Museum has offered to loan the shield to Australia for exhibitions, but has refused to return it to the Gweagal people permanently. In 2017, Kelly, who is a descendant of Cooman, led a protest at the British Museum to draw attention to the campaign. He insists that the shield belongs to the Gweagal people and should be exhibited in a museum in Sydney.

Activities

Remembering and understanding

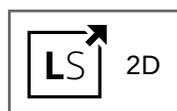
- 1 What things make up Australia's heritage?
- 2 What is the UNESCO World Heritage List? Which Australian landscape that features in this chapter has been included on this list?

Applying and analysing

- 3 Why is the conservation of Australia's ancient heritage important?
- 4 Describe why the issue of repatriation is an emotional and controversial issue for Aboriginal and Torres Strait Islanders?

Evaluating and creating

- 5 Should museums and other institutions return artefacts and human remains to their traditional owners? Explain your response.
- 6 Research who the local Australian Aboriginal and Torres Strait Islander groups are in your area.
 - a What is the language of the people?
 - b Has the language been recorded in any way and is it still spoken?
(Hint: Consider contacting organisations like the Victorian Aboriginal Corporation for Languages, or the Koorie Heritage Trust to give you leads for your research.)





Ancient Egypt

3

Ancient Egypt was one of the first great civilisations. Beginning about 5000 years ago on the banks of the Nile River, Egyptian society prospered for 3000 years. Our knowledge of this great civilisation is kept alive today by the treasures it left behind. Examples include the golden burial mask of Tutankhamen, the Great Pyramid of Giza and the temple of Abu Simbel.

OVERVIEW QUESTIONS

- 3A** Where and when did civilisation develop in ancient Egypt?
- 3B** What was daily life like for ancient Egyptians?
- 3C** How did ancient Egypt become a powerful civilisation?
- 3D** How did we discover the history of ancient Egypt?

GLOSSARY

afterlife life after death; a place where a person goes after they have died

barter the swapping of goods or services for other goods or services without using money

delta an area where a river splits into separate rivers before flowing into a sea

Egyptomania a modern term used to describe the fascination with ancient Egyptian culture and history

embalming preserving a dead body from decay; in ancient Egypt this involved using spices and salt

god a supreme being that is worshipped by people

inundation (history) to flood with water; the Nile flooded at the same time each year and made agriculture and settlement in Egypt possible

kingdom a period of time when ancient Egypt was ruled by pharaohs and their descendants

mummification to preserve a body by drying it with salts, packing the cavities inside with spices and sawdust, and wrapping the body in linen strips

pharaoh the title used for ancient Egyptian kings

pyramid a triangular-shaped monument including a tomb for the deceased

sarcophagus a stone coffin

scribe a person employed to write

society a community of people living together

sphinx a statue with a human head and a lion's body

temple a religious building where people worship their god(s)

tomb a large room, often underground, to bury the dead

vizier the chief government official in ancient Egypt; the vizier helped the pharaoh to administer (organise and run) the kingdom



Before you begin

3.0.1 Ramses II, a relief (raised artwork) from his tomb, Egypt, thirteenth century BC

Timeline

Ancient Egypt

Many people are fascinated by ancient Egyptian civilisation. Historians have provided a great amount of information about its unique buildings, the awe-inspiring pharaohs and the daily life of the ancient Egyptian people. However, there is still much left to discover and mysteries to be solved. The work of archaeologists in Egypt continues to unearth amazing details from the past.



Built in approximately 2650 BC, Egypt's first pyramid was the Step Pyramid of Djoser

3500 BC

First farming settlements

2569 BC

Great Pyramid built for Pharaoh Khufu

9000 BCE (BC)

8000 BC

7000 BC

6000 BC

5000 BC

4000 BC

3000 BC

2100 BC

9000–3000 BCE (BC)
Stone Age settlements

3000–2200 BC
Old Kingdom:
3rd to 6th Dynasties

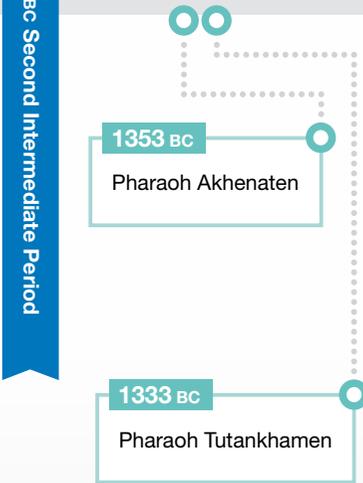
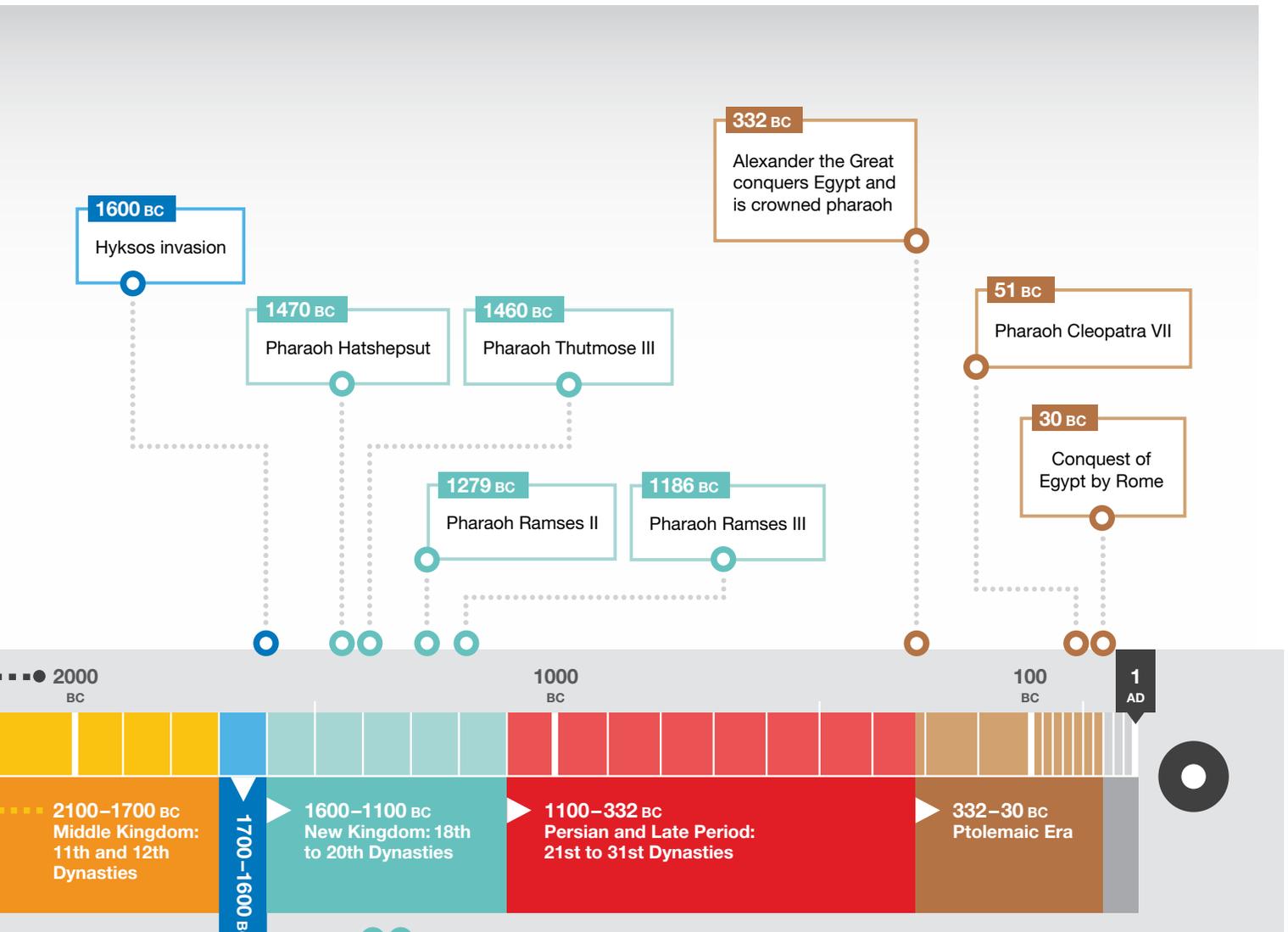
2200–2100 BC First Intermediate Period



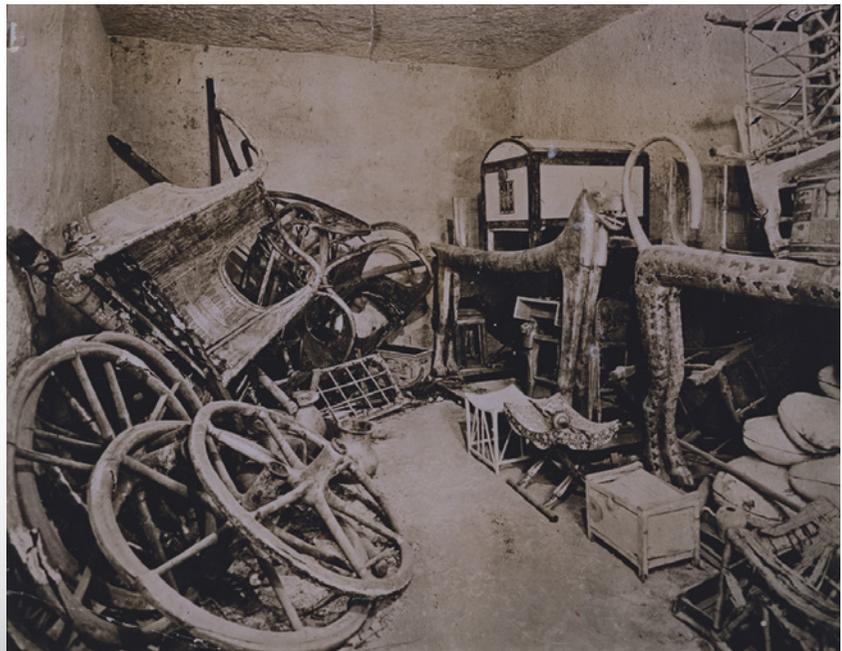
Agricultural workers on a nobleman's estate, from the Tomb of Nakht, approximately fourteenth century BC



Funerary mask, c. 300 BC



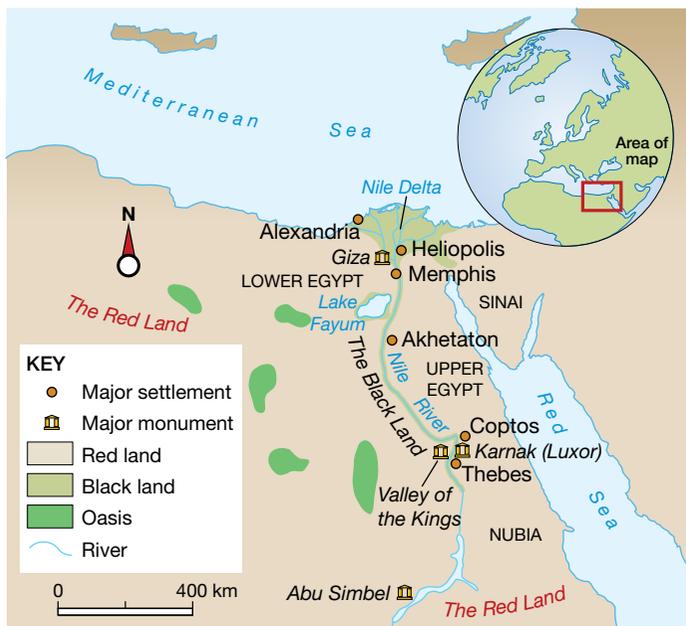
Items found in the antechamber of King Tutankhamen's tomb



3.1 The geography of ancient Egypt

Development of a society

In about 3500 BC, the people who lived in Egypt began to farm. Before this they were nomadic, which means they did not have a permanent home. The Egyptian farmers learnt to predict when the Nile River would flood and so they were able to plant and harvest crops. They grew flax, barley and wheat. The Egyptians also learned to domesticate animals, which means that the animals could be tamed and kept on farms or around the home. Farming was so successful that food could be stored in small towns set up along the Nile. The Egyptians were no longer nomadic people because they had created a permanent home.



3.1.1 Map of ancient Egypt



3.1.2 The Nile River, as seen in present-day Egypt

The Nile River

The landscape of Egypt is mostly desert. Less than 10 per cent of the land is settled or used for agriculture, even today. The Nile River transformed Egypt's almost waterless desert into one of the most fertile areas on Earth.

The Nile begins in tropical Africa and is formed by two main branches or tributaries. The White Nile begins in Lake Victoria in east Africa, while the Blue Nile starts in Lake Tana in the snow-covered Ethiopian mountains. The place where the two rivers meet is known today as 'al-Mogran', meaning the confluence or joining place of two rivers.

Inundation

In ancient times the Nile flooded every year at the same time. This became known as the **inundation**, which means to flood with water. The inundation made agriculture and settlement in Egypt possible. In June, the Nile began to rise with water that had become green in colour due to the plant matter it had picked up. By August, the waters were thick and muddy, and in September, the flood peaked. By the following May, the river level had dropped to its lowest point. When the floodwaters of the Nile had subsided, they left behind thick layers of mud that created fertile farming lands to grow grain. Without the inundation Egypt would have been an uninhabitable desert plain.

The height that the waters rose during the flood was critical. A water-level rise of 7.5 metres was ideal for farmers, but a flood level over 8 metres would destroy housing and agricultural lands, and a flood less than 6 metres would result in famine.

Herodotus (c. 484–c. 425 BC), an ancient Greek historian, described the Nile as a gift to the Egyptians because it provided food, water, rich soils, and an environment for plant and animal life to flourish.

The Black Land

The Black Land is a narrow strip of land that runs along both sides of the Nile. It is called the 'Black Land' because of the fertile black mud that the Nile deposited there each year. The Black Land also refers to the fan-shaped **delta**, a broad area with many rivers, where the Nile enters the Mediterranean Sea and Lake Fayum (Lake Fayum was a large oasis to the west of the Nile).

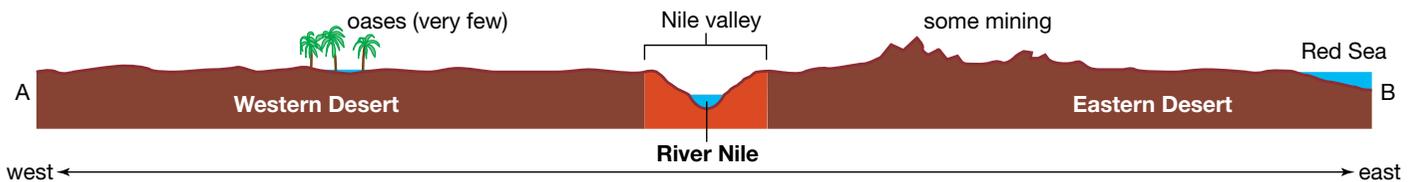
Most ancient Egyptians were farmers. Their farms ran along the banks of the Nile. This location had the most fertile lands and it gave farmers easy access to water to irrigate their crops. The main crops grown were wheat and barley. They also grew cucumbers, peas, lettuce, garlic, onions, dates and pomegranates.

Did you know?

- The ancient Egyptians did not call their land 'Egypt'.
- In ancient times, Egypt was known as 'Kemet', which simply means 'Black Land'.

The Red Land

In contrast to the fertile Black Land along the Nile, the surrounding deserts were referred to as the 'Red Land' because of the colour of the sand. In the Red Land, the Egyptians buried their dead, built some of their **temples** and hunted wild animals. The desert lands also supplied the Egyptians with stone for building and semiprecious stones for jewellery. Dotted about the desert were some small but important water sources. Each was called an oasis. While the Red Land was hot and waterless, it did serve as a barrier against would-be invaders.



3.1.3 A cross-section across Egypt from west to east; the width of the Nile River has been exaggerated for the purposes of this cross-section

Activities

Remembering and understanding

- 1 Refer to an atlas or Source 3.1.1 to answer the following questions.
 - a Which sea does the Nile River flow into?
 - b Identify the parts of Egypt which were green and fertile.
 - c Is Thebes located in Upper or Lower Egypt?
 - d Identify six cities located in the Black Land.
- 2 Outline why the Nile River was important to the Egyptians.
- 3 Explain the process of inundation from beginning to end.

Applying and analysing

- 4 Use a Venn diagram to compare and contrast the features of the Black Land and the Red Land.

Evaluating and creating

- 5 The ancient Greek historian Herodotus described the Nile as a 'gift to the Egyptians'.
 - a Why was Herodotus correct?
 - b In what ways was the Nile a gift to the Egyptians? Your answer should be approximately one paragraph in length.



3.2 Government, law and religion



3.2.1 A giant Pharaoh Ramses II clutches war prisoners by the hair in a painted limestone carving from Memphis, 1279–1213 BC

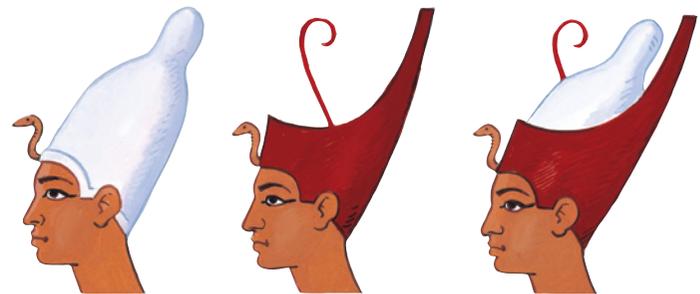
The pharaoh

The **pharaoh** was the most important and powerful person in ancient Egyptian **society**. He was responsible for protecting Egypt from invaders, making laws and maintaining order (see Source 3.2.1). The people believed the pharaoh was descended from Re, the sun-god, and that he was a **god** on Earth. The pharaoh's divine or god-like duties included:

- performing sacred rituals in all the temples of the land
- making sure *ma'at* or justice was maintained
- controlling the floodwaters of the Nile River
- making sure there was enough food for people to eat
- leading the army and defending Egypt against invasion.

Symbols of power

One way that the pharaoh symbolised (visually demonstrated) his power over the land of Egypt and its people was through his clothing and accessories.



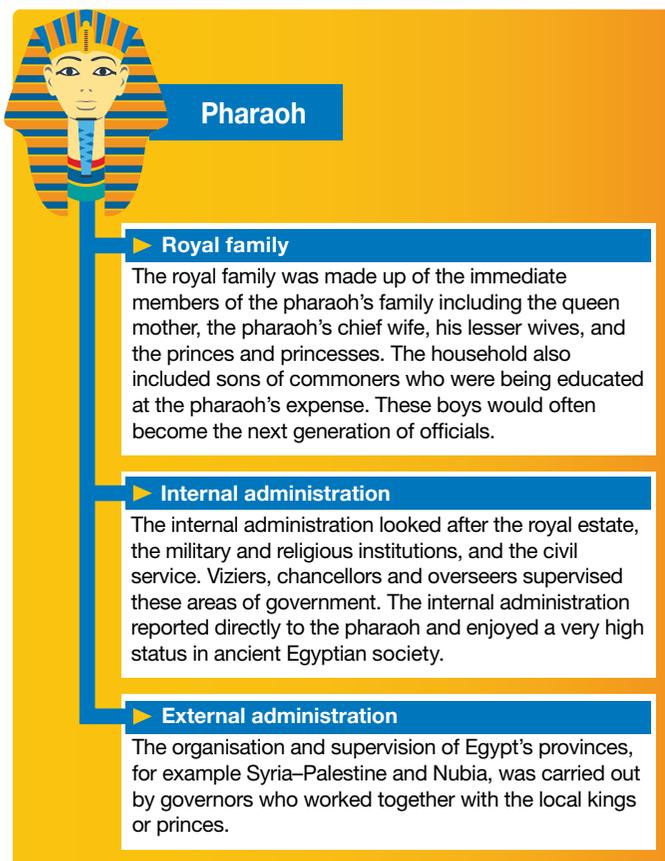
3.2.2 Formal royal headdresses: the white crown (*hedjet*) of Upper Egypt, the red crown (*deshret*) of Lower Egypt and the combined red and white double crown (*pschent*) of united Egypt

3.2.3 Symbols of the power of the pharaoh

Symbol	Description	Power
false beard	made of goat's hair	manliness, bestowed by the god Osiris
<i>heka</i> (means 'ruler')	a shepherd's crook, held in one hand	
<i>nekhata</i>	a whip, held in the other hand	
<i>shemset</i>	an apron with a bull's tail at the back of the belt	
<ul style="list-style-type: none"> • a crown (varied according to the ceremonial occasion) • the three most common were: <ol style="list-style-type: none"> 1 <i>pschent</i> 2 <i>nemes</i> 3 <i>khepresh</i> or war crown 	<ol style="list-style-type: none"> 1 a double crown 2 a blue and gold striped cloth headdress 3 a tall headdress made of blue cloth or leather decorated with gold discs 	<ol style="list-style-type: none"> 1 rule over Upper and Lower Egypt 2 power and kingship 3 worn in battle and at certain ceremonies

Government structure

The pharaoh, despite being the most powerful person in Egypt, needed assistance to rule the country. He had several officials who controlled the royal household, the military, religion and domestic affairs. Together, they formed the government of ancient Egypt. The government was divided into three main areas as outlined in Source 3.2.4.



3.2.4 The structure of government in ancient Egypt

Role of officials

Vizier

The most important government official was the **vizier**. The vizier was in control of administration. His tasks were to:

- ▶ make sure law and order was kept throughout the land
- ▶ look after the pharaoh's household and lands
- ▶ decide how much tax people should pay and make sure taxes were collected
- ▶ appoint and supervise officials
- ▶ receive tribute (payment or gifts) and visitors from foreign countries
- ▶ look after all public building programs
- ▶ control all transport on the Nile.

High priest

The high priest was appointed by the pharaoh and was responsible for overseeing all priesthoods and religious institutions.

Priests were well educated, so temples were not only places of worship but also places of learning. Any boy who wanted to enter religious service or the government had to attend a temple school from the age of fourteen.

Priests carried out daily rituals (religious actions) to please the gods. This ensured the wellbeing of the land and the people of Egypt. High priests supervised religious building programs and looked after the day-to-day running of the temples. The temples required regular maintenance and cleaning, and temple libraries and storerooms had to be kept in good order.



3.2.5 Renefer, a high priest of Ptah, painted limestone standing statue, early 5th Dynasty 2450–2325 BC

Chancellor

The chancellor was the chief official of the royal court, which is the place where the pharaoh and the royal household lived. He was referred to as the 'seal-bearer' because he carried with him the pharaoh's personal seal (the seal was equivalent to the pharaoh's signature and carved in stone). The chancellor represented the pharaoh on trading and mining expeditions.



3.2.6 Pharaoh's seal

Religion in ancient Egypt

Egyptian religious beliefs were linked to the land and climate. This can be seen in their view of how the world was created (see Sources 3.2.7 and 3.2.8).

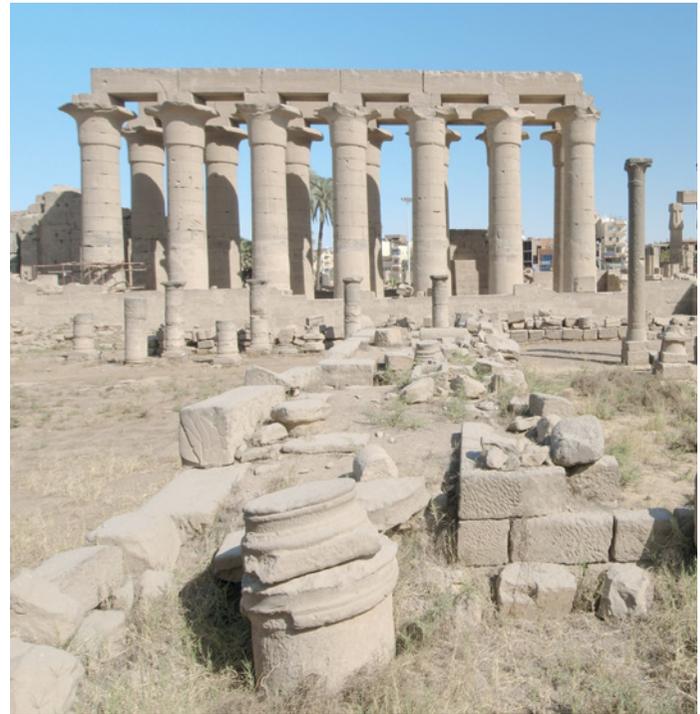
3.2.7 Comparison of the myth of creation with the natural environment

Myth of creation	Natural environment
In the beginning, the entire Earth was covered with water	During the inundation, the Nile Valley was covered with water
A small island rose up out of the water	Small mounds of earth were left behind after the floodwaters drained away
The first goddess, Nut, came out of the island and created life	Crops could be grown in the rich soil of the Nile Valley after the inundation

Temples

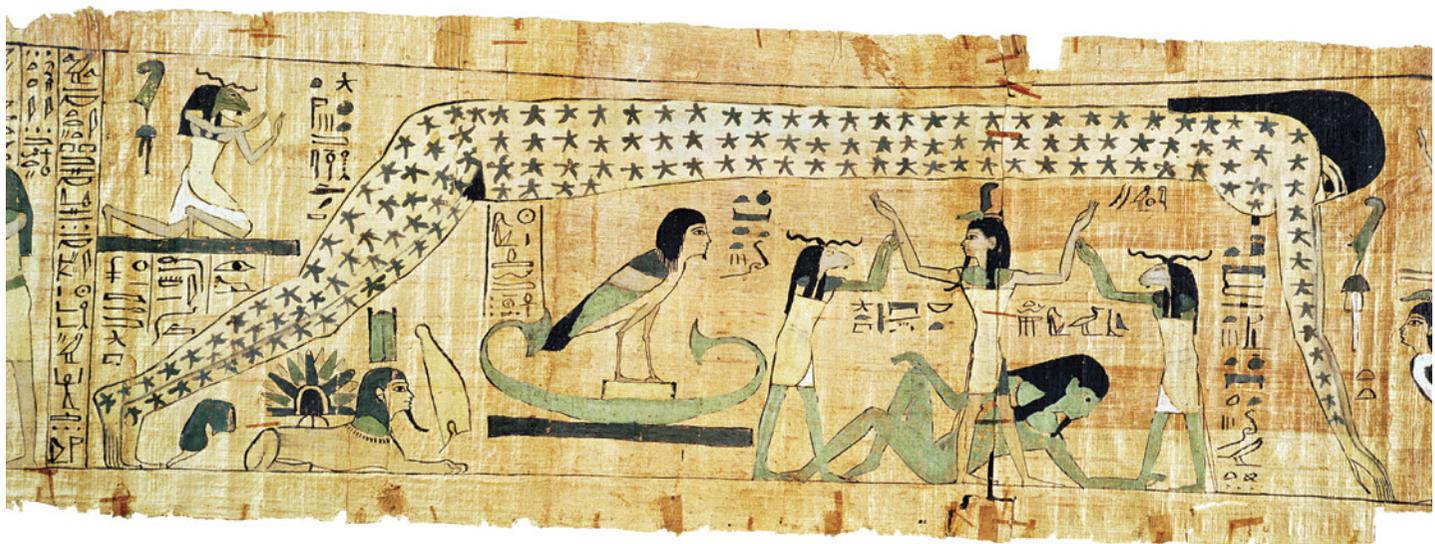
There were two main types of temples in ancient Egypt: cult temples containing the images of gods and goddesses for worship, and funerary temples as shrines to pharaohs (these temples honoured the dead).

The largest temple site was at Karnak (known today as Luxor, see Source 3.2.9). Each temple was decorated with huge stone statues of the god of the temple and the pharaoh who paid for its construction. The statues were brightly painted, and the walls of the temples were decorated with sculptured artworks known as reliefs.



3.2.9 Temple at Luxor

The temples were sacred places and only the priests were allowed inside. Common people had to pray outside the temple and were only allowed inside for very special occasions. Each day sacred rituals were performed in the temples; for example, incense was burnt in the mornings (to purify the air), and offerings of fresh food and water were made to the god of the temple.



3.2.8 A funerary papyrus (form of paper made by the Egyptians) depicting Nut giving birth to the world, c. 1069–945 BC

3.2.10 Gods of ancient Egypt. Many of the Egyptian gods were linked to the natural environment. For example, Re (Ra or Amun-Ra) was the sun-god and Seth was associated with the desert.

Name	Description	Appearance
Amun-Ra	<ul style="list-style-type: none"> a national god a patron or supporter of the pharaoh represented with a ram's head or body 	
Anubis	<ul style="list-style-type: none"> god of the dead believed to be the inventor of embalming represented with a jackal head or body 	
Horus	<ul style="list-style-type: none"> god of the sky the pharaoh was believed to be Horus on Earth represented with a falcon's head or body 	
Isis	<ul style="list-style-type: none"> the most important goddess a magical healer; she cured the sick and brought the dead back to life represented as a woman with a solar disk and cow's horns on her head 	

Name	Description	Appearance
Osiris	<ul style="list-style-type: none"> the judge of the dead in the afterlife a god of both fertility and death represented as a mummy 	
Seth	<ul style="list-style-type: none"> a sky god, lord of the desert, and master of storms, disorder and warfare he was a trickster (joker/prankster) represented with a dog's body, square-tipped ears, tufted tail and long, curved nose 	
Thoth	<ul style="list-style-type: none"> god of wisdom believed to be the inventor of writing represented with either an ibis or baboon's head 	

Activities

Remembering and understanding

- 1 Why was the pharaoh the most important and powerful person in ancient Egyptian society?
- 2 Who was directly responsible for law and order in ancient Egypt?
- 3 Explain how the natural environment influenced the religious beliefs of the ancient Egyptians.
- 4 What is the difference between a cult temple and a funerary temple?
- 5 Who was allowed inside a temple and what was the purpose of them entering?

Applying and analysing

- 6 Examine Sources 3.2.8 and 3.2.11.
 - a Outline how the way the gods looked supports the theory that ancient Egyptian religious beliefs were linked to the land.

- b Write three statements about ancient Egyptian beliefs or everyday life from your analysis.

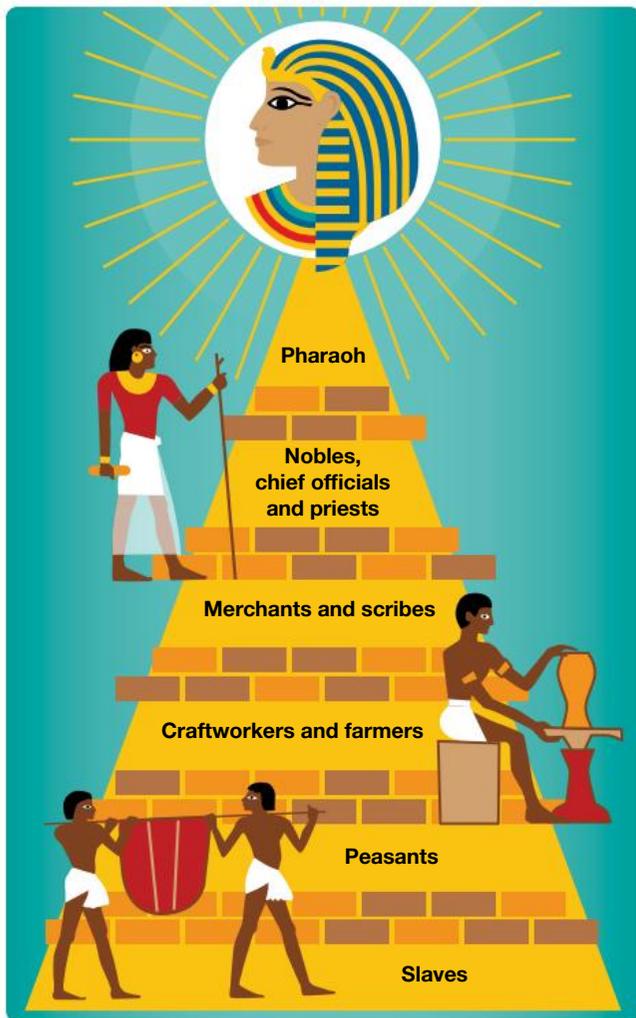
Evaluating and creating

- 7 Using a PMI chart (a three-column opinion table showing the **Pluses**, **Minuses** and **Interesting** aspects of the topic), evaluate how ancient Egypt was governed.
- 8 Create a job advertisement for a vizier. Your advert should include:
 - a the title of the job
 - b a job description of the requirements of the position
 - c the personal qualities of the ideal candidate
 - d the closing date for applications
 - e who to send enquiries and the application to.

3.3 Key groups in ancient Egyptian society

Social structure

Egyptian society was hierarchical. This means that groups of people were divided into different levels or classes (see Source 3.3.1). The pharaoh was at the top of the hierarchy and had absolute or total power. However, he could not rule alone; several nobles, officials and priests helped him. These people formed the next level of the hierarchy. The merchants, while not of noble birth, were often very wealthy because of trade and other commercial business. They were the next most important people in Egypt. Then came the craftworkers and peasants, and at the very bottom were the slaves.



3.3.1 Social groups in ancient Egypt

Nobles, chief officials and priests

Many people from this class became the chief officials who helped the pharaohs to govern Egypt. The priests took care of important religious matters. Nobles were usually very wealthy landowners and lived extremely luxurious lifestyles. Their wealth and power was inherited (meaning it was passed down through their family). Nobles used peasant farmers to work on their land.

Merchants

Merchants were often very wealthy from their trading and commercial businesses. They enjoyed a comfortable lifestyle with large houses, and they had some servants and slaves. Merchants were not of noble birth, so they had very little power in politics and government. Their male children were usually educated and sometimes they entered government or religious service.

Scribes

A **scribe** was a well-educated male who could read, write and calculate. Scribes were responsible for measuring, inspecting, checking, rationing and recording. The Egyptians kept records of everything and so there were many scribes in government, temples and private employment.

Some scribes were clerks or secretaries who wrote letters to officials on behalf of the pharaoh or vizier. Others were legal specialists responsible for writing contracts. Many scribes worked on building projects; they kept a record of the type and quantity of materials used, and they would record any broken equipment supplied to the workers. Scribes were also employed to write inscriptions in the **tombs** and the temples. They were highly regarded in ancient Egyptian society and they enjoyed a comfortable lifestyle with no hard labour.

Craftworkers

Examples of craftworkers were skilled tomb builders, potters, jewellers and carpenters. They also included stonemasons (a person who cuts and builds with stone) and metalsmiths (someone who works with metal). Craftworkers and their families lived in small houses in villages and towns. Some ran small shops from the front room of their house, while others ran stalls or worked on big building projects (for example, the construction of a pharaoh's tomb or temple).



3.3.2 Goldsmiths at work, from an ancient Egyptian wall painting in the tomb of Nebamun and Ipuki, Thebes, c. 1411–1375 BC

Peasants

Peasants were mostly farmers who worked the land of the nobles in return for accommodation and occupation. The majority of the food they grew was paid in taxes to the landowner. The pharaoh or nobles could demand peasants work on big building projects (for example, the construction of a tomb or temple) during the inundation, when farming land was flooded.

Slaves

Slaves were at the very bottom of the social pyramid. They had no rights and were considered the ‘property’ of their owner. Few were ever set free by their owners and slaves in Egypt were never able to buy their freedom. Despite their lowly status, slaves were an important group in ancient Egypt because they provided much of the labour needed for building projects, mining and farming. Slaves could also be set to work as household servants or scribes; these slaves were lucky because their working life was much easier than those who laboured in the fields or in mines.

Activities

Remembering and understanding

- 1 Draw a two-column table with the headings ‘Nobles’ and ‘Peasants’. Contrast the roles of nobles and peasants. You should be able to list three differences between these two social groups.
- 2 Look at Source 3.3.2. Record all the jobs being performed by craftworkers in this scene.

Applying and analysing

- 3 Imagine that you have recently been appointed as a scribe to the vizier of Ramses II. Write a letter to your best friend describing a typical day at work.
- 4 Compare and contrast the roles of a scribe and a merchant. Which would you have preferred to be in ancient Egypt? Prepare a one-minute speech to deliver to the class in which you state your preferred role and outline the reasons for this preference.

3.4 Everyday life

Everyday life

Everyday life in ancient Egypt varied according to a person's status and wealth. Life for peasants was hard work with a basic diet, whereas craftworkers enjoyed a diet that included more variety and could afford a few luxuries. The nobility lived in large homes or villas, had time for leisure activities, ate rich foods, and were attended to by servants and slaves.

The lives of men

Royalty

Some of the pharaoh's jobs included:

- inspecting his lands, buildings and people
- leading military expeditions
- receiving foreign ambassadors and dignitaries
- attending religious festivals along the Nile.

Although he was king, the pharaoh was a hard worker. He listened to daily reports from his vizier, held audiences (meetings with individuals or groups), read letters and dictated replies. The pharaoh spent his leisure time at banquets, being entertained by musicians and dancers, and taking part in hunting expeditions.

The wealthy

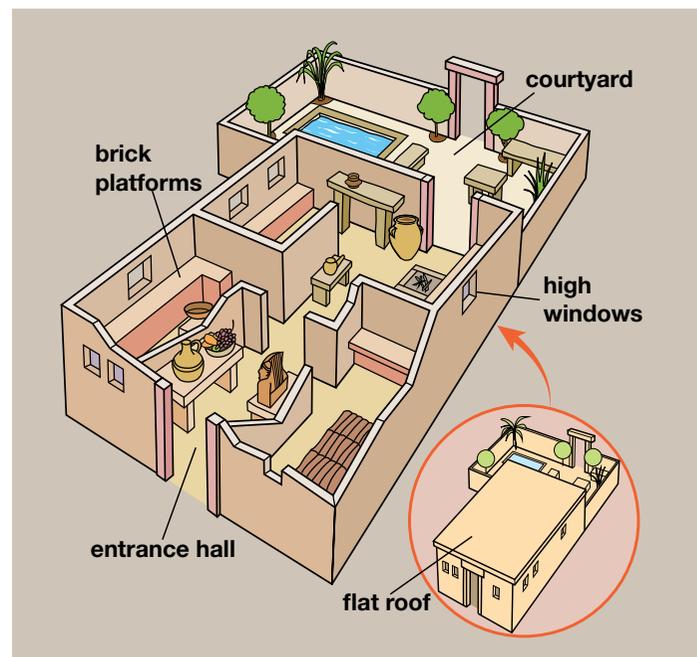
Many nobles were exceptionally wealthy and could afford grand country villas with gardens and pools. Some could also afford a second house in town, household officials, servants and slaves, fine linen clothing, jewellery and perfumes, chariots, weaponry and large boats with fine decoration.

For the wealthy, numerous servants carried out the menial or basic tasks, which left the wealthy man's family with a good deal of leisure time. Leisure activities of the wealthy included fishing on the Nile, hunting bulls from a chariot, banquets, and musical and dancing entertainment.

Craftworkers

Artists and craftworkers were employed by the pharaohs, temples and wealthy individuals. Workers were organised into gangs, and were supervised by a foreman and scribe. Men worked on tomb construction and decoration in 4 hour shifts for 8 days without a break in the Valley of the Kings. They camped near the tombs during their 8 day roster, and returned to their village and families on their days off. Craftworkers were paid in monthly rations comprising emmer wheat flour (for making bread) and barley (for making beer).

Craftworkers lived in single-storey houses with flat roofs. Houses were generally four rooms with a courtyard at the back for cooking. The entrance hall usually had offering tables and perhaps a bust (sculpture) of an ancestor. There was very little furniture as it was very expensive. A brick platform along the walls would have been used for seating during the day and beds at night. Light filtered through small high windows and the floor was simply hard-packed earth.



3.4.1 A modern artist's impression of a craftworker's house

Peasants

Most peasants in ancient Egypt were farmers and life on the land was hard. During the inundations the farmer would spend his time repairing equipment and making objects for use in his household. He might also be conscripted, which meant he had no choice but to work on one of the pharaoh's building projects. After the floodwaters had drained away, the farmer began ploughing and planting the land. This was hard work as the soil was heavy with water and everything was done by hand. In mid-March the harvest began, and the farmer harvested, threshed (separated the grains from the stems), winnowed (separated the grain from dirt and other materials), measured and transported his crop to storage bins.

While peasants worked hard they were also shown on tombs as relaxing: snoozing under a tree, playing their flute, drinking beer with friends and fishing on the Nile. Religious festivals would have given them an opportunity to take a break from the everyday routine.

The lives of women

Women had the same legal status as men in ancient Egypt, which means that the law regarded them in the same way. A woman could buy and sell land, she could sign contracts, give evidence in a court of law, and she could divorce her husband. Egyptian women enjoyed greater freedom and independence than any other women of the ancient world. Egyptian literature, painting and sculpture show women in a supportive role to men, but they were subordinate to them, which means women were lower in rank.

Royalty

Many royal women took important roles in Egyptian state affairs. For example, Tuya, mother of Ramses II, wrote personally to the Hittite king after a peace treaty was signed with Egypt. Nefertari, the great royal wife of Ramses II, is shown in temple and tomb decorations as participating in religious festivals with her husband (see Source 3.4.2). The pharaoh's daughters were also held in high regard and would sometimes accompany their parents on tours of inspection or at religious festivals. However, it was very unusual for a woman to become pharaoh in her own right. Hatshepsut is the most famous exception.

The wealthy

Women's status in society was linked to their husbands and their status increased with motherhood. This meant that a married woman was more respected than an unmarried one in ancient Egypt. A key role for women was to look after the home. For wealthy women this involved supervising the slaves and servants so that all the domestic or household tasks were carried out efficiently and well. A wealthy woman was also expected to support her husband in his career, and there is evidence to suggest that it was acceptable for a woman to stand in for her husband if he was absent. The only employment open for wealthy women was to work in a temple as a musician.



3.4.2 A wall painting from the tomb of Queen Nefertari. It portrays Nefertari (left) presenting scrolls to Thoth, god of wisdom.

Village women

Village women, who were usually the wives of craftsmen, looked after their children and added to or supplemented the family's income by spinning, weaving and dressmaking. They often had the assistance of a slave to help with the menial household duties of grinding corn and making bread. While most careers were closed to women, they could serve in the temples as minor priestesses, singers, musicians and dancers.

Women were equal to men in the eyes of the law. If a woman inherited property she kept control of it even after marriage. She was also allowed to leave her property to whomever she chose. If she divorced her husband, a woman kept control of her private property.

Peasants

Peasant women worked hard in the fields, alongside their husbands, and at baking, brewing, weaving and spinning. They are shown in wall paintings as carrying baskets to storehouses, and providing refreshments or selling beer, bread, vegetables and fish at markets.

The lives of children

Royalty

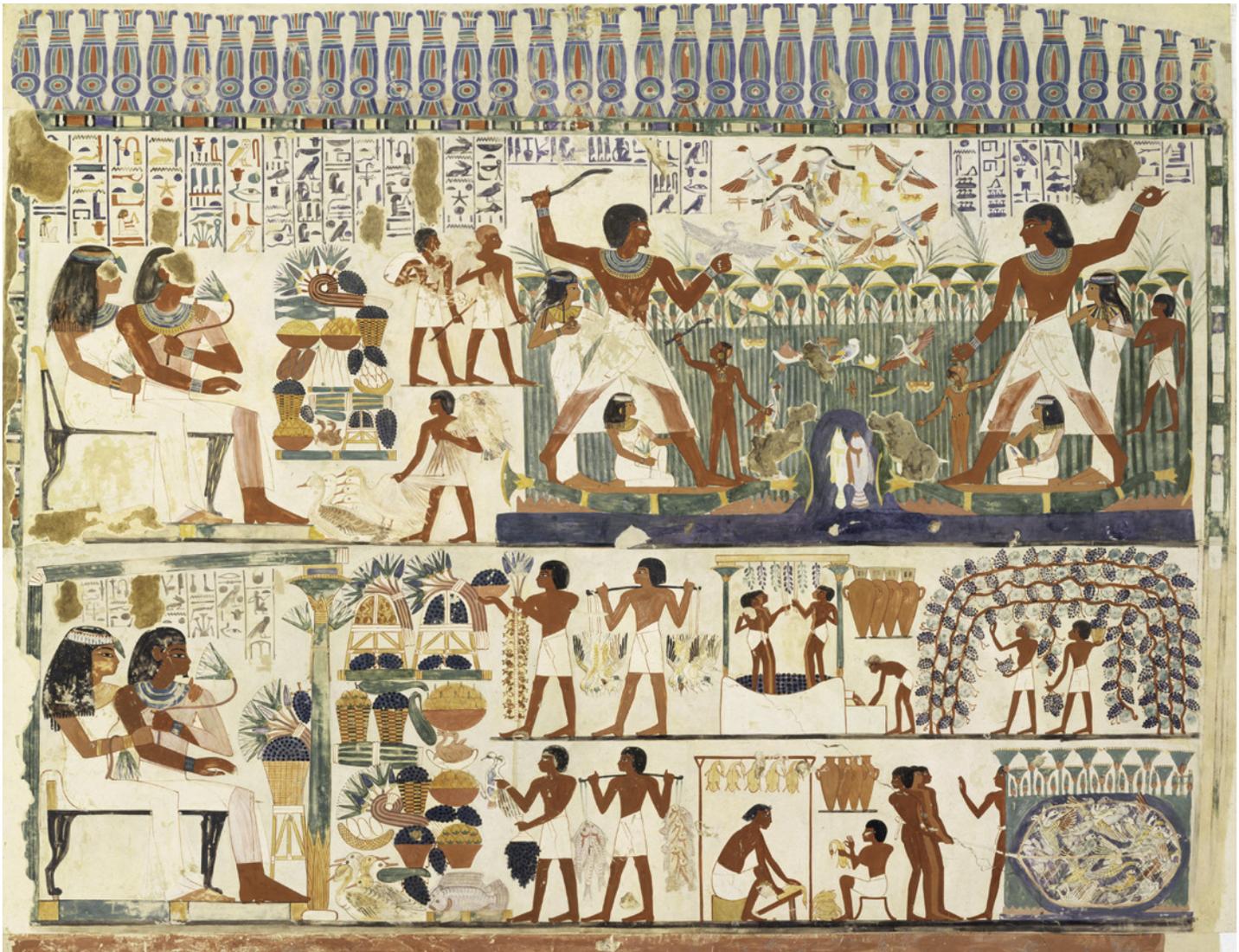
Only the highest ranking men and women were appointed as nurses and tutors for the pharaoh's sons and daughters. The boys and girls learnt how to read and write, and to paint. A relief showing the young Amarna princesses riding their own chariot (a fighting platform, on wheels, drawn by horses) indicates that girls were brought up to be independent and were allowed to engage in physical activities. Princes were also taught how to swim, hunt and engage in warfare.

Family life

Family life was very important for all Egyptians, no matter what their social status was. The Egyptians loved children and hoped for large families. Although boys were favoured, daughters were well cared for, and tomb scenes show affection between parents and all their children. Many scenes show parents and children enjoying each other's company in leisure activities (see Source 3.4.3).

While the children of wealthy families attended school, most children stayed at home and learnt from their parents. It was usual for boys to follow in their father's profession. Girls learnt domestic skills from their mothers.

The remains of many Egyptian toys have been found by archaeologists. Toys were generally homemade and included objects such as leather or cloth balls, and pottery and wooden animals. Some of these animals are on wheels and could have been pulled along with string.



3.4.3 Nakht and his family hunting birds and fishing, copied from a painting in the tomb of Nakht, c. 1400–1390 BC



Did you know?

The ancient Egyptians played board games. Senet was a board game played on a grid of thirty squares arranged in three rows of ten (see Source 3.4.4). A senet board has two sets of pawns with at least five in each. Moves were determined by knucklebones; however, the rules of the game remain a topic for debate.

3.4.4 Queen Nefertari is shown playing senet in this watercolour copy of an original image, which was found in her tomb

Activities

Remembering and understanding

- 1 List three important roles of the pharaoh.
- 2 Describe the lives of the wealthy in two to three paragraphs, including the activities of men and women.
- 3 Summarise ancient Egyptian entertainment and leisure activities. Your summary should include information from all classes of society.

Applying and analysing

- 4 Draw up a two-column table with the headings 'Women and girls in ancient Egypt' and '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.

- 5 Look at Source 3.4.3. Record all the activities depicted in this scene.

Evaluating and creating

- 6 Create a 'For Sale' advertisement for the house illustrated in Source 3.4.1. Your advertisement should include:
 - a a catchy sales title
 - b four to five features of the house (maximum of one sentence for the description of each feature)
 - c who to contact for more information.
- 7 Create a mind map (with appropriate illustrations) of a year in the life of either an Egyptian farmer peasant or a village woman.



3.5 Warfare

A military power of the ancient world

By the time of the New **Kingdom** (c. 1600–1100 BC, see the Timeline), Egypt had become a military power in the ancient world. Egypt had adopted the superior weapons introduced by eastern Asiatic invaders (people who came from Asian places). These weapons included new types of bronze swords and daggers, bronze and leather armour, the powerful compound bow and, most important of all, the horsedrawn chariot (see Source 3.5.1).

Organisation of the army

The pharaoh was commander-in-chief of the armed forces and often led the army to battle. A war council helped the pharaoh with tactics and strategy. By the time of Ramses II's reign, the army was divided into four divisions (see Source 3.5.2).

The charioteers held the most prestigious (respected and admired) position in the army. Each chariot was led by two horses with two charioteers. One man drove the chariot on the battlefield, which was a job requiring great skill. The second man was a fighter who was armed with a spear, and a bow and arrows.



3.5.2 Organisation of the army



3.5.1 A reproduction of a relief in the Ramesseum (Ramses II's mortuary temple) at ancient Thebes, depicting Ramses II at the Battle of Kadesh

The foot soldiers were divided into small groups depending on the weapon they used. There were spearmen with spears, archers with bows and arrows, axe-bearers, clubmen and slingers (who could throw things at the enemy using slingshots). These groups were made up of a mixture of highly experienced fighters and new recruits.

The army at war

Soldiers were provided with weapons at the state's expense, which means they were paid for by the government. A scribe would carefully record the name of each soldier and the equipment he was provided with. Equipment included swords, javelins, and bows and arrows. By the time of Ramses II, each soldier was also given armour that covered his chest and a helmet. Soldiers were provided rations (set amounts) of grain, bread, beef, cakes, vegetables and wine.

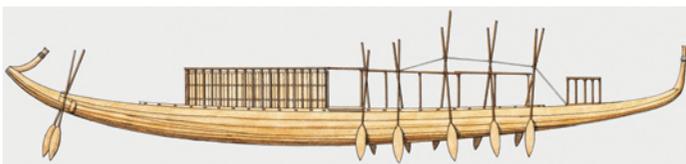


3.5.3 A wooden funerary model of marching armed soldiers, from the tomb of Mesehti at Assiut, c. 2350–2200 BC

Ancient Egyptian navy

The earliest ships that sailed on the Nile were made out of reeds. By the New Kingdom period (1600–1100 BC) the ships used in battle by the Egyptian navy were much different. They were made of cedar wood and each required about fifty oarsmen. The ships were fast and efficient. One of the main uses of the naval fleet was to transport troops and supplies to battle locations. Naval ships also facilitated, which means made possible, speedy communication throughout the vast Nile valley. Ships were used as a platform from which archers would fire their arrows on the enemy. The navy was also used to destroy enemy fleets that were attempting an invasion of Egypt.

One of the most famous confrontations of the New Kingdom period was the war against the Sea Peoples during the reign of Ramses III. The Sea Peoples were raiders from the region around the Aegean Sea in southern Europe. They made many attempts to invade Egypt during the twelfth and thirteenth centuries BC. The Sea Peoples had very large ships with sails which were not suited to the narrow Nile. The Egyptians had faster ships with oarsmen. This meant that the Egyptian ships were easier to steer, so the Sea Peoples were easily defeated.



3.5.4 Illustration of an Egyptian ship from around 2500 BC

The army in peacetime

When an enemy was defeated, the Egyptians would often leave a battalion stationed in the captured town or city. A battalion was a large group of soldiers who would help to ensure the area remained under Egyptian control. The defeated city had to pay for the cost of these peacekeeping troops. Often soldiers would settle down in these foreign lands, marry and raise a family.

When conscripted soldiers came back from battle, they returned to their families and the work they had done before the war which was usually farming. The full-time professional soldiers were given housing in Egyptian city centres or a plot of land to farm. The soldiers who were not farming during peacetime were employed on public building projects, and as bodyguards on foreign expeditions or for the pharaoh during important public festivals.

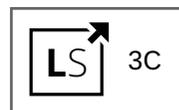
Activities

Remembering and understanding

- 1** List the types of armour and weapons introduced in the New Kingdom period.
- 2** Use Source 3.5.2 and the information in this unit to describe how the Egyptian army was organised.
- 3** Examine the information about the army and answer the following.
 - a** Identify the most admired position in the army.
 - b** Explain why the position identified in Question 3a was the most admired.
- 4** Study Source 3.5.3. Describe the armour and weapons of an Egyptian soldier as depicted in the tomb of Mesehti.

Applying and analysing

- 5** Source 3.5.1 is a reproduction, a secondary source, based on a primary source. Formulate one or two reasons why such a reproduction would be made.
- 6** Imagine you are an Egyptian soldier. Write a letter to your wife and children stating all the reasons why you are looking forward to peacetime.



3.6 Death and funerary customs

Death: An interruption to life

The ancient Egyptians believed that death was simply an interruption to life. A deceased person would continue to 'live' in the **afterlife**:

- if the correct rituals were performed
- if the body remained intact
- if one's name continued to be remembered.

Body, soul and spirit

The Egyptians believed that a person was made up of six separate elements, the first being the physical body.

The *ka*

The Egyptians believed that the *ka* was born with a person and after death remained in the tomb with the body. In order to survive, the *ka* needed the person's body to remain in a recognisable form or, alternatively, a lifelike statue.

The *ba* and shadow

The *ba* or soul journeyed to the afterlife after death; however, it could revisit a person's tomb at any time. The *ba* was usually represented as a human-headed bird. A person's shadow was linked to their soul.

The *akh*

A person's spiritual intelligence or *akh* was described as a shining form that cut all ties with the body and Earth after death.

A name

The Egyptians believed that if their name was written or spoken they would exist for all eternity. If their name was forgotten the person would cease to exist forever.

The Field of Reeds

The afterlife was referred to as the 'Field of Reeds'. It is highly likely that this Field of Reeds was based on the lush, green appearance of Busiris. This was an area of the Nile delta region with waterfalls, wide meadows and plenty of plant and bird life. Egyptians believed that afterlife in the Field of Reeds was effortless: the crops never failed, the wheat and barley always grew high, and there were no pests or disease. In the Field of Reeds, the wealthy enjoyed sailing on the Nile, visiting important cities and relaxing with family members after reuniting with them.

Burial practices

A person could only enjoy eternal life if the correct burial practices were carried out at the time of their death. The most important and well-known burial practice of the ancient Egyptians was **mummification**. It is believed that mummification owes some of its origins to the myth of Osiris.

The myth of Osiris

According to the Egyptian's myth, Osiris was once a king on Earth. He was popular and well loved by the people. However, his brother, Seth, was very jealous. Seth killed Osiris, cut his body up into fourteen pieces and scattered the pieces all over Egypt. Isis, Osiris's faithful wife, journeyed from one end of Egypt to the other and brought back all the pieces. Isis and her sister Nephthys (who was Seth's wife) wept for Osiris. The great god Re heard them. He sent Anubis, the jackal-headed god of **embalming**, and Thoth, the god of wisdom and scribes, to help the sisters preserve the remains of Osiris. Once the body was wrapped, Isis and Nephthys changed themselves into birds and fanned life back into Osiris. Osiris did not return to the throne of Egypt; instead he preferred to rule in the underworld. Horus, the son of Isis and Osiris, later took revenge on Seth and was given the throne of Egypt by the gods.



3.6.1 The dead making an offering to Osiris, king of the underworld, as seen in this fragment of the *Book of the Dead*, fifteenth to fourteenth century BC

Mummification

The process of mummification was a lengthy one. It required the embalmer, the person who was making the mummy, to carry out many different steps (see Source 3.6.2).

Instructions to the embalmer:

- 1 Put on your jackal head mask, learn the prayers for the dead and chant these prayers over the body as you work.
- 2 Wash the body thoroughly.
- 3 Take a hook and insert into the left nostril. Remove the brain matter and discard.
- 4 Make an incision in the left side of the stomach and remove the liver, lungs, intestines and stomach. Warning: be very careful not to damage the heart! The heart must stay in place so that it can be judged either good or bad by Osiris.
- 5 Cover the removed internal organs and body with natron (a natural salt used for its preserving qualities) and leave for 40 to 70 days.
- 6 Rub the dried body and internal organs with oils and resins and wrap individually. Please note: fill the empty stomach area with perfumed linen and sawdust first and sew up the wound.
- 7 Place the wrapped internal organs into canopic jars (a covered jar used in ancient Egyptian burials to hold the internal organs of the deceased). Do not get the jars mixed up.
- 8 Remember to place amulets (magic charms) in the layers of bandages. These charms will help the deceased make his or her journey into the afterlife.
- 9 Place a well-fitting mask over the face and place the wrapped body in a decorated coffin.
- 10 The body is now ready for delivery to its tomb.

3.6.2 The mummification process: instructions to the embalmer



3.6.3 Embalmmnt of Crates, from Dayr al-Madīnah, Egypt, Roman period, third to fourth century AD

Funeral procession

An embalmed body would be collected by relatives and ferried along the Nile to the necropolis ('city of the dead'). The coffin was placed on a sled and drawn by oxen. Wealthy people employed professional mourners to walk along with the funeral procession. These women wept, screamed, beat their chest, tore at their hair and threw earth over themselves; all of these were accepted signs of sadness.

Family members carried with them everyday belongings that they believed the deceased would need in the afterlife. These belongings were placed in the tomb with the coffin. A banquet or great feast was held at the tomb. Priests said magical prayers and spells, burnt incense and made offerings to the gods.



3.6.4 An Egyptian funeral procession

Weighing of the heart

Egyptians believed that before the deceased could enter the Field of Reeds they had to be judged worthy by Osiris. The judgement began with the deceased facing forty-two gods. Each god ruled over one sin. The deceased was required to say the name of each god and declare that she or he had not committed any sin. The importance of these confessions provides evidence for the moral standards of the ancient Egyptians, showing that they understood the difference between right and wrong.

For example, the following acts were considered sinful:

- theft
- murder
- greed
- anger
- trickery
- destroying property
- using the gods' names as curses.

After the deceased confessed they had not sinned, their heart was placed on a set of scales. The heart was weighed against the Feather of Truth. For the deceased to pass the test, his or her heart must be in balance with the feather. If the heart was good, they could advance to stand before Osiris. If judged bad, the heart was eaten by Ammut, who was a monster that was part crocodile, part lion and part hippopotamus.

Did you know?

The ancient Egyptians mummified millions of cats, birds and other animals. These animals were kept as pets, but they were also thought to be the incarnation, or living form, of gods. Archaeologists had originally thought these animals were mummified in a sloppy fashion. However, researchers at the University of Bristol, England, analysed samples of tissues and wrappings from a selection of mummified animals; they found that the level of care and quality of materials used in human mummification was the same as that used in animal mummification.



3.6.5 Mummified cats from ancient Egypt

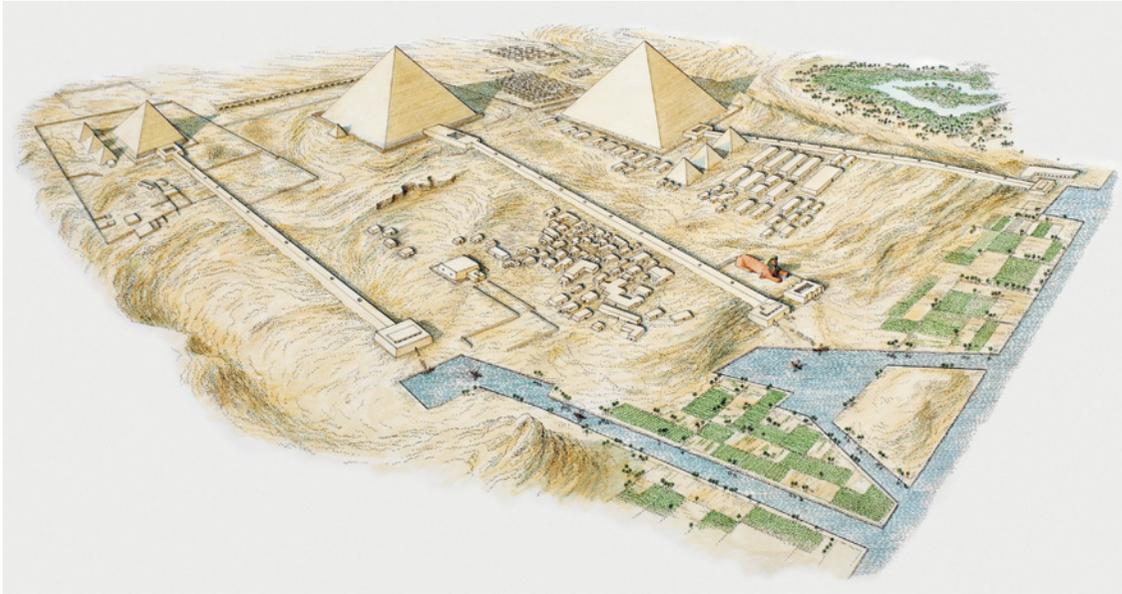
Skills builder

Determining historical significance

An important skill in history is to be able to determine the historical significance, or value, of something. This may be a trend, an event, an idea or an individual or group. To help work out the historical significance, we can pose questions or criteria. Examples include:

- How important was it to people who lived at the time?
- How many people did it affect?
- Did it change people's lives? For better or worse?
- What were the long-term effects?

Refer to the sources that are available in this unit to determine the historical significance of ancient Egyptian funerary practices. Explain why you came to this conclusion.



3.6.6 Illustration of an aerial view of the pyramids of Giza

Tombs

Tombs were built to safeguard the deceased's body from destruction, and to house all the goods and food needed for an existence in the afterlife. The most well-known tombs are the **pyramids** of Giza and the underground tombs in the Valley of the Kings.

Pyramids of Giza

The pyramids of Giza were built as tombs for the pharaohs. The Great Pyramid of Khufu was a massive building consisting of at least 2.3 million blocks of granite weighing 2.5 tonnes each. It is the largest monument ever built for a single person. Archaeologists think that the triangular structure of the pyramid might be representative of the journey the pharaoh would take to the heavens.

There is only a single burial chamber for the pharaoh Khufu inside the Great Pyramid. None of its contents have survived to the present day due to looting by tomb robbers. The room is now very bare. There are no wall paintings, reliefs or personal objects.

Valley of the Kings

The pyramids were often left unguarded, so they were easy targets for tomb robbers. By the New Kingdom period, all royal and noble tombs were constructed underground in the Valley of the Kings.

Typically, an underground tomb had a burial chamber divided in two parts: there was an area at the front with columns, and a sunken floor at the back where the **sarcophagus** (highly decorated coffin) was placed.

There were small chambers before and beside the burial chamber, and in the more elaborate (meaning carefully planned) tombs there were sloping passageways, vaulted ceilings and multiple rooms with beautiful wall paintings.

The paintings and reliefs found within tombs were never intended as decoration. The painted scenes, written spells and incantations were there to help the deceased make their journey to the afterlife. The makers of the tomb did not intend for anyone else to see the inside of the tomb once it was sealed. The tomb was the deceased's house for all eternity.

Activities

Remembering and understanding

- 1 Why was the afterlife referred to as the 'Field of Reeds'?
- 2 Outline the reasons for holding a funeral procession.
- 3 Why did tombs go underground in the New Kingdom period?

Applying and analysing

- 4 Sketch a picture of a person. Annotate your picture with labels for the *ka*, *ba*, shadow, *akh* and name.
- 5 You are a time traveller transported back to an ancient Egyptian embalmer's workhouse. Take notes on the key aspects of the mummification process. Use your notes to create a PowerPoint presentation (or similar) about the embalming process to a modern audience.
- 6 Photocopy or sketch the scene from Source 3.6.3 into your notes. Add speech bubbles to the key figures in the scene, to explain what may be taking place.

3.7 Contact and conflict

Contact within the ancient world

The ancient Egyptians came into contact with people living in other places as a result of trade, warfare and conquest (meaning to take control over other places and people). As a result of contact with other cultures, the Egyptians built up great wealth, learnt new techniques of fighting and expanded their territory.

Trade

Trade was fundamental to the economy and lifestyle of ancient Egypt. Egyptians were able to trade goods that they made or sourced from their local area with imported goods that were not available in the local area. For example, Egypt was almost treeless and so trade with Lebanon was crucial for obtaining wood. Source 3.7.1 outlines Egypt's main trading relationships. This source also outlines the key imports (meaning goods that were brought in to the country from other places) from these key trading partners with Nubia (ancient region in north-eastern Africa), tropical Africa (the central section of Africa), Lebanon and the Mediterranean countries.



3.7.1 Trading contacts in ancient Egypt

The Egyptians used honey and cedar oil for embalming. Trees were converted into incense sticks and furniture for the wealthy elite. Slaves from tropical Africa were essential for the domestic and mining industries. Until the fourth century BC, all trade was done through **barter**, which involved the exchange, or swapping, of goods or services without the use of money. Source 3.7.2 shows the main goods that were exported (meaning local goods sent to other countries) from Egypt.



3.7.2 Egyptian export items

Warfare

During the Old Kingdom period, Egypt did not have a permanent army. The desert on either side of the Nile kept the Egyptians safe from invasion. However, Egypt's wealth and supply of natural resources meant that foreign rulers were always looking for a way into the country.

Midway through the seventeenth century BC, a people called the Hyksos invaded Egypt. They were successful and ruled Egypt for approximately 100 years. The Hyksos had superior weapons: horsedrawn chariots, bronze swords and daggers, composite bows and scaled armour.

The Egyptians adopted the weaponry of the Hyksos, which means they began to use it too. The Egyptians not only expelled the Hyksos from their land, but they also used this superior weaponry to invade nearby countries. Egyptian armies invaded Nubia, Syria and Palestine. These three countries all had valuable natural resources that the Egyptians desired. From this point onwards, the pharaohs maintained a large and permanent army to protect Egypt's borders (see Source 3.7.3).



3.7.3 Tutankhamen (1333–1322 BC) wearing the blue crown and protected by vultures charging his Syrian enemies in battle, as seen on a painted wooden chest from his tomb in the Valley of the Kings at Thebes

Conquest

The New Kingdom period marked the beginning of Egypt's international conquests, which involved taking control of other places and people. It was the start of the Egyptian Empire. Thutmose I led two important military campaigns: one into Nubia and the other into western Asia (Syria and the territory of the Mitanni of Naharin). Thutmose I spent an entire year campaigning (which means waging war) against the Nubians. At the end of his campaign he had gained control of Upper Nubia (Kush).



3.7.4 A kneeling statue of Hatshepsut (c. 1470–1458 BC)

He returned to Nubia later in his reign and took control of the entire country. He built fortresses in Nubia and established a new administrative system.

Eventually, the Nubians overthrew Egyptian rule. However, one of the few female pharaohs in Egyptian history, Hatshepsut, led a campaign into Nubia (see Source 3.7.4). The Egyptians won this war and took with them as booty (valuable stolen goods) living captives. These captured Nubians became Egyptian slaves. Control of Nubia was important to the New Kingdom's pharaohs as Nubia was rich in gold, copper and semiprecious stones.

Hatshepsut's stepson, Thutmose III, spent much of his reign leading armies beyond Egypt's borders. His ambition or goal was to conquer all of Syria and Palestine; this meant that he needed to defeat 300 cities each controlled by a local prince or chieftain. It took Thutmose III seventeen military campaigns over a period of 20 years to achieve his aim.

Activities

Remembering and understanding

- 1 Which countries did ancient Egypt have contact with because of trade, warfare or conquest?
- 2 Recall or search the content in this unit to answer the following.
 - a What does it mean to 'barter'?
 - b Formulate one example of barter. Make sure the item(s) traded are roughly of equal value.
- 3 List all the countries or peoples conquered by Egyptian pharaohs in the New Kingdom.

Applying and analysing

- 4 Produce a ten-word crossword for Egyptian imports and exports. Your crossword should include items traded and countries traded with.
- 5 Why was there no permanent army in the Old Kingdom?

Evaluating and creating

- 6 Evaluate the impact of the Hyksos people on ancient Egypt.
- 7 'Trade was essential for the ancient Egyptians.' Prove that this statement is true using specific examples from Egyptian imports and exports.

3.8 Effects of contact and conflict

Developments in trade

Foreign trade involves exchanging goods and/or services with other nations. In ancient Egypt, foreign trade was controlled by the pharaohs. Over time, Egypt established trading links with Punt (located somewhere in present-day Somalia), Nubia, Palestine and Syria. There is also evidence of regular trade with peoples of the Mediterranean region (the Minoans of Crete in particular).

During the Middle Kingdom, trading expeditions were led into Punt and Nubia. Incense was in great demand in Egypt and Punt was rich in fresh myrrh, which was used to make incense. Evidence from the reign of Mentuhotep II shows that an expedition was made into the Sinai Peninsula, and lapis lazuli (a stone used in jewellery) and galena (an ingredient used in eye make-up) was brought back to Egypt.

The Sinai was a very valuable region for the Egyptians because the area had large copper and turquoise deposits. Several pharaohs began military campaigns to take control of Sinai mines. Once these mines were taken, the Egyptians had to pay attention to their northern defences, to protect them from others. The pharaoh Amenemhet III created permanent fortified settlements for Egyptian miners in the region. He had houses, wells and temples built for the miners and their families.



3.8.1 Ancient Egyptian settlement in Sinai

The spread of religious beliefs

The Hyksos, foreigners from Palestine who occupied and ruled Egypt between the Middle and New Kingdoms, accepted a few of the Egyptian gods. For example, they associated their god Baal with the Egyptian god Seth. The Hyksos based their official religion on that of the Egyptians. Furthermore, the Hyksos kings honoured the Egyptian sun-god Re by including 'Re' as part of their throne name.

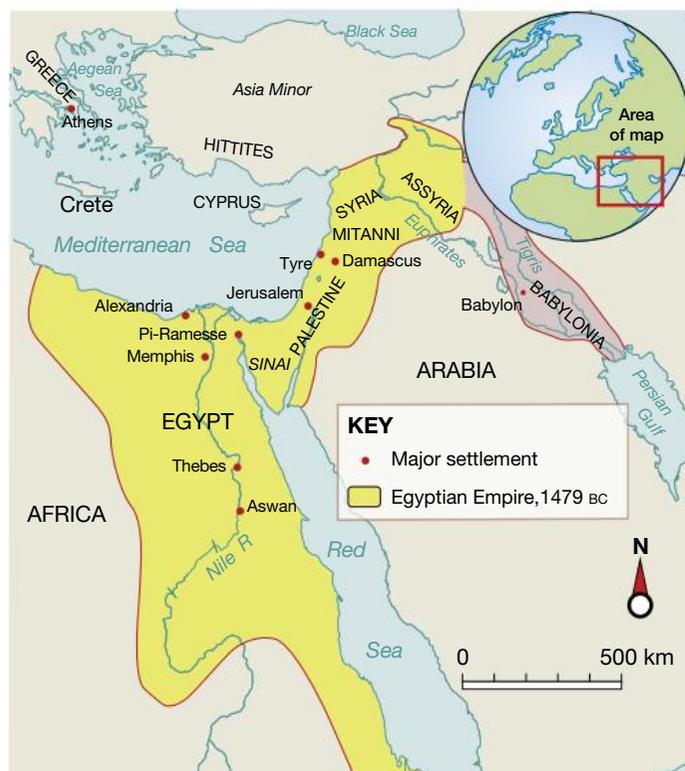


3.8.2 'We are all the gods of wisdom': the Egyptian god Thoth, the Greek god Hermes and the Roman god Mercury

The main effect of the contact between the peoples of Egypt and the Mediterranean region can be seen in the way that the nature and qualities of their gods began to overlap. For example, the Roman god Mercury and the Greek god Hermes both appear to be based on the Egyptian god Thoth, the god of learning, writing, sciences, magic and wisdom. Thoth's chief temple in Egypt was in a place called Khmun, later known by the Greeks and Romans as Hermopolis Magna. This name was chosen as it recognised that Thoth was the same as the Greek god Hermes. The Greeks believed that Hermes was the god of art, law, writing, magic, science and wisdom. Later the Romans associated their god of science and wisdom, Mercury, with the Greek god Hermes. Roman writers took Greek myths and substituted the name Hermes with their Mercury.

The emergence of empire

The borders of the Egyptian empire shifted with the rule of each new pharaoh. The pharaoh who achieved the greatest success in creating a very large empire was Thutmose III. By year 42 of his reign, Thutmose III had defeated Megiddo in Palestine and Kadesh in Syria. Also, his successful battles against the Mitanni in Naharin and the Nubians to the south meant that large tributes (or payments) were continually flowing into Egypt. This created a period of great wealth for the Egyptian empire.



3.8.3 The Egyptian Empire under Thutmose III

Diplomacy

One way that Egypt kept its kingdom peaceful was by arranging marriages. This was often done for political reasons. In 1246 BC, Ramses II married a princess from the Hittite realm (located in the region of current-day Turkey). The union allowed for the exchange of tribute between the two great nations. It also opened international royal visits; for example, Prince Hishmi-Sharruma (the crown prince of the Hittite realm) made the 1287-kilometre journey to Pi-Ramesse (which means the 'house of Ramses' and was the capital established by Ramses II). As a result of the marriage, there was also an increased exchange of knowledge between the Egyptians and the Hittites. The Hittite court came to value Egyptian medical skills. Ramses II's physician, Dr Pariamakhu, was sent to the Hittite court to prepare herbal remedies for the Hittite king Hattušili.



3.8.4 The hieroglyphic peace treaty between the Egyptians and the Hittites. Carved on the outer wall of the Cachette Court in Karnak (Luxor), c. 1259 BC.

Activities

Remembering and understanding

- 1 Why was Punt an important trading partner for Egypt?
- 2 Explain why Egyptian pharaohs invaded the Sinai region.
- 3 Discuss how Egyptian religious beliefs influenced other countries or regions from the ancient world.

Applying and analysing

- 4 Compare and contrast the qualities of the Egyptian god Thoth, the Greek god Hermes and the Roman god Mercury using a Venn diagram.

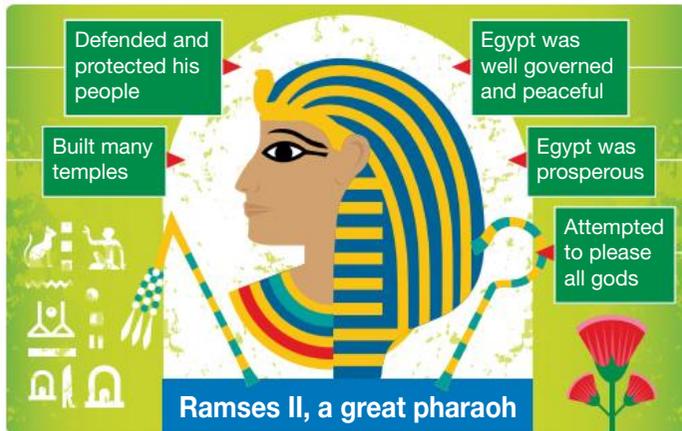
Evaluating and creating

- 5 Create an annotated visual display (AVD), using hand-drawn illustrations, that demonstrates the effects of conflict and contact for ancient Egypt. Your AVD should include a description, pictures with labels and diagrams.

3.9 Significant individuals

Ramses II

Ramses II was twenty-five when he came to the throne and he ruled for 67 years. He is often regarded as the greatest and most powerful pharaoh of ancient Egypt.

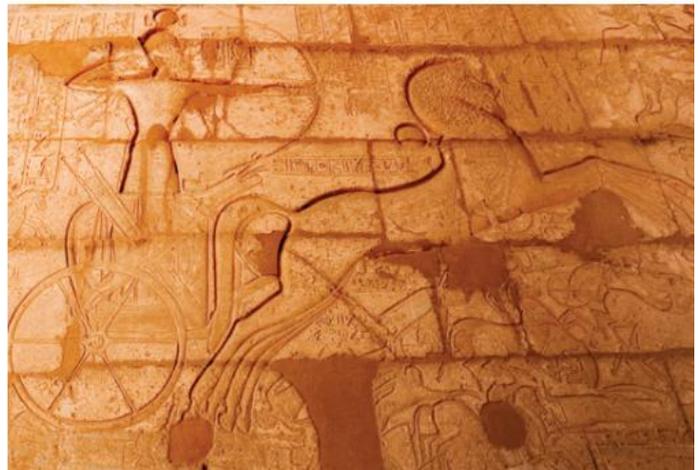


3.9.1 The great Ramses II

At war

Ramses II's most famous military campaign was the battle against Kadesh. In the fifth year of his reign, Ramses II, with several of his sons, left his capital, Pi-Ramesses, and marched towards Kadesh in Syria. On arrival, Ramses II was tricked by Hittite allies. They deliberately lied, telling him that his enemy was 200 kilometres to the north. In fact, the Hittites were lying in wait only 3 kilometres away. The Hittites swiftly attacked, and the Egyptian troops panicked and fled.

Ramses II, not wanting to lose the battle, threw on his armour, jumped into his chariot and charged at the Hittite attackers. With a little help from Egyptian reinforcements, Ramses II saved the Egyptians from defeat. There was no clear winner in this battle; however, on returning to Egypt, Ramses II boasted to the Egyptian people in reliefs and inscriptions of his glorious victory (see Source 3.9.2).



3.9.2 A frieze of Ramses II in his chariot at the Battle of Kadesh, at his funerary temple in Luxor, Thebes

Building program

In his 67-year reign, Ramses II had an enormous number of building projects completed. These included:

- the twin temples at Abu Simbel in Nubia (see Source 3.9.3)
- the Ramesseum (mortuary temple of Ramses)
- the Temple to Thoth at Memphis and the restoration of the **Sphinx**.



3.9.3 The Great Temple at Abu Simbel

Hatshepsut

Hatshepsut ruled Egypt for 22 years, which was the longest period of rule in ancient Egypt by a female. She became a great pharaoh.

When Hatshepsut's husband, Thutmose II, died prematurely she became regent for her stepson, Thutmose III, who was approximately nine or ten at the time. A regent is a person who is appointed to rule a country if the monarch is too young, absent, sick or disabled. Initially Hatshepsut was careful not to overstep her role as regent; however, within about two years of her husband's death, Hatshepsut had assumed the position of pharaoh. She ruled while Egypt was peaceful and economically strong.

A female pharaoh

The ancient Egyptian language had no words to define a female monarch and so Hatshepsut is frequently referred to as 'he'.

Furthermore, to be accepted as a true king of Egypt, Hatshepsut had to assume the symbolism of a pharaoh. Therefore, in most of her images Hatshepsut is shown wearing regalia (emblems) usually associated with male pharaohs. For example:

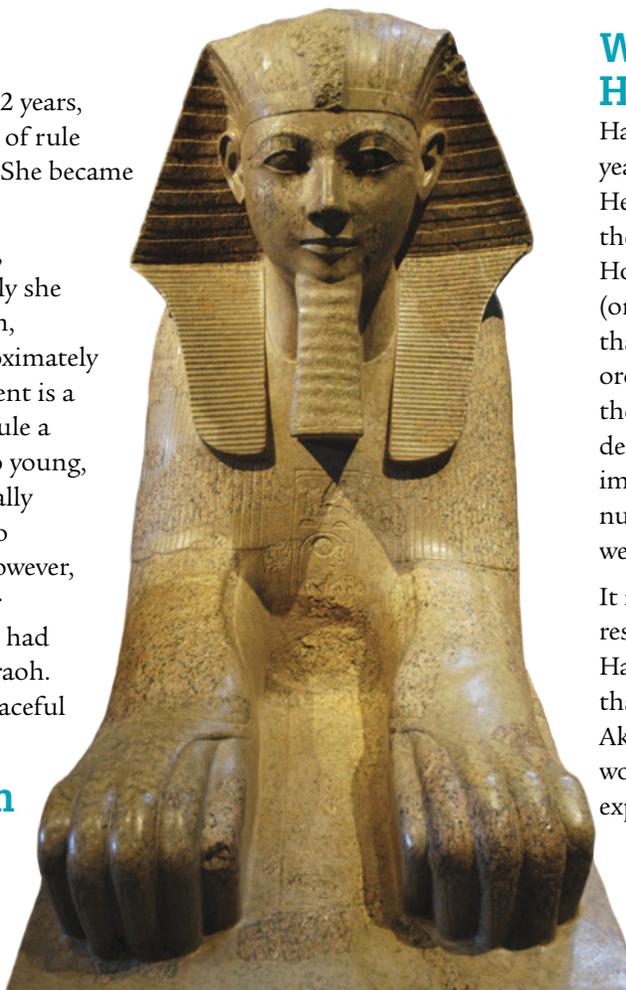
- a ceremonial false beard
- nemes (folded striped head cloth)
- royal crowns
- standing with left foot forward
- depicted as a sphinx (see Source 3.9.4).

Building program

During her time as pharaoh, Hatshepsut set about making her own mark on Egypt and ensuring that she left a legacy by undertaking a series of ambitious building projects.

Hatshepsut's building projects included:

- repairs to the Temple of Thoth at Hermopolis
- repairs to the Temple of Hathor at Cusae
- the construction of the Temple at Deir el-Bahri (Hatshepsut's mortuary temple).



What happened to Hatshepsut?

Hatshepsut died in the twenty-second year of her co-regency with Thutmose III. Her mummy has never been found and there is no evidence of an unnatural death. However, many historians have speculated (or come up with a theory or hypothesis) that Hatshepsut was murdered on the orders of her stepson Thutmose III. This theory is based on the fact that after her death Hatshepsut's names, titles and images were removed from the walls of numerous temples, and many of her statues were destroyed and dumped.

It is possible that Thutmose III was responsible for the damage done to Hatshepsut's images, but it is also possible that the destruction was carried out by Akhenaten, a pharaoh who introduced worship of the sun-god called Aten at the expense of all other gods.

3.9.4 Sphinx of Hatshepsut from Deir el-Bahri, Thebes

Activities

Remembering and understanding

- 1 Refer to the Timeline at the start of the chapter. What was the length of time between the start of the reign of Hatshepsut and the start of the reign of Ramses II?
- 2 How did Ramses II boast about his victories to the Egyptian people?
- 3 Outline how Hatshepsut attempted to legitimise (gain approval for) her rule as pharaoh.

Applying and analysing

- 4 'Ramses II was a great pharaoh.' Justify this statement with reference to the information in this unit, and Sources 3.9.1, 3.9.2 and 3.9.3.
- 5 With a partner, discuss what types of evidence would be required to prove that Hatshepsut had been murdered.

3.10 The tomb of Tutankhamen

Discovering the tomb

In November 1922, Howard Carter discovered the tomb of a little-known king. The tomb had lain mostly undisturbed for over 3000 years. Carter described the breathtaking first glimpses into the tomb in his book *The Tomb of Tutankhamen*. Read Source 3.10.1 to get a taste of what it must have been like to gaze into history.

At first I could see nothing ... as my eyes grew accustomed to the light, details of the room within emerged slowly from the mist, strange animals, statues, and gold—everywhere the glint of gold. For the moment—an eternity it must have seemed to the others standing by—I was struck dumb with amazement, and when Lord Carnarvon, unable to stand the suspense any longer, inquired anxiously, 'Can you see anything?' it was all I could do to get out the words, 'Yes, wonderful things.'

3.10.1 Howard Carter describes opening the tomb of Tutankhamen in an extract from his diary (26 November 1922)

Ancient robbers

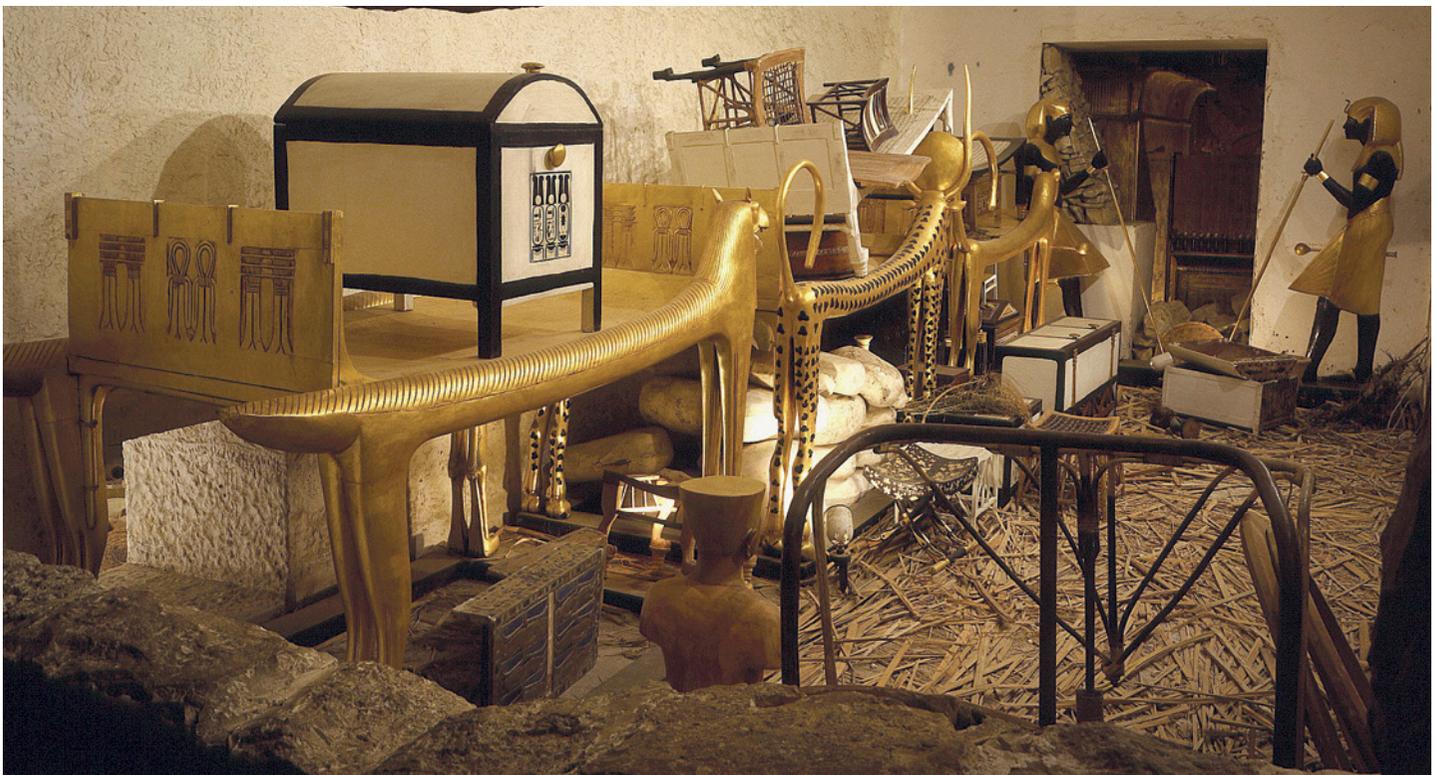
There were signs that the tomb of Tutankhamen had been entered in ancient times. However, historians speculate that the would-be robbers must have been disturbed as the funerary items, although cluttered and disordered, were still there.

Tomb contents

Antechamber

An antechamber is a small room leading to a larger room. In Tutankhamen's tomb, the antechamber contained about 700 items including:

- the components or parts of four chariots
- a collapsible sunshade
- senet boards
- four ritual couches
- two life-sized wooden figures (images of Tutankhamen) that stood guard at the entrance to the burial chamber. The clothing and jewellery of the figures were coated with gold and the sandals with bronze (see Source 3.10.2).



3.10.2 A reconstruction of the antechamber in Tutankhamen's tomb, showing piles of objects, including two life-sized figures guarding the entrance to the burial chamber, Valley of the Kings, Thebes

Burial chamber

The burial chamber was almost entirely filled by an enormous sarcophagus covered in gold. Inside, there were three more sarcophagi, and inside the smallest one were four person-shaped coffins (see Source 3.10.3). The burial chamber is the only chamber in the tomb decorated with scenes from the funeral procession and of the pharaoh being welcomed into the afterlife by a range of gods.

Treasury

The treasury, the room within the tomb in which the most valuable items were stored, contained over 5000 objects. The items included:

- Tutankhamen's canopic chest
- a large statue of Anubis
- model boats
- two more chariots
- two mummies of foetuses that some believe to be the stillborn children of Tutankhamen.

A cold case closed?

There have been many theories regarding the death of Tutankhamen. Read Sources 3.10.4 and 3.10.5 for some recent commentary.

A CT scan [medical imaging that uses X-ray and digital technology] of King Tutankhamen's mummy has disproved a popular theory that the Egyptian pharaoh was murdered by a blow to the head more than 3300 years ago ... Instead, the most likely explanation for the boy king's death at 19 is a thigh fracture that became infected and ultimately fatal, according to an international team of scientists.

3.10.4 Extract from 'King Tut died from broken leg, not murder, scientists conclude', *National Geographic*, 2006

A 'virtual autopsy' of King Tutankhamun has revealed that he is unlikely to have died in a chariot crash, as has previously been suggested, because he suffered from serious genetic physical impairments. The autopsy, composed of more than 2,000 computer scans, was carried out alongside a genetic analysis of Tutankhamun's family. Virtual scans showed that only one of the [bone] breaks occurred before he died, while fractures in his skull and other parts of his skeleton were made after the boy king was already dead - leading scientists to believe he may have succumbed to an inherited illness.

3.10.5 Extract from 'King Tutankhamen did not die in chariot crash, virtual autopsy reveals', *Independent*, 20 October 2014



3.10.3 English Egyptologist Howard Carter examining Tutankhamen's golden sarcophagus in 1922 AD

Activities

Remembering and understanding

- 1 Use Source 3.10.1 to write a newflash on the discovery of the tomb of Tutankhamen.
- 2 Why do historians think that Tutankhamen's tomb robbers were not successful?
- 3 Use Source 3.10.2 and the information in this unit to describe Tutankhamen's burial chamber.

Applying and analysing

- 4 Use Sources 3.10.4 and 3.10.5 to answer these questions:
 - a Why was it originally believed that Tutankhamen was murdered?
 - b What evidence was used to discredit the murder theory?
 - c What is the most recent theory as to the cause of Tutankhamen's death?
 - d Identify how Sources 3.10.4 and 3.10.5 differ in terms of the theories provided for Tutankhamen's death.
- 5
 - a What types of objects were typically buried in Egyptian tombs?
 - b What do the objects identified in Question 5a reveal about Egyptian beliefs in life after death?
- 6 From the evidence in Tutankhamen's tomb, how can we assume that the Egyptian pharaohs were fabulously wealthy?

3.11 The legacy of ancient Egypt

Tourism

In the modern world, Egypt is an attractive destination. Egypt contains significant and important heritage objects and sites of the past. More than 12 million tourists visit Egypt each year and the tourism trade generates over 10 billion dollars annually. The most popular tourist destinations are the ancient sites. For example:

- Giza for the pyramids of Giza and the Sphinx
- Luxor for the temples of Karnak and Luxor, Valley of the Kings and Valley of the Queens
- Abu Simbel for Ramses II's massive rock temples.

Egyptomania

Fascination with ancient Egypt has its own name: **Egyptomania**. Ancient Egypt's appearance in popular culture stems from two main factors:

- the antiquity (or very old age) of the Egyptian civilisation
- the accessibility of ancient Egyptian artefacts and monuments.

Through Egyptian art everyone can see and interact with the ancient culture. This is a direct link with the past. People are entranced by scenes of the Nile, statues of gods and goddesses, reliefs of pharaohs and queens, and tomb paintings showing religious and everyday scenes.

Roman Egyptomania

The cult of the goddess Isis became very popular throughout the ancient Roman Empire, particularly among women. In Egyptian mythology, Isis brought her husband Osiris back to life and so she became a symbol of renewed life and fertility in the ancient world. See Source 3.11.1 which shows Isis as a Roman goddess. This was an early example of people preserving a link with the ancient Egyptian past.



3.11.1 Statue of the Roman goddess Isis, second century AD

Early historians

Early historians such as Herodotus, Strabo and Diodorus Siculus travelled to and studied the land of Egypt. Herodotus was a Greek historian and tourist who visited Egypt in about 450 BC, when the pyramids and Sphinx at Giza were already 2000 years old. He wrote in his *Histories* that 'nowhere are there so many marvels in the world'. Of the Egyptians he wrote, 'They have existed ever since men existed upon the Earth.' Herodotus was noticeably fascinated by this almost mythical ancient civilisation.

Nineteenth-century Egyptomania

Egyptomania flourished in the nineteenth century. Napoleon's Egyptian campaign triggered extensive study of ancient Egyptian remains and culture. In the 1820s, the encyclopedic *Description de l'Égypte*, compiled by the scholars who had accompanied Napoleon's expedition, brought ancient Egypt to the European public.

Nineteenth-century Americans also became fascinated with ancient Egypt. American literature, architecture and art were all influenced by Egyptomania. Well-known literary works include *Some Words with a Mummy* by Edgar Allan Poe and *Lost in a Pyramid, or the Mummy's Curse* by Louisa May Alcott. Examples of architecture influenced by ancient Egypt are the Gold Pyramid House in Illinois and the Washington Monument in Washington, DC (see Source 3.11.2).



3.11.2 The Washington Monument in Washington, DC is an obelisk



3.11.3 A pyramid of glass and steel at the Louvre Museum, Paris

Did you know?

- Mummy unwrapping parties also became fashionable when American tourists brought home mummies as souvenirs. As after-dinner entertainment, the unwrapped mummy would be presented to the delighted guests. Mummy wrappings were also used to make cheap paper and the bodies then used as fuel for steam trains.

Modern Egyptomania

Mummy movies were made as early as 1899. As many as nine silent mummy movies were made and included storylines such as mummies coming back to life, mummy cults, and comedies where characters dressed themselves up as mummies. The discovery of Tutankhamen's tomb in 1922 followed by the 'mysterious' deaths of several people

who worked on the excavation of the tomb gave rise to the myth of the 'Curse of the Pharaohs'. The groundless myth has provided inspiration for many mummy horror movies. Recent movies such as *The Mummy* (2017) and its sequels demonstrate that ancient Egypt still has a mysterious and romantic appeal for modern audiences.

Preserving ancient heritage

Interest in ancient Egypt also threatens the heritage of the past. Large numbers of tourists, access to archaeologically important sites and even political instability within present-day Egypt all pose threats to the ancient sites. Some protection is offered by UNESCO (the United Nations Educational, Scientific and Cultural Organization), which has placed six Egyptian locations on its World Heritage List because of their cultural significance. With the potential for more 'hidden treasures' to be discovered beneath Egypt's desert sands, it is important to respect and protect all places associated with this fascinating ancient civilisation.

Activities

Remembering and understanding

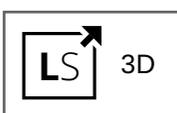
- 1 Why is Egypt a popular tourist destination in the twenty-first century?
- 2 Define the term 'Egyptomania'.

Applying and analysing

- 3 What evidence is there to prove that ancient peoples were fascinated by Egypt?
- 4 Explain evidence of Egyptomania from the nineteenth and twentieth centuries.

Evaluating and creating

- 5 Use the information from this unit to create your own example of twenty-first century Egyptomania. Some suggestions include, but are not limited to:
 - a cartoon for children
 - a board game
 - a rap song
 - a sketch for a building or an architectural feature
 - a new-season clothing range.





Ancient Greece

4

The ancient Greek civilisation lasted for a period of approximately 2000 years. It reached a peak during a time now known as the Classical period (fifth century BC). The ancient Greeks established the foundations of Western civilisation. The legacy of ancient Greece (meaning the things they left behind) is very important to the modern Western world. Democracy, equality before the law, philosophy, science, Western medicine, theatre and athleticism all originated in ancient Greece.

OVERVIEW QUESTIONS

- 4A** What was a city-state and why were these important in ancient Greece?
- 4B** How did everyday life differ in the city-states of Athens and Sparta?
- 4C** What religious practices were observed in ancient Greece?
- 4D** What role did war play in shaping ancient Greece?



Before you begin

4.0.1 Even in ruins, the Parthenon, on the Acropolis in Athens, is one of the most easily recognised buildings in the world today and a lasting symbol of the achievements of ancient Greek civilisation

GLOSSARY

agora the marketplace or centre of a Greek city-state; public offices and shops were in the *agora* and people met there to socialise

aulos an ancient Greek wind instrument

bier a stand on which a dead body is laid before the funeral

deities gods or goddesses, or divine beings

gymnasia sporting and teaching facilities where Greeks exercised both their body and mind

Hellas the Greek word for Greece

Hellene the Greek word for a person of Greek descent

league an alliance of states

libation a liquid offering, usually wine, to the gods

lyre an ancient Greek string instrument; shaped like a U, the lyre was used to accompany songs and recitations

metic Greek or foreign migrant living in a city-state

neoclassicism a period of revival (the bringing back) of ancient Roman and Greek culture in Europe. This was seen in architecture, art and interior design. The neoclassical period lasted from the mid eighteenth to the early nineteenth century AD

oracle this word had multiple meanings; it could refer to a place of prophecy, the prophecy itself or the person giving the prophecy

sophist a wise man, philosopher or teacher

stelae upright stone slabs or pillars that served as monuments or markers, especially as gravestones

Timeline

Ancient Greece

You probably know more about ancient Greece than you think. So many of the principles and ideas that are important in today's world have their foundations in ancient Greece. The struggle for supremacy between competing city-states helped to produce one of the most vibrant and creative of all the ancient civilisations.

KEY EVENTS



◀ An intricately designed earring, with a hanging pendant, in the National Museum of Taranto, Italy

1500 BC
Earthquake on Thera

1450 BC
Mycenaeans rule Crete

1240 BC
Mycenaeans conquer Troy

Before 2000 BC

2000 BC

1100 BC

Before 2000 BCE (BC)
Bronze Age

c. 2000–1450 BC
Minoan civilisation

c. 1600–1100 BC
Mycenaean civilisation

KEY SOCIAL REFORMS AND CULTURAL ACHIEVEMENTS



1450 BC
Collapse of Minoan civilisation

800 BC
Greek alphabet developed

776 BC
The first recorded Olympic Games

▲ This amphitheatre at Epidaurus shows the importance of theatre to the ancient Greeks

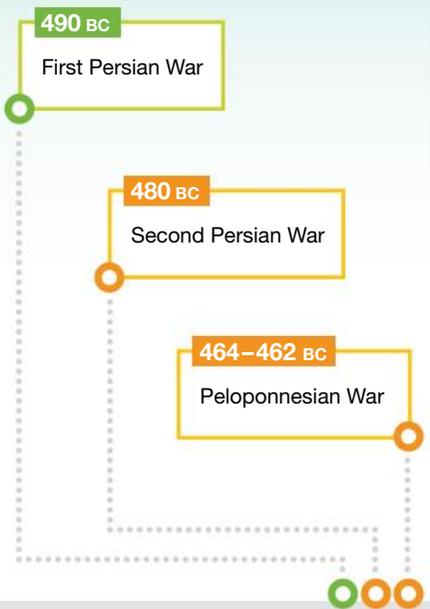
KEY EVENTS

KEY SOCIAL REFORMS AND CULTURAL ACHIEVEMENTS

Athena
(an Olympian god)



Poseidon
(an Olympian god)



750 BC
Homer writes the *Illiad* and the *Odyssey*

650 BC
Reforms of Lycurgus in Sparta

594 BC
Solon reforms laws in Athens

507 BC
Cleisthenes establishes democracy in Athens

462 BC
Courts established in Athens

The Siege of Tyre with fortified walls surrounded by the navy of Alexander the Great



4.1 Geography of Greece

Physical features

Greece is located on the south-eastern edge of Europe. Asia lies directly to its east and Africa to its south. Greece consists of a mainland and many islands. The mainland is surrounded by three seas: the Aegean to the east, the Ionian to the west and the Mediterranean to the south. The coastline of Greece is very long, and it contains many gulfs and bays. No place in Greece is very far from the sea. In the south, a narrow strip of land (known as an 'isthmus') joins two larger areas of land. This isthmus links the Peloponnese to the rest of Greece.

The Greek mainland is very mountainous. There is little fertile land except for the plain of Thessaly and the plain of central Macedonia. The ancient Greeks made the most of the land they had. They cut a series of steps (known as terraces) into some hillsides to create extra farmland. Their major crops included grapes, olives and grain.

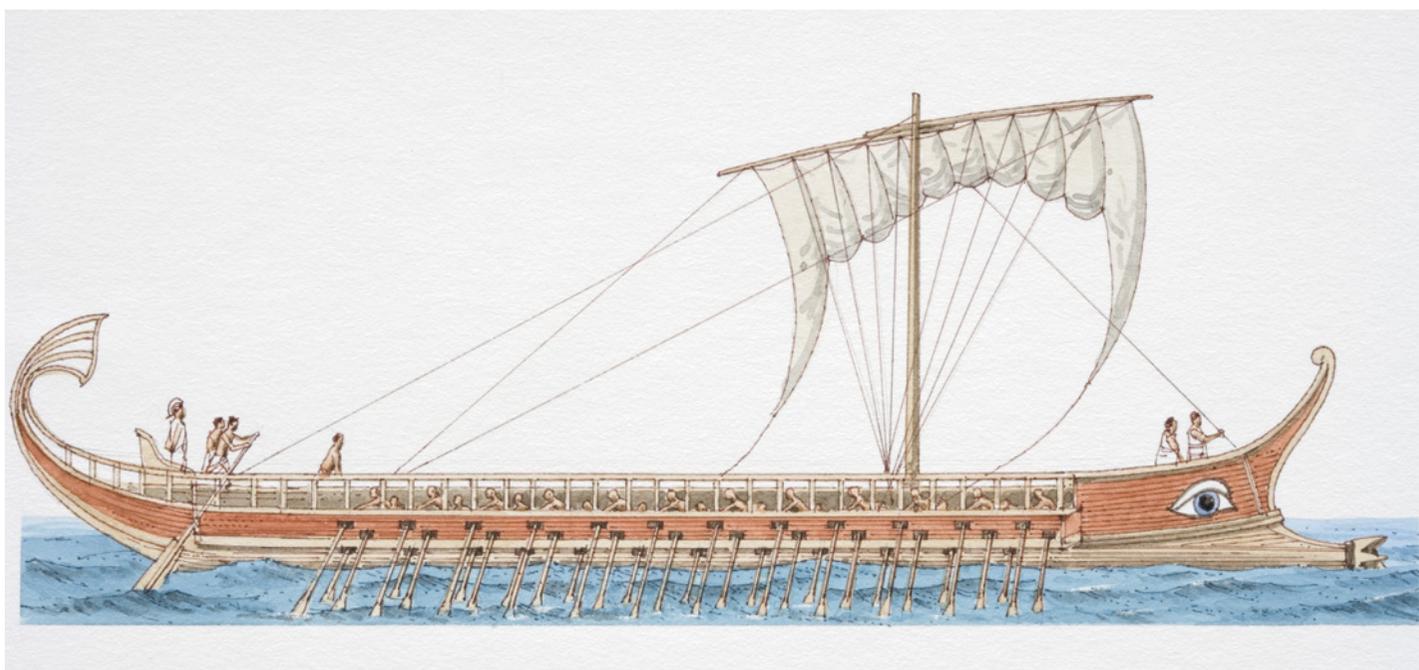
The Greeks were mostly a coastal people. The lack of suitable places to farm made them rely more heavily on the sea. Their forests provided them with timber needed to build ships and so the Greeks became traders. They would trade their olives, grapes and pottery for metals and extra grain. Sea travel was the fastest and safest form of transport in the ancient world. The Greeks were able to control trade across the Mediterranean and Black seas. They also sailed beyond the Pillars of Hercules (the Strait of Gibraltar) into the Atlantic Ocean.

The formation of city-states

The landscape made communication between the different locations within Greece very difficult. As a result, the Greeks were not a unified nation for most of their history. Instead, Greece was a collection of many separate city-states called *poleis*. Each *polis* was made up of the city and the surrounding countryside (which formed the state). It had its own government, currency, calendar, law system and army. The most powerful city-states were Athens, Sparta and Thebes. Conflict between the separate city-states was common. Despite their differences, the city-states recognised that they were part of a broader Greek world, which they called *Hellas*. They shared a common language, religion and similar customs. Non-Greeks were referred to as barbarians, which simply meant non-Greek speaking.

Did you know?

The Aegean Sea was named after King Aegeus of Athens. According to legend, he threw himself into the sea when he thought his son Theseus had been killed by the Cretan Minotaur, a fearsome mythical monster with the head and tail of a bull and the body of a man.



4.1.1 An illustration of a Greek ship from c. 500 BC. The ancient Greeks developed a strong seafaring culture



4.1.2 Map of ancient Greece

Colonisation

During the Archaic period (800–480 BC), trade and the search for farming land had led the Greeks to establish colonies around the Mediterranean and the Black Sea. The philosopher Socrates described the *Hellenes* (Greeks) as being ‘like frogs around a pond’. The ‘frogs’ were the colonies and the ‘pond’ referred to the seas around which they were based. The colonies kept close ties with their city-state, which provided support during times of need.

Southern Italy, Sicily, Corsica, the southern coast of France and the coast of Libya were dotted with Greek colonies. So too were the Black Sea coasts of the Ukraine, Russia, Georgia and Turkey. Some colonies grew to become great Greek city-states in their own right. Examples included the cities of Neapolis (Naples) in Italy, Syracuse in Sicily and Massalia (Marseille) in France. It is important to note that the Greek world in ancient times included an area much bigger than modern Greece.

Activities

Remembering and understanding

- 1 What are the distinguishing features of the Greek terrain?
- 2 **a** Define the term *polis*.
b Name five important Greek *poleis*.
- 3 Who were the *Hellenes* and who were the barbarians?
- 4 **a** Why did the Greeks form colonies?
b Define the term ‘metropolis’.
c Name two European cities that were founded by Greeks.

Applying and analysing

- 5 What did Socrates mean by his analogy (comparison) ‘like frogs around a pond’?
- 6 What impact did the Greek landscape have on the Greeks?

Evaluating and creating

- 7 To what extent were the ancient Greeks the dominant civilisation in the Mediterranean region? Use evidence from the chapter to support your answer.

4.2 Key groups in ancient Greek society

A tale of two city-states

Two of the most prominent and powerful city-states in ancient Greece were Sparta and Athens. The relationship between the people of these two regions played a key role in shaping the history of ancient Greece. They were at different times close allies (defeating the Persian forces in 480 BC) and fierce enemies (in the Peloponnesian War from 464 BC).

Spartans

People who lived in the city-state of Sparta were known as Spartans. The Spartans thought of themselves as the descendants of Heracles. Originally, the Spartans were Greeks from the north called Dorians. In the tenth century BC they settled in the southern Peloponnese around the older Achaean (the name of the original inhabitants of the area) city of Sparta. The area surrounding Sparta was known as Laconia and it included the fertile valley of the Eurotas River. To the north, Sparta was protected by a tall mountain range called the Taygetus. To the south, it had access to the sea, but a lack of natural harbours meant that the Spartans did not develop shipping or trade.

A warrior state

In the eighth century BC, most Greek city-states were establishing colonies beyond the Greek mainland. During this time the Spartans strengthened their control over Laconia and conquered the nearby state of Messenia. In doing this, Sparta became one of the largest and most powerful city-states. This power was based on Sparta's rich farmland, but was mainly due to the strength of its army. In order to maintain their power over the territories they occupied, the Spartans dedicated their lives to serving their country as soldiers. They became obsessed with war and feared that the people they had enslaved (meaning captured and controlled) would revolt or rise up against them. So, the Spartans ran their country as a military state (see Source 4.2.2), ruthlessly destroying all opposition to their rule.



4.2.1 The Taygetus mountain range surrounds Sparta and provides natural protection

They made the proclamation [announcement] to the effect that the helots [people native to the area] should choose ... those who claimed to have done the best service to Sparta on the battlefield, implying that they would be given their freedom. This was, however, a test conducted in the belief that the ones who showed most spirit and came forward to claim their freedom would be the ones likely to turn against Sparta ... 2000 were selected ... under the impression they were being made free ... however, the Spartans did away with them and no one ever knew how each one was killed.

4.2.2 The Spartans kill 2000 helots; in *History of the Peloponnesian War* written by the Greek historian Thucydides

Divisions in Spartan society

Spartan society was organised into three main groups (see Source 4.2.3).

4.2.3 Organisation of Spartan society

Division	Description
Spartiates	<ul style="list-style-type: none"> • Dorian Spartans who had full rights • all professional soldiers • allocated a plot of Laconian land and slaves
Perioikoi	<ul style="list-style-type: none"> • <i>perioikoi</i> meant 'the ones who dwell around' • other Dorians settled in Laconia, or local Achaean populations occupied by the Dorian Spartans • were free, allowed some autonomy but were not citizens • involved mainly in farming and trade; some were artisans • joined the Spartan army and followed Spartiates into battle • allowed to travel outside Sparta
Helots	<ul style="list-style-type: none"> • inhabitants of Spartan-conquered lands; most were Messenians (lived in a nearby region) • slaves owned by the state • allocated to adult Spartiates to farm their land • required to carry their master's weapons into battle

Athenians

The city-state of Athens was made up of the city of Athens and the surrounding countryside called Attica. The Athenians were Ionian Greeks (ancient Greeks originating from the eastern part of Greece). They thought of themselves as natives of Attica and were proud that their ancestors had not mixed with the Dorian Greeks. The Attic landscape was hilly and mountainous with a few small, fertile valleys. The main crops grown were grapes and olives. Since Attica was densely populated, the people were required to import most of their grain. Mount Pentelikon provided Athens with marble, a stone which was used in the construction of their public buildings. Silver was also mined at Laurion. What really made the Athenians wealthy was trade. Attica had a long coastline with several natural harbours. The main port of Athens, Piraeus, grew into the busiest port of the Mediterranean during the Classical period.

Divisions in Athenian society

Athenian society was organised into three main groups (see Source 4.2.4).

4.2.4 Organisation of Athenian society

Division	Description
Citizens	<ul style="list-style-type: none"> • males born to free Athenian parents • only allowed to marry Athenians • had full political rights and could vote at the Assembly and hold a position in government • could own land • had full legal rights • most were farmers, traders, shopkeepers or artisans • expected to serve in the army, cavalry or navy at times of war
Metics	<ul style="list-style-type: none"> • free Greek or foreign migrants • had no political rights • not permitted to marry Athenian citizens • could not own land • required to pay taxes • protected by the law • mainly artisans or traders • required to serve in the Athenian army
Slaves	<ul style="list-style-type: none"> • non-Greeks bought or born into slavery • the property of citizens or the state • had no legal rights • were paid for their work; some became rich • most worked on farms or as household slaves • many employed by the state as police, record keepers or in the silver mines of Athens

Activities

Remembering and understanding

- a What was the geography of Sparta?
 - b Where did the Spartans originally come from?
- a What was the geography of Athens?
 - b Where did the Athenians originally come from?

Applying and analysing

- Use a Venn diagram to compare and contrast Sparta and Athens.
 - a What advantages did the Spartans have over the Athenians?
 - b What advantages did each city-state have over each other?

4.3 Government and law

Development of different political systems

Over time, social change caused different political systems to develop in the city-states. Many states experienced a similar pattern of political change. The growth of city-states in the early eighth century BC was linked to the decline of monarchies. Eventually, the city-states were ruled by noble or wealthy landowners (this is known as an aristocracy).

Lawgivers

In the seventh century BC, colonisation and trade led to the rise of a wealthy class of citizens. These people demanded rights and wanted to share power with the nobles. To settle the disputes between these two groups, lawgivers (powerful men who pass laws to help organise society) compiled law codes to redistribute (or change) power. In Athens, the first lawgivers were Draco and Solon. Eventually, many aristocracies were replaced by oligarchies, which were small groups of influential people who held all the power.

Did you know?

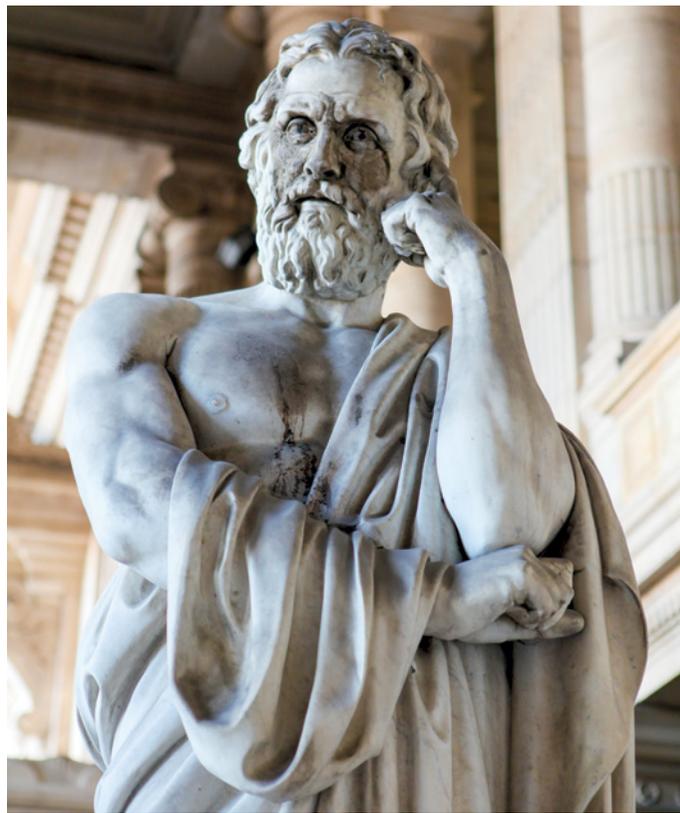
Draco was the first ancient Greek lawgiver, but his written code of laws was so harsh that it gave rise to the word 'draconian'. Today, draconian refers to any harsh measures taken by people in power.

Tyrants

The introduction of new law codes did not succeed in settling the unrest between different groups. Most people had limited rights and little or no say in the running of their city-state. At times, ambitious individuals became tyrants (controlling rulers) as they gained the support of the lower classes and seized complete control. A tyrant in ancient Greece was not necessarily a harsh ruler. Some tyrants, like Periander of Corinth and Peisistratos of Athens, were popular leaders who ruled with the consent (or agreement) of the people.

Government in Sparta

According to ancient authors, Lycurgus, a Spartan, received instructions from the **oracle** of Delphi to establish Sparta's laws in the seventh century BC. While we do not know if Lycurgus actually existed, we do know that Sparta was ruled by an oligarchy composed of ephors (leaders), elders and two kings. Citizens could attend the Assembly to vote for leaders, but they could not make proposals or question the decisions of their rulers.



4.3.1 Statue of Lycurgus, the legendary lawgiver of Sparta, in the Palace of Justice (Palais de Justice) in Brussels, Belgium

4.3.2 Spartan government

Government in Sparta	Descriptions
Two kings	<ul style="list-style-type: none">• descendants of two royal families• figureheads without real power• one remained in Sparta while the other led the army into battle
<i>Gerousia</i> (Council of Elders)	<ul style="list-style-type: none">• consisted of two kings and twenty-eight members over the age of sixty who served for life• organised discussions of the <i>Apella</i>• a high court for serious cases requiring death sentence or exile
Five ephors (leaders)	<ul style="list-style-type: none">• most powerful people in Sparta• served for 1 year• chosen by the <i>Apella</i>• oversaw all legal matters, foreign policy and decisions of the <i>Apella</i>• could overrule the kings and even punish them
<i>Apella</i> (Assembly of Citizens)	<ul style="list-style-type: none">• attended by Spartan citizens over the age of thirty but they could not speak• elected members of the <i>Gerousia</i> and the ephors

Government in Athens

Important political reforms were made by Solon in 594 BC. To protect the poor, he passed laws that cancelled or wiped out all debts (money owed) and he gave all citizens the right of appeal a legal decision in court.

In 507 BC another lawgiver called Cleisthenes, who was an aristocrat by birth, sided with the common people in their rebellion against tyranny. He introduced new reforms that established democracy in Athens. For the first time in history every citizen was equal before the law. In order to protect citizens' rights, and to encourage loyalty to the city-state, Cleisthenes divided the Athenians into ten tribes. Each tribe consisted of members from the city of Athens, the coast and rural areas.

Our constitution is called a democracy because power is in the hands not of a minority but of the whole people. When it is a question of settling private disputes, everyone is equal before the law; when it is a question of putting one person before another in positions of public responsibility, what counts is not membership of a particular class, but the actual ability which the man possesses [what the person can do]. No one ... is kept in political obscurity because of poverty.

4.3.3 This is how the famous Athenian politician Pericles described democracy, in Thucydides's *History of the Peloponnesian War*



4.3.4 Voting in Athens used ballots, such as these inscribed examples

Did you know?

- Athenian citizens voted on whether or not Athens should go to war. And even a general in the army
- was elected by a vote.

Athenian government was organised in the following way:

4.3.5 Athenian government

Government in Athens	Description
<i>Ekklesia</i> (Assembly of Athens)	<ul style="list-style-type: none"> • most important political body • included all male Athenian citizens over eighteen • directly involved in decision making by exercising their vote • citizens addressed the Assembly and expressed their opinion
<i>Boule</i> (Council of 500)	<ul style="list-style-type: none"> • each of the ten tribes chose by lot fifty citizens over the age of thirty to serve as councillors for 1 year ('chose by lot' means that names were randomly chosen or drawn from a list of people) • councillors prepared agenda for the Assembly • oversaw the implementation of the Assembly's decisions
Ten <i>strategoí</i> (generals)	<ul style="list-style-type: none"> • the army was divided into ten units extracted from ten tribes • each tribe elected a general every year to lead the unit • were influential political figures
Juries and law courts	<ul style="list-style-type: none"> • Solon established the <i>Heliaea</i>, the law court where citizens exercised the right of appeal • 6000 citizens selected by lot to serve as jurors • the <i>Areopagus</i> (court) dealt with murder and other very serious crimes

Activities

Remembering and understanding

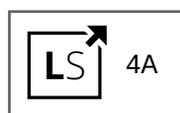
- 1 Describe the most powerful political groups in Sparta and Athens.
- 2 How did Cleisthenes establish democracy?

Applying and analysing

- 3 According to Pericles (Source 4.3.3) what principles underpin democracy?
- 4 How did Athenians ensure political power was distributed fairly?

Evaluating and creating

- 5 Create a brochure that provides information on the different types of government found in ancient Athens and Sparta. Include a list of the advantages and disadvantages of each system.



4.4 Everyday life

Everyday life in Sparta

Spartans were forbidden to follow any interest other than military affairs. It is not surprising that they have left us very few primary sources from which we can study their society. Most sources relating to Sparta are Athenian, so they are likely to be biased with an Athenian point of view.

Childhood

When a Spartan boy was born, he was bathed in wine. Then he was presented to a council of elders who examined him to see if he was healthy. If the child was too weak or deformed, he was abandoned and left to die on Mount Taygetus. When healthy boys turned seven, they left their home and family to begin their military training. The only option for Spartan boys was to serve their city-state by training as soldiers.

While they were training, boys lived in barracks in groups called 'packs'. They were trained to endure harsh conditions and to be obedient, which means that they would follow orders. They went barefoot; their hair was cut short, and they were given little to wear and little to eat. They were also encouraged to steal, but were severely punished if they were caught.

Boys also received a basic education, and were taught to read and write. They were trained in music and dance. It was important for the boys to love their country, and to respect its laws and their elders. They were taught to admire bravery and disregard death, which meant that they did not fear dying for Sparta.

Adulthood

From the age of twenty, Spartan men became full-time warriors. They were ready to fight for Sparta when called to duty. They kept their hair long and grew a beard, but not a moustache. They ate at the mess hall called the *syssition* and continued to live in barracks even if they were married.

At age thirty, men were granted full political rights and they were given land for farming by the state. A part of what they produced was used to supply the common *syssition*. From this age they could spend the nights at home with their families.



4.4.1 A bronze statuette of a Spartan warrior, about sixth century BC

The Spartans continued to serve their city-state up to the age of sixty. They led a life of vigorous (energetic) training and discipline. They were always ready to go into battle if Sparta was attacked or if there was an uprising of the helots. The Spartans were so confident in their army that their city was not protected by walls. Spartan soldiers wore red in battle in order not to be put off by the sight of bloodstains. Cowardice on the battlefield was not tolerated. Spartans who dropped their weapons and ran away during battle were not welcomed back to Sparta. Being dishonoured for cowardice and exiled from Sparta was considered to be a punishment worse than death.

Love of wealth and luxuries was also considered dishonourable. All property belonged to the state and the Spartan currency, made of iron, was heavy to carry and had little value. There was no reason for Spartans to build up (or accumulate) wealth. Spartans were also forbidden to travel outside Sparta and foreigners could only visit Sparta for short periods. This was done to ensure that Spartans were not corrupted or influenced in a bad way by others.

Did you know?

- The staple (main) Spartan food was a black soup made of salt, blood and vinegar. A Sybarite (native of Sybaris, an ancient Greek city in southern Italy) visiting Sparta after eating in the communal mess hall remarked: 'Now I know why Spartans do not fear death.'

Women

Unlike other Greek women, Spartan women led active and independent lives. From the age of seven, they received a basic education in reading, writing, music and dance. They were trained to be physically healthy and strong. A woman's primary, or most important, role was to produce healthy soldiers for Sparta. At the age of eighteen, women were married, but they did not live with their husbands until the men turned thirty.

Since helot women did all the housework and the men were often away, Spartan women looked after the finances, and supervised work in the house and on the farm. They were much more independent than other Greek women and were quite outspoken, which means they often said what was on their mind. Spartan women were even allowed to dance and sing in front of men (see Source 4.4.2). Like men, their duty to Sparta came first. Spartan mothers were known to send their sons into battle telling them, 'Come back with your shield or on it', which means be victorious or be prepared to die. Women, especially those who were mothers, were highly respected in Sparta.

Everyday life in Athens

Childhood

In wealthy families, children up to the age of seven were looked after at home by their mothers or nurses. Like children today, they played games with other children. Archaeologists have also found several toys including rattles, dolls, toy soldiers and animals on wheels. Written sources indicate that children were brought up listening to the legends of heroes and Aesop's fables.



4.4.2 A bronze figurine of a Spartan girl dancing, about sixth century BC

4.4.3 An ancient Greek drinking cup from about the fifth century BC showing classroom scenes including a music lesson on the lyre, a student reciting poetry and a slave tutor waiting



Boyhood

From the age of seven, boys and girls were treated differently. Boys went to school escorted by their *paidagogos* (slave tutor) who carried their books, kept them focused in class and assisted them with their work. Schools were privately run (like a business) and boys were taught reading, writing and arithmetic. They were taught to play a musical instrument such as the **lyre** (a stringed instrument) or the **aulos** (an ancient Greek wind instrument) (see Source 4.4.3 for an image of the lyre). Boys also attended the *palaestra* where they exercised and trained in wrestling and other sports.

Boys from less affluent (that is, less well off) families finished their education at fourteen and then accompanied their fathers to work. Wealthier families had their sons continue their education up to the age of eighteen. They became pupils of one of the many **sophists** (professional teachers and intellectuals) in Athens and, among other things, they were trained in public speaking. Between the ages of eighteen and twenty, young Athenians received military training.

The lives of girls

Girls did not go to school, but many were taught to read and write at home. They were raised by their mothers and taught the household duties, which included cleaning, cooking, spinning and weaving. Education involved preparing girls for their later roles as wives and mothers.

4.4.4 An earthenware drinking cup decorated with a scene from a symposium, about 500 BC

Adulthood

Athenian males became citizens at the age of twenty. They were required to attend the Assembly of Athens for 40 days each year, where they exercised their right to vote on important matters affecting the city-state. At some time in their adult lives, men were also called to serve in government. They considered it a great honour to be a citizen and to be directly involved in the running of their state.

The agora and the *gymnasia*

Citizens spent much of their time discussing politics in the *agora*, which was the city's great open space. All the state offices, religious buildings and shops were in the *agora*. Here they met their friends, discussed the latest news or developments, and listened to the politicians or to the many philosophers of Athens. Going to the *agora* was an education in itself, as much could be learned. Wealthier citizens could also attend the city's *gymnasia* where they could exercise their bodies and their minds. In the *gymnasia*, they mixed with other citizens including influential politicians and philosophers.

Festivals

Several religious festivals were held in Athens throughout the year. They provided colour, spectacle (something to look at) and a break from routine. These included theatrical performances at the Festival of Dionysus and the athletic competitions of the Panathenaic Games.



Men at home

At home there was a formal reception room reserved just for men. It was called the *andron*. Here the men entertained their male friends at drinking parties called *symposia*. During a symposium, the men would lie on couches, enjoy a banquet and drink diluted or watered-down wine. It was considered uncivilised (rude or without culture) to drink undiluted wine as clarity of mind was necessary for the discussions that followed.

Women

Women in Athens had no political rights, did not own property and could not inherit money. They were usually married at the age of fourteen to much older men. Their husbands were chosen by their fathers, who also provided a dowry (property or money brought by the bride to her husband on marriage) to the groom. Upon marriage, women exchanged the authority (or control) of their fathers for that of their husbands.

Women at home

Women were confined to the home. They looked after the children and the housework. If they were wealthy they supervised the slaves, who undertook all household duties. A special area in the upper floor of the house, known as the *gynaikon*, was reserved for women and children when male visitors came. Women rarely left the house and when they did they were escorted. They might have left the house to fetch water from public fountains, participate in certain religious festivals or visit the tombs of loved ones. The only women who could attend the *symposia* were *hetairai* (courtesans) who provided entertainment for the men.



4.4.5 This detail of a vase from Athens (525 BC) shows female water carriers waiting to collect water from a fountain

Man is by nature superior to the female and so the man should rule and the woman should be ruled. (Aristotle, 384–322 BC, philosopher)

We keep *hetairai* for the sake of pleasure, female slaves for our daily care and wives to give us legitimate children and to be the guardians of our households. (Demosthenes, 384–322 BC, orator or public speaker)

A woman who travels outside her house should be old enough that people ask whose mother she is, not whose wife she is. (Hypereides, 389–322 BC, orator and speech writer)

A woman's reputation is highest when men say little about her, whether it be good or evil. (Pericles, 495–429 BC, statesman)

4.4.6 Some thoughts on women given by men in Athens

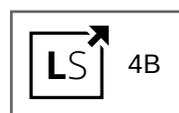
Activities

Remembering and understanding

- 1 How did Sparta prevent its citizens from becoming corrupt?
- 2 What was the prime role of women in Sparta and how did this affect their lives?
- 3 Describe the life of an Athenian citizen.
- 4 What was a *symposium*?

Applying and analysing

- 5 Construct a Venn diagram, and compare the similarities and differences in the childhood of Spartan and Athenian boys.
- 6 Explain the statement: 'The experience of the *agora* was an education in itself.'
- 7 Read Source 4.4.6. What does each of the statements tell us about the attitude towards women in Athens?
- 8 Imagine you lived in ancient Greece. Who would you rather be? An Athenian or a Spartan? A man or a woman? Explain your answer.



4.5 Religion

Creation story

The original Greek gods represented the basic components of the universe that came into being at the time of creation: Gaia (Earth), Uranus (Sky), Pontus (Sea), Night (Nyx) and Day (Hemera). Eros (Primordial Love) represented the driving force that brought the components together, sparking life in the universe.

The Titans

The Titans, born out of the union of Gaia and Uranus, were the first **deities** (or gods) to rule over the universe. Among the Titans were Helios, who controlled the movements of the Sun, and Selene, who controlled those of the Moon. Oceanus ruled over the ocean, while Atlas held the heavens and the Earth on his shoulders. A Titan called Prometheus created humans from clay, and gave them food and fire.

The most famous Titans were Cronus and Rhea. Cronus had been warned that one day he would be overthrown by one of his children, and so he forced his wife Rhea to hand over each of their children to him. Cronus then swallowed them to protect himself. When Zeus was born Rhea hid him on the island of Crete and she presented Cronus with a rock covered in swaddling (wrapping) clothes to trick him. When Zeus grew up he sought out, challenged and defeated his father. Cronus was given a potion that forced him to vomit up Zeus's older brothers and sisters. Zeus and his siblings then waged a 10 year war against the Titans. They eventually won and became the rulers of the world.

Since we are three brothers born of Rhea and Cronus, Zeus, and I [Poseidon], and the third is Hades, lord of the dead men.

All was divided among us three, each given his domain [area to rule].

I when the lots were [done] drew the grey sea to live in forever;

Hades drew the lot of the mists and the darkness, and Zeus was allotted the wide sky, in the clouds and the bright air.

But earth and high Olympus are common to all three.

4.5.1 The division of the world as described by Poseidon in the *Iliad*, an epic poem written by Homer in the eighth century BC



4.5.2 The Greek god, Zeus

The Olympian gods

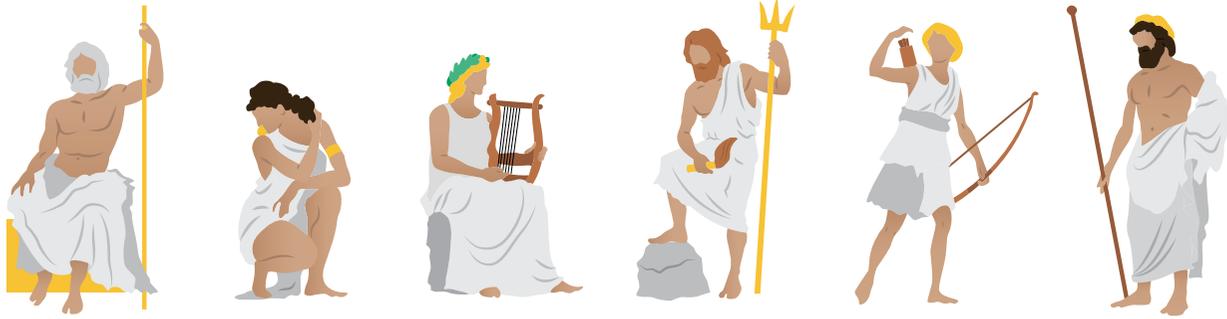
The Greeks were polytheists which means they believed in multiple gods. The twelve most important Greek gods were believed to live on Mount Olympus in northern Greece. The gods ate ambrosia and drank nectar to sustain their immortality.

The gods judged the mortals (human beings) on Earth and were primarily concerned with being respected and honoured. The gods were anthropomorphic. This means that they were like humans, able to express emotions like love, anger and revenge. The gods often pretended to be mortals and visited the Earth where they associated with humans. They favoured certain mortals and brought misfortune on others.

Honouring the gods

Each god influenced a different aspect of daily life. This meant that the Greeks would direct their prayers to certain gods. For example, a farmer who was disappointed about poor harvests prayed to Demeter to change his fortunes. A merchant planning a successful trade expedition would pray to Poseidon to grant safe passage across the sea. Source 4.5.4 outlines which god was responsible for each aspect of Greek life.

Honouring the gods in the form of religious rites (duties) played a significant role in Greek society. The Greeks performed a variety of rites to please the gods. Failure to do so could incur the wrath or anger of the gods. These rites included animal sacrifices and **libations** (a drink poured as an offering to a god) of wine. Animals chosen for sacrifice needed to have a certain skin colour. There were specific instructions regarding how the animal was to be slaughtered, the shape of the blade that was to be used, and the type of wood that was to be burnt for roasting the flesh. Libation offerings, usually of wine, had to be performed on certain days to honour the various gods. Greek traditions for the worship of each of the gods were so complex that it was the job of officials to oversee correct religious practices.



4.5.4 Six of the most important Greek gods and goddesses: Zeus, Aphrodite, Apollo, Poseidon, Artemis and Hades

4.5.3 Ancient Greek gods

Olympian god	Domain	Symbol
Zeus	<ul style="list-style-type: none"> the sky weather ruler of all gods 	<ul style="list-style-type: none"> thunderbolt eagle oak tree
Hera	<ul style="list-style-type: none"> marriage women, childbirth wife of Zeus 	<ul style="list-style-type: none"> diadem pomegranate peacock
Poseidon	<ul style="list-style-type: none"> the sea earthquakes 	<ul style="list-style-type: none"> trident dolphin horse
Demeter	<ul style="list-style-type: none"> farming, grain, bread 	<ul style="list-style-type: none"> torch corn
Aphrodite	<ul style="list-style-type: none"> love beauty 	<ul style="list-style-type: none"> myrtle dove
Hades (also known as Pluto)	<ul style="list-style-type: none"> the Underworld or hell death and dying 	<ul style="list-style-type: none"> scepter rooster cornucopia key
Apollo	<ul style="list-style-type: none"> the Sun light music prophecy 	<ul style="list-style-type: none"> lyre laurel wreath bow and arrows
Ares	<ul style="list-style-type: none"> war 	<ul style="list-style-type: none"> spear helmet chariot dog boar
Hephaestus	<ul style="list-style-type: none"> fire blacksmiths 	<ul style="list-style-type: none"> axe anvil hammer
Hermes	<ul style="list-style-type: none"> trade protector of travellers messenger of the gods wisdom 	<ul style="list-style-type: none"> winged shoes the staff with entwined serpents
Athena	<ul style="list-style-type: none"> warfare crafts wisdom 	<ul style="list-style-type: none"> olive tree helmet spear owl
Artemis	<ul style="list-style-type: none"> the hunt protector of young girls the Moon 	<ul style="list-style-type: none"> bow deer

Religious festivals

The most important activities in Greek society were centred on the gods. These included processions (organised walks or marches), athletic games and theatrical performances. Religious festivals provided a break from the daily routine. In a world where there was no such thing as the weekend, religious celebrations were important holidays. Some festivals were very localised, only occurring in certain places. Others were panhellenic, involving all Greeks. The Greeks were a divided people, but they did share a common language, culture and religion. Participation in panhellenic religious celebrations strengthened ties between the city-states and instilled a sense of unity among their citizens.

Panhellenic Athletic Games

Greek athletes came together to compete to honour their gods and to bring glory to their city-state. The games were made up of four separate sporting festivals (see Source 4.5.5). They were a great cultural event, which attracted poets, musicians, actors and playwrights (people who wrote plays) who provided additional entertainment.

4.5.5 The Panhellenic Athletic Games

Panhellenic Athletic Games	Location	God honoured	Victor's crown
Olympic	Olympia	Zeus	olive leaves
Phythian	Delphi	Apollo	laurel leaves
Isthmian	Corinth	Poseidon	pine leaves
Nemean	Nemea	Zeus	wild celery leaves

Olympic Games

The most prestigious athletic games were the Olympic Games. They were held to honour Zeus every 4 years in Olympia, which was in south-western Greece. The athletic contests lasted 5 days, but the celebrations and the religious rites took place over a period of 2 weeks. A truce was called during the games and all wars were required to stop to allow athletes and spectators to come to Olympia in peace.



4.5.6 A reconstruction of ancient Olympia



The main athletic events at the games included running, discus, wrestling, boxing, long jump, javelin, horse and chariot racing, and pentathlon (discus, javelin, long jump, wrestling and running). Another event was the *pankration*, a cross between wrestling and boxing, in which all moves were allowed except for biting and eye-gouging. Victorious athletes did not receive any medals or money. They were awarded a simple wreath (leaves plaited into a circular shape and usually worn on the head) at the games. With victory came great prestige, fame and honour. The winning athletes were treated as heroes in their native city-state.

Did you know?

- Olympic champions were so admired that the *gloios* (a gluey mixture of sweat, oil and dirt) scraped off their bodies was believed to have medicinal qualities.

4.5.7 The torch race originated in the ancient Olympics, but it was not a competitive event; it was a religious ceremony that involved passing the sacred flame as quickly as possible to retain its purity. The torch race ended at the altar of the god that was celebrated. It is also featured in modern Olympics.

Theatre

Drama festivals were held to honour the god Dionysus and to entertain the people. In Athens, the Greater Dionysian Festival was celebrated in spring. The theatre contained an altar where offerings were made to Dionysus at the opening of each festival. Several tragedies and comedies were performed throughout the day. These were judged, and first, second and third places were awarded.

A trophy for the winning play was publicly displayed on a tripod. The plots or storylines of the plays often focused on famous myths and legends, and the lives of Dionysus and other gods. Since the plots were known to everyone, it was up to the skill of the playwright to intrigue (make people think) and entertain the audience. The actors were always men who wore masks and costumes appropriate to their character.



4.5.8 Ancient Greek terracotta model of a theatre mask from 400–300 BC

Religious sanctuaries

There were a number of sites of great religious importance throughout Greece. The most significant was the oracle of Apollo at Delphi. This was the name given to the Pythia or priestess through which Apollo spoke.

People went to Delphi in large numbers hoping to seek advice from the oracle. After a ritual bath and a meal of special herbs, the oracle sat on a tripod over a fissure (or opening) in the ground inhaling (which means breathing in) the vapours that arose. While in a trance, the priestess posed the questions asked by the worshippers. Her response was believed to be the words of Apollo. The prophecy was often unclear and open to interpretation, which meant that it could mean different things to different people. Another important oracle was that of Zeus in Dodona in north-western Greece. Here it was believed that Zeus communicated through the rustling of the leaves of an oak tree.

The sanctuary of Epidauros in the Peloponnese was a famous healing centre. It was dedicated to the god of medicine, Asclepius. Sick people arrived at Epidauros hoping to be cured. It was believed that Asclepius visited the sick and cured them during the night. Both conventional (regular or accepted) medicine and faith healing were practised at Epidauros. Theatrical performances and athletic facilities were also available, and were often prescribed for physical and emotional healing.



4.5.9 The ruins of the Temple of Apollo at Delphi

Activities

Remembering and understanding

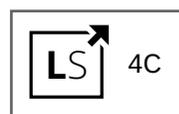
- 1 Which god represented 'Primordial Love' and what was his role in the creation story?
- 2 Why would the Greeks have honoured the Titan Prometheus?
- 3 How did the Greeks show their respect for the gods?
- 4 Explain the importance of the Panhellenic Games.
- 5 Why did the ancient Greeks visit Delphi?

Applying and analysing

- 6 According to Homer (Source 4.5.1) how was the world divided between the gods?
- 7 Examine the model of the ancient site of Olympia in Source 4.5.6. How do you think it is different from a modern Olympic complex? Discuss the reason for this difference.

Evaluating and creating

- 8 Devise a family tree of the Greek gods beginning with the original Greek gods.



4.6 Death and funerary customs

The afterlife

The ancient Greeks believed that the soul of the dead continued to exist in an afterlife. This took place in an enclosed area beneath the Earth, called the Underworld. The Lord of the Underworld was Pluto or Hades, who ruled over the dead with his wife Persephone. The name Hades was used as an alternative name for both the god and the Underworld.

The Greeks believed that when a person died, their soul (or inner spirit) left their body. A person's soul was escorted by the god Hermes to the River Styx, which encircled the Underworld. There, Charon the ferryman carried the soul across the river in his boat. The journey of the soul across the River Styx was paid for by relatives, who placed a coin in or on the mouth of the deceased. The gates to the Underworld were guarded by the three-headed dog Cerberus who ensured that the living did not enter.

Judging the soul

Each soul was judged by three judges in the Underworld. Rhadamanthus judged the souls of Asians and Aeacus those of Europeans, while Minos judged both groups by dealing with disputed cases. If a soul was judged to be evil, it was sent to the depths of the Underworld to a place called Tartarus. There the souls received punishment for their wrongdoings. A pious and virtuous soul (belonging to someone who had honoured the gods and done good deeds) was sent to the Elysian Fields, a place of light, warmth, happiness, games and music.

Funerary customs

Honouring the dead and providing an appropriate burial was an important duty for the relatives of the deceased. Between the eighth and fourth centuries BC the Greeks practised full burial and cremation. The choice between the two varied over time and from place to place.



4.6.1 A detail from a red figure vase depicting the Underworld, with Hades and Persephone in the centre and Cerberus, the three-headed dog, in the foreground

Burial rites

Burial rites consisted of three parts.

Laying out the body

The laying out of the body took place in the family home the day after a person had died. The women prepared the body. They bathed, anointed (blessed with oil) and dressed the body. Then they laid the body on a **bier**, which was a type of stand. The head of the deceased was raised on a headrest and the body was decorated with flowers, wreaths and jewellery. The body was displayed for a whole day. Friends and family came to pay their last respects. Women dressed in black and with their hair shorn (shaved very short) would beat their chests and sing traditional laments, which were sad songs. A vessel containing spring water was placed outside the house as a sign of mourning and to allow visitors to wash their hands to purify themselves as they left.

The funeral procession

The funeral procession from the house to the cemetery took place before dawn on the third day after a person had died. The body was wrapped in a shroud (which was like a sheet of material) and covered by a cloak. The procession was required by law to be noiseless as it made its way through the streets of the city. When a cremation was to occur, the body was placed on a funeral pyre at the cemetery and then burnt. The ashes were collected by relatives and placed in a funerary urn. The ashes, or the corpse, were then buried with other grave goods such as jewellery, vases, statuettes or gifts from loved ones. Libations of wine and oil were poured over the grave.



4.6.2 A funerary urn depicting a funeral scene, about 750 BC

Did you know?

- In Athens there were laws in place that limited
- extravagant (today we might say 'over the top')
- funerals and elaborate tombs. Laws even prescribed
- the amount of money that could be spent on a
- funeral, as well as the number of mourners who
- could attend.

The funeral banquet

The funeral banquet or meal took place at the home of the deceased. The banquet enabled friends and relatives to come together, and talk about and remember their loved one that passed away.

Grave markers

The cemeteries in Greece were situated outside the city walls and along the main roads. Many grave markers have survived such as large vases, funerary statues and grave *stelae* (tombstones). The more elaborate tombs belonged to wealthier citizens. Soldiers who died in battle were often cremated and buried on site (where they were killed) in man-made hills called *tumuli*.

Activities

Remembering and understanding

- 1 Who or what is Hades?
- 2 a What happened to the souls sent to Tartarus?
b What were the Elysian Fields?

Applying and analysing

- 3 Describe the funerary ritual depicted in Source 4.6.2.

Evaluation and creating

- 4 Sketch a five- to ten-panel storyboard or cartoon strip that depicts the journey of a soul to the Underworld and its judgement.
- 5 Create an illustrated flow chart to select and demonstrate the important steps of an ancient Greek funerary ritual.

4.7 Warfare

A divided land

The ancient Greek world was a divided one, where resources and good land were rare. War was a part of life and city-states would often settle their differences on the battlefield. Some wars were smaller and fought over local territorial disputes. In the case of the Peloponnesian War, however, rivalry between Athens and Sparta plunged the entire Greek world into a gruesome war that lasted 27 years. It divided the city-states into separate groups. Despite these divisions within the Greek world, there were occasions when the Greeks united against their common enemy: the Persians.

The Greek army

In the Mycenaean period (1600–1100 BC), warfare tactics were very different to those of the later periods. The famous poet Homer, in his work the *Iliad*, wrote about the Greek's military ideology. This was based on the heroic actions of individual warriors who were mostly members of an aristocratic ruling class. In the Trojan War, warriors fought for individual honour and glory in an attempt to be immortalised as heroes. By the seventh century BC, however, the idea of personal glory had been replaced by a sense of duty to the city-state. Soldiers fought for the power and prestige of their city-state rather than their own personal fame. This change in approach to warfare is evident in the military tactics of the time. While Homer described the gruesome hand-to-hand duels between champions like Achilles and Hector, in the Classical period strength of numbers and military discipline and organisation were more highly valued.



4.7.1 Two hoplites prepare for battle

The hoplite

At the core of the Greek army was the foot soldier called the *hoplite* (from the Greek word *hoplon*, meaning shield). Hoplites were protected by heavy bronze armour. This included a helmet, a cuirass to protect the upper body, greaves to protect the legs and a large circular shield. They fought with long spears with iron tips and swords (see Source 4.7.1). Hoplites were citizens of average wealth and they were responsible for the purchase of their own armour. They received military training when they reached adulthood and they were always prepared to go to war whenever their city-state called them to duty. Poorer citizens that could not afford the armour served as archers, lightly armed soldiers and peltasts (javelin throwers), and supported the hoplite units in battle. During peacetime, soldiers would go on with their normal lives, practising their chosen professions. Only Sparta maintained a professional army at all times.

The phalanx

The hoplites marched into battle in a military formation called the *phalanx*. The hoplites lined up closely together. Usually, eight rows of men gathered, with overlapping shields. The left part of each soldier's shield protected the right side of the hoplite to his left. The phalanx moved forward like a wall of shields. Spears protruded or stuck out from between the shields. The first rows of the phalanx could stab the enemy while the rows behind pressed forward. This helped the phalanx to keep together. It was a great honour for hoplites to be placed in the front row next to their officers.

Sea battles

The Greeks were mainly a coastal people. In order to protect themselves from possible outside attacks, Greek city-states required a fleet of warships. When Athens was at its most powerful it had the largest fleet of ships in the Greek world. More than 20 000 citizens served in the fleet. Sailors were usually poor citizens who could not afford the armour required to be a hoplite. Most of these men were also great supporters of democracy, so the strength of the fleet came to represent the strength of democracy.

The fastest warship during the Classical period was known as the *trireme*. It had 170 oarsmen; 85 on each side. The oars were arranged in three rows. Triremes also had one or two masts with sails. During battle the sails were taken down and the oarsmen used their strength to power the ship.



4.7.2 The phalanx formation

Triremes were fitted with heavy bronze prows (which is the name of a protrusion at the front of the ship). These prows were used to ram holes in enemy ships. Hoplites from the upper decks of triremes would fight to protect their ships or jump aboard the enemy's ships as they came alongside.



4.7.3 An illustration from the nineteenth century AD portraying a trireme, similar to those used by the Athenians

Activities

Remembering and understanding

- 1** Why did the ancient Greeks engage in warfare?
- 2** Describe the armour of a hoplite.
- 3** What was the phalanx and how did it operate in battle?

Applying and analysing

- 4** Explain the connection between naval strength and democracy in Athens.
- 5** Compare and contrast the change in the perception of the warrior from the Mycenaean to the Classical period.
- 6** Explain why the trireme was considered to be a great military innovation.

Evaluating and creating

- 7** Design a series of slogans to encourage citizens to join the Athenian navy. Choose words and phrases that help to demonstrate the advantages of life in the navy.

4.8 Contact and conflict

The Persian Wars

Origins of the conflict

Persia was a large empire based in the part of the world that today we call the Middle East. In the second half of the sixth century BC, the Persian Empire began to expand towards the west. This brought the Persians into contact with the Greek colonies on the Asia Minor coast. The Persians, under King Darius, controlled a vast empire extending from India to the Asia Minor coast.

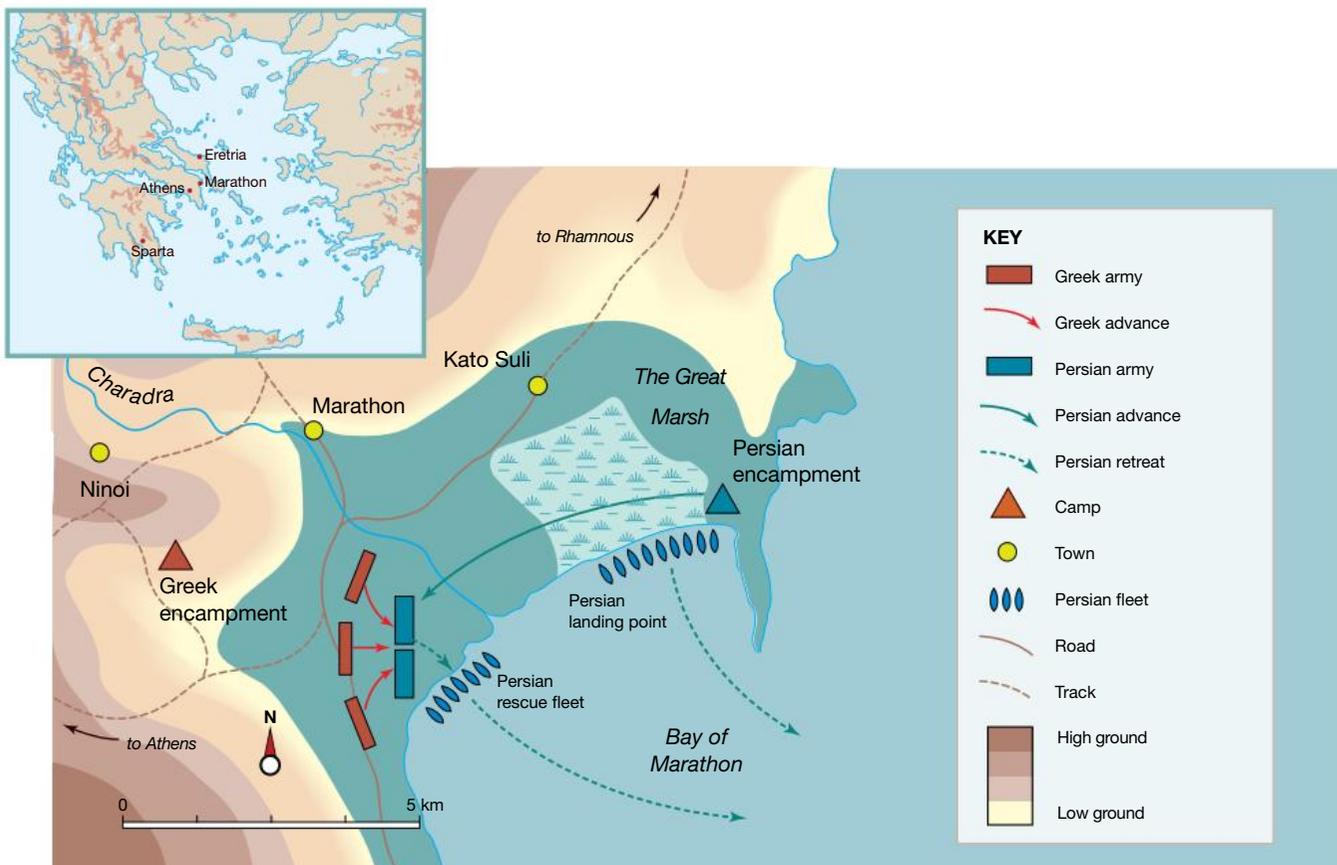
In 499 BC the Ionians rebelled against, or stood up to, the Persian invaders and asked the mainland Greeks for assistance. Athens and Eretria, who shared a common ancestry with the Ionian Greeks, agreed to help. They sent a small fleet of ships to help the Ionians. While the Persians eventually crushed the Ionian revolt, Darius never forgot what the Athenians had done. He had a servant repeat to him every day, 'Remember, master, the Athenians.'

In 492 BC Darius sent the commander Mardonius from Asia into Europe. He managed to control the Greeks of Thrace and Macedonia, but his expedition was aborted when his fleet was shipwrecked near the Athos peninsula in northern Greece.

The Battle of Marathon

In 490 BC Darius sent a second expedition across the Aegean Sea. On their way to Athens, the Persians attacked and destroyed Eretria and then landed on the Athenian coast at Marathon. The Athenians sent a runner called Pheidippides to Sparta to seek help. He ran 246 kilometres over mountainous terrain in only 2 days. The Spartans replied that they would send an army to help the Athenians once their religious festival was over.

Without Spartan assistance, 10 000 Athenians and 1000 Plataeans were outnumbered by the Persians on the plain of Marathon. The Athenian general Miltiades tried to take on the Persians by strengthening the wings (the battalions of soldiers at each side of the central force) of his army. As the Persians broke through the weak Athenian centre, the wings of the Athenian forces surrounded the Persians and attacked. This tactic led the Greeks into a decisive victory. Only 192 Athenians died, while the Persians suffered a loss of almost 6000 men. The remaining Persian forces retreated with their ships and sailed for Athens. In response, the Athenians marched to Athens and arrived there before the Persians. Not wanting another confrontation, the Persians sailed back to Asia.



4.8.1 The Battle of Marathon

The Battle of Thermopylae

King Darius died in 486 BC and was succeeded (or followed) by his son Xerxes. In 480 BC Xerxes himself led a vast force of over 200 000 men and 1000 ships into Europe. The army was so large that it was described as ‘drinking rivers dry’ as it passed across northern Greece and headed south into central Greece. There was no resistance on the way as the city-states were overwhelmed by its size. The Persian threat forced the Greek city-states to join forces.

The Greeks appointed the king of Sparta, Leonidas, to lead a force of 7000 soldiers and defend the pass of Thermopylae. This was a narrow stretch of land between the mountains and the sea. A combined Greek fleet of less than 300 ships arrived at Artemision to prevent the Persian ships from sailing further south.

The 300 Spartans

At Thermopylae, Xerxes was unable to use all of his army due to the narrowness of the space between the mountains and the sea. This allowed the Greeks to hold back smaller groups of Persians for several days.

A Greek traitor named Ephialtes told Xerxes of a path through the mountains that led behind the Greek soldiers. The Persians followed the path and surrounded the Greeks. Knowing that defeat was highly likely, Leonidas ordered the Greek army to retreat. He, along with 300 Spartans and 700 soldiers from the nearby town of Thespieae, refused to surrender and sacrificed their lives to allow the other Greeks to get away. On the same day, the Persian and Greek fleets met in a sea battle. On hearing that the Greek army had withdrawn, the Greek fleet retreated south to the island of Salamis.



4.8.2 A rare Spartan sculpture believed to be King Leonidas

The Battle of Salamis

When the Persian army eventually arrived in Athens they found a deserted city. On the advice of the Athenian general Themistocles, the Athenians had evacuated their city to prepare to fight the Persians at sea in the narrow straits between the island of Salamis and Athens.

As at Thermopylae, the Greeks were greatly outnumbered. Themistocles sent a message to Xerxes. Pretending to betray the Greeks, he urged Xerxes to strike at once as the Greeks were squabbling and were about to retreat. Xerxes fell for the trap and ordered the attack. When the Persian ships entered the straits, the Greeks waited in formation. The large Persian warships were no match for the faster, more compact Greek triremes. The Greek ships moved easily in the narrow straits, allowing them to attack and sink enemy ships. The Battle of Salamis was a tremendous victory for the Greeks and especially for Athenians who provided most of the ships.

There is not so much gold in the world nor land so fair that we would take it for pay to join the common enemy [the Persians] and bring Greece into subjection. There are many compelling reasons against our doing so ... the first and greatest is the burning of our temples and images of our gods—now ashes and rubble. It is our bounded duty to avenge this desecration ... not to clasp the hand that wrought it. Again, there is the Greek nation—the community of blood and language, temples and ritual, and our common customs; if Athens were to betray all this, it would not be well done. We would have you know that so long as a single Athenian remains alive we will make no peace with Xerxes.

4.8.3 Extract from *The Histories* by Herodotus (c. 490 – c. 425 BC)

Final victories

Xerxes had been humiliated and left Greece. The Persian fleet was defeated but the army was intact. Xerxes left a man called Mardonius in charge of the army. In 479 BC a combined Greek army of 35 000 men led by the Spartan general Pausanias defeated the Persian army at Plataea west of Athens. On the same day, the Greek fleet defeated the Persian fleet at Mycale off the Asia Minor coast. These victories marked the end of the Persian threat.

Consequences of the Persian Wars

The Greek victory over the Persians had a significant impact on the ancient Greek world. It helped to shape the political future of the region for decades to come:

- Thousands of Greeks and Persians were killed.
- The Persian defeat ended all hopes of their empire expanding westwards into Europe.
- The Persian Wars united the Greeks and led to the development of a common history.
- Athens entered a 'golden age' in which the arts, philosophy, science and mathematics flourished.
- Athens (with a strong fleet) and Sparta (with a powerful army) emerged as the most powerful city-states in Greece.
- Athens became the leader of an alliance of city-states, the Delian **League**. Its purpose was to protect all members from Persia. Each city-state had to contribute either ships or funds to the alliance. With time, however, Athens took advantage of (exploited) her allies, and what was an alliance of equal states became an Athenian empire.

The Peloponnesian War

Reasons for the war

In 445 BC Athens and Sparta signed a peace treaty; however, unity in the Greek world did not last very long. Greece was deeply divided between two factions: Athens and her allies (the Delian League) and Sparta and her allies (the Peloponnesian League). The factors that led to this division were:

- the tribal differences between Athens and her allies who were mainly Ionian Greeks, and Sparta and her allies who were mainly Dorian Greeks
- political differences; Athens was a democracy and supported democratic parties throughout the Greek world, while Sparta supported oligarchies
- the competition between Athens and Sparta to dominate the affairs of the Greek world
- the competition to control the western trading routes between Sparta's ally Corinth and Athens.

Eventually, conflict broke out between Athens and her allies and Sparta and her allies. This was known as the Peloponnesian War.

The conflict

The Peloponnesian War lasted almost 27 years. The Athenians left behind their homes in the countryside and locked themselves behind the walls of their cities. Their strength lay in their fleet of ships. As long as the Athenians controlled the seas, the city had a secure source of provisions. The Spartans had the superior land force. They led a combined Peloponnesian army into Athenian territory. Historians divide the Peloponnesian War into three phases (see Source 4.8.5).

4.8.5 The three phases of the Peloponnesian War

Phases	Major events
Archidamian War 431–421 BC	<ul style="list-style-type: none">• Between spring and autumn each year the Spartans led by King Archidamus invaded Attica and devastated the countryside. The Athenians boarded their ships and sailed to the Peloponnese and plundered the coastline.• In 430 BC, the plague struck Athens, killing thousands including Pericles.• In 421 BC, the Peace of Nicias was signed between Athens and Sparta. Each side returned what they had gained in the war.
Sicilian Expedition 415–413 BC	<ul style="list-style-type: none">• To extend their influence in Sicily, the Athenians sent a large military expedition to capture the city-state of Syracuse, an ally of Sparta. The Athenians suffered a crushing defeat.
Deceleian/Ionian War 413–404 BC	<ul style="list-style-type: none">• The Spartans tightened their stronghold on Athens by fortifying Deceleia near Athens. The Athenians were now locked within their walls all year round.• The Spartans sought financial assistance from the Persians. They wanted to build a fleet to match that of Athens.• In 405 BC the Spartan fleet under Lysander surprised and defeated the Athenian fleet at Aigospotamoi.• In 404 BC Athens surrendered to the Spartans.



4.8.6 Nineteenth-century AD engraving depicting the Spartans defending the Spartan city of Methoni against the Athenians, Peloponnesian War, 431–404 BC

The defeat of Athens

After the devastating defeat of the Athenian fleet, Lysander sailed to Athens and blockaded the city.

Without her fleet of ships, Athens had no access to any supplies and was forced to surrender. Sparta's allies demanded that Athens be destroyed, but the Spartans decided against this out of respect for the crucial role that Athens had played in the Greek victory over Persia. Sparta instead set in place the following conditions. Athens was to:

- dismantle the city walls
- limit her fleet to only twelve ships
- allow the return of the exiled Athenian supporters of oligarchy
- share the same enemies and friends as Sparta and follow Sparta into battle.

Consequences of the Peloponnesian War

The Peloponnesian War was a devastating civil war and involved nearly all the Greek world. Thousands of Greeks died in battle and thousands of civilians were killed or sold into slavery. Many cities were deserted. Vast areas of farmland were abandoned. Trade almost came to a halt and the economies of the Greek city-states were seriously impacted.

Shifting the balance of power

The Peloponnesian War changed the balance of power in the Greek world. Athens, the wealthiest and most powerful city-state before the war, was now in financial, political and military decline. Sparta, although victorious, was also weakened by the lengthy conflict. This allowed for other Greek states to emerge as influential powers in the Greek world. First the Thebans and then the Macedonians came to dominate Greek affairs.

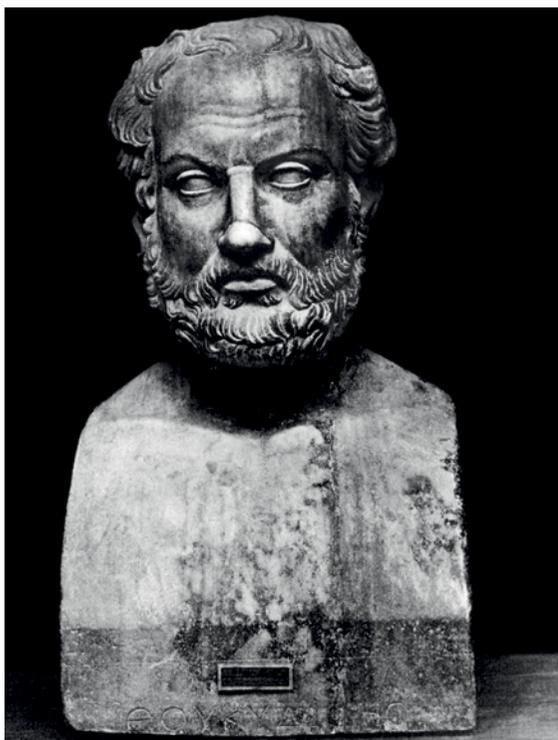
Effect on society

To defeat the Athenians, the Spartans sought financial aid from Persia. They used this money to build a Spartan fleet. This allowed Persia to interfere in the affairs of Greece. It was helpful for the Persians if the Greeks remained divided and weak.

The war also had devastating social effects. The Greeks witnessed hardship and cruelty. This caused social unrest as people began to challenge past values. Suspicion and lack of consideration for the common good (what was good for most people) prevailed. People became more concerned with their private affairs and personal gain.

The Peloponnesian War ... throughout its course brought unprecedented suffering for *Hellas*. Never before had so many cities been captured and then devastated, whether by foreign armies or by the Hellenic powers themselves; never had there been so many exiles; never such loss of life—both in the actual warfare and in internal revolutions ... and there was the plague which did more harm and destroyed more lives ... All these calamities fell together upon the *Hellenes* after the outbreak of war ... What made war inevitable was the growth of Athenian power and the fear which this caused in Sparta.

4.8.7 The historian Thucydides (c. 460 – c. 395 BC) comments on the importance of the Peloponnesian War in his *History of the Peloponnesian War*



4.8.8 Greek bust of Thucydides, c. 4 BC

Activities

Remembering and understanding

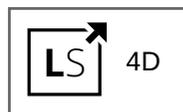
- 1 Refer to the Timeline on pages 82 to 83. Make a list of all the instances of war or conflict that are shown on the Timeline. Include the event and the date.
- 2 **a** Why did the Persians make contact with the Greeks?
b Why was Darius angry with the Athenians?
- 3 Describe Miltiades's military plan that led to Athenian success at Marathon.
- 4 What was Themistocles's role in the Battle of Salamis?
- 5 Examine Source 4.8.4. Name five Athenian allies and five Spartan allies.

Applying and analysing

- 6 List five consequences of the Persian Wars. Explain why each was important.
- 7 Was the death of Leonidas and his men at Thermopylae without meaning? Discuss.
- 8 What does Herodotus tell us in Source 4.8.3 about the Greek world and the concept of 'Hellenicity' or 'Greekness'?
- 9 Rank the reasons that led to the Peloponnesian War from the most to the least significant. Explain your choices.
- 10 Explain why each condition of surrender was imposed on Athens by Sparta.

Evaluating and creating

- 11 **a** Refer to Source 4.8.7 and list the reasons given by Thucydides to support his claim that the Peloponnesian War was the greatest war of his time.
b Do you agree with Thucydides that the Peloponnesian War was greater in significance than the Persian Wars?



4.9 A significant individual

Pericles the politician

Pericles was an important Athenian statesman. A statesman is someone who represents the ideas and culture of a nation or city-state. Pericles dominated Athenian politics from 460 to 429 BC. Although an aristocrat by birth, he was a loyal supporter of democracy. Pericles supported reforms that placed limits on the power of the aristocrats. For example, he introduced payment for official positions for those who were poor and could not otherwise serve the state. He also provided poor citizens with free entry to the city's drama festivals. In these ways Pericles strengthened the democratic rights of citizens.

A charismatic man

Pericles was a charismatic (impressive and compelling) leader and a skilled public speaker. He managed to sway (influence) public opinion and gain the support of the Athenian Assembly. His popularity was so great that he was repeatedly re-elected to public office.



4.9.1 A sculpture of Pericles

Achievements of Pericles

Pericles transformed the Delian League from an alliance of Greek city-states to an Athenian empire of subject states. This had the effect of making Athens the most important Greek city-state. Athens taxed her allies, forced them to use Athenian currency, dominated trade and became very wealthy. On the advice of Pericles, the treasury (financial control) of the League was transferred from Delos to Athens. This gave Athens complete control of the League's money.

To support Athenian interests and trade, Pericles led Athens to form alliances with the Greek city-states in Sicily and southern Italy, and to establish the new colony of Thurii. The port of Athens, Piraeus, was the largest and busiest port in the Mediterranean.

Pericles was also responsible for the introduction of strict citizenship laws. Athens had a growing population of **metics** and foreigners. In order to protect the rights of Athenians, citizenship (or legal belonging to the city-state) was only granted to those who could prove their Athenian ancestry. Metics were not allowed to own land or to marry Athenians.

Pericles, because of his position, his intelligence and his known integrity, could respect the liberty of the people and at the same time hold them in check. It was he who led them rather than they who led him, and, since he never sought power from any wrong motive, he was under no necessity of flattering them.

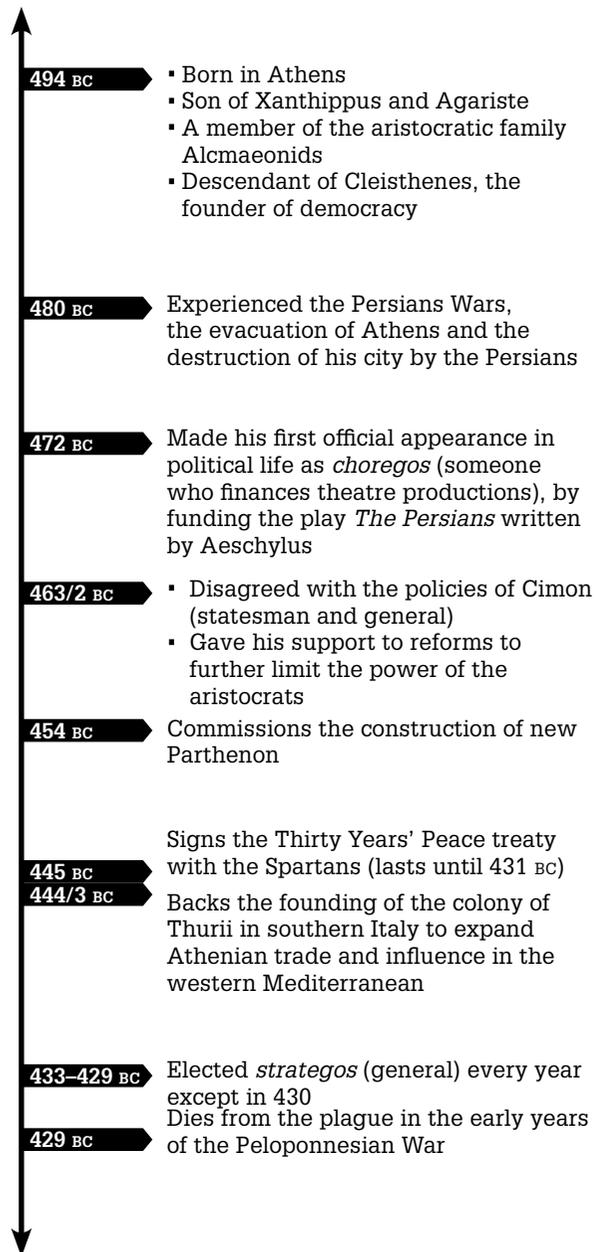
4.9.2 Description of Pericles by Thucydides, from *History of the Peloponnesian War*

The Periclean Age

Pericles's name is so closely associated with the golden age of Athens that the term 'Periclean Age' is used. Under his patronage (watchful guide), Athens became the greatest cultural centre in Greece. The city-state attracted builders, artists, craftsmen and great thinkers from all over Greece. Great men like the architects Callicrates and Ictinus, the sculptors Pheidias and Myron, the philosophers Socrates and Plato, and the playwrights Aeschylus, Sophocles, Euripides and Aristophanes contributed greatly to Athenian culture and the birth of Western civilisation.



4.9.4 Pericles was the inspiration behind the building of the Acropolis



4.9.3 Timeline of Pericles's life

Rebuilding the Acropolis

The original buildings on the Acropolis of Athens had been destroyed during the Persian Wars. Pericles commissioned three new temples to be built on the site. These included the Delian League Parthenon, dedicated to the patron goddess of the city, Athena Parthenos, the temple of Athena Nike, and the Erechtheion, dedicated to Poseidon and Athena. These buildings came to symbolise the rebirth of the city. Athens enjoyed the newly found confidence of a democracy that had defeated Persia and dominated an alliance of Greek city-states.

Activities

Remembering and understanding

- 1 How did Pericles make Athens more democratic?
- 2 Outline Pericles's foreign policy. What was its purpose?
- 3 Why did Pericles introduce strict citizenship laws?

Applying and analysing

- 4 According to Thucydides what qualities made Pericles a great leader? Refer to Source 4.9.2.
- 5 What does patronage mean and how did it lead to cultural development in Athens?

Evaluating and creating

- 6 Imagine that you were a friend of Pericles and that you had been asked to deliver the eulogy (remembrance speech) at his funeral. Decide how best to evaluate Pericles's life and achievements in a two- or three-minute speech.

4.10 Legacy of ancient Greece

Alexander the Great

Alexander the Great was the king of the northern Greek state of Macedonia. In 334 BC he led a united Greek army against Persia. Within a few years he conquered much of the world known to the Greeks. Greek culture and language then spread as far as India. Many Greek centres of learning were established by Alexander and his successors. Alexandria in Egypt developed into a great cultural centre that attracted many of the most important thinkers of the time. The great library of Alexandria contained texts from all over the Greek world and beyond.

Graeco-Roman heritage

In 146 BC Greece fell to the Romans. This meant that the Romans controlled Greece, but this did not mark the end of Greek civilisation. Many aspects of Greek culture, politics, philosophy, literature, art and architecture greatly influenced the Romans.



4.10.1 The neoclassical building of the State Library of Victoria is influenced by ancient Greek architecture

Art and architecture

In the Renaissance (fourteenth to sixteenth centuries AD), European artists and scholars were inspired by the cultures of Greece and Rome. This helped them to make great advances in social and political thinking, literature, art and architecture. The word 'Renaissance' refers to a rebirth of ideas from an earlier time. The eighteenth-century AD artistic movement, **neoclassicism**, once again looked back to ancient Greece for inspiration.

Western thought

The Greeks were the first ancient people to see themselves as Europeans. They recognised that they were distinct from (or separate to) the peoples of Asia. Greek civilisation provided the foundations of the Western world. Many Western values, social structures and institutions trace their origins back to Greece. The Greeks emphasised the rights of the individual, independence and freedom of speech. They believed in the equality of all men before the law, the right to appeal in court and trial by jury. They invented democracy, which allowed more people to participate in government.

Philosophy

Philosophy is a Greek word meaning 'love of wisdom'. The Greeks had a very high regard for the human intellect (mind) and the human spirit (soul). They attempted to use reason to explain the nature of the world around them and to explain the place of humans within it. Socrates, Plato and Aristotle laid the foundations of moral philosophy.

Language

The Greeks adapted the Phoenician alphabet, giving every sound, including vowels, a symbol. They established the convention (tradition) of writing from left to right. The Greek alphabet formed the basis of the Roman and Cyrillic scripts, used by all European languages today. The Greek language had a significant influence on other European languages. Many words and their concepts were borrowed from Greek. It has been estimated that about 25 per cent of English words come from Greek either directly or indirectly via Latin (which was the language of the Romans). Words such as music, melody, theatre, drama, democracy, athletics, gymnastics and mathematics are Greek in origin.

Literature

Homer's epic poems the *Iliad* and the *Odyssey* are the first examples of Western literature. The Greeks also invented theatre. The playwrights Aeschylus, Sophocles and Euripides wrote the world's first tragedies, and Aristophanes wrote the earliest comedies. All of these plays are still enjoyed by modern audiences. Greek myths, gods and heroes have inspired writers and artists to the present day.

History

The Greeks were the first to analyse historical cause and effect, and the first to record their findings. Herodotus is considered the 'Father of History'. He termed the word *historia*, which means 'investigation'. He wrote a history of the world known to him, ending with the Persian Wars, and Thucydides wrote a history of the Peloponnesian War.

Skills builder

Using historical sources as evidence

One of the most famous Greek legends was that of the lost world of Atlantis. The ancient Greeks told of a great civilisation that suddenly disappeared and sank to the bottom of the sea. Historians rely on primary sources, evidence created at the time of an event, as the building blocks to historical understanding. But if this event happened so long ago, where could we look for evidence or proof that it really did take place?

In recent years, archaeologists and scientists have evaluated the latest evidence and have suggested that Atlantis did in fact exist. They point to the Greek island of Santorini, which was known as Thera in antiquity, as its likely location.

To complete this task, you are required to work in small groups. Divide the following research areas among the group:

- a** the ancient legend of Atlantis as it appears in Homer and in Plato
- b** the Minoan civilisation
- c** the archaeological site of Akrotiri in Santorini
- d** the geological evidence of the eruption of the Thera volcano in the seventeenth century BC.

At the end of the individual research, group members discuss and collate their findings. The group is then required to put the pieces of the puzzle together and present a plausible connection between the Minoan civilisation, the devastation of Thera and legendary Atlantis. Present the group's findings and conclusions as a written report or a PowerPoint presentation. The individual research areas may serve as headings for the presentation. In your conclusion, you must discuss how credible the evidence is.

Science and mathematics

The Greeks tried to explain natural phenomena using observation and logic. The father of medicine, Hippocrates, observed his patients' symptoms and recommended treatments that had been tested for their effectiveness. Before Hippocrates, medicine consisted of spells and charms, which meant that it was much less effective.

Pythagoras believed that the universe could be explained through mathematical principles. Pythagoras's theorem is a well-known geometrical rule. Democritus proposed that all matter was made up of tiny particles, which he called 'atoms'. Aristotle proposed the first system of classification of living things. Eratosthenes calculated the circumference of the Earth (that is, the distance around the equator) with great accuracy. Aristarchus suggested that the Earth rotated while it revolved around the Sun. These are just a few of the many contributions that the Greeks made to the fields of science and mathematics.

Modern Olympics

The modern Olympics Games have their foundations in the ancient Olympics. In 1894, Pierre de Coubertin formed the International Olympics Committee with the purpose of organising a modern Olympic Games. The committee achieved this in Athens in 1896 and the modern Olympic movement has continued for over 100 years. Currently over 200 countries compete in a wide variety of sporting events held over the Summer and Winter Olympics in a spirit of international cooperation and friendly rivalry.

Activities

Remembering and understanding

- 1** What were the results of Alexander the Great's conquests?
- 2** What does the art of the Renaissance and neoclassical periods have in common?
- 3** Outline three aspects of Australian society that have been influenced by ancient Greece.

Applying and analysing

- 4** Select five Greek achievements that you consider the most important. Explain your answer.



Ancient Rome

5

From humble beginnings on a hillside beside the Tiber River, the ancient Romans built first a republic and then an empire that was a world power for over 1000 years. Rome ruled all the lands around the Mediterranean Sea, and as far away as Britain and Syria. It influenced the development of Western culture and its legacy lives on today.

OVERVIEW QUESTIONS

- 5A** When and how did settlement begin in ancient Rome?
- 5B** What types of government existed in ancient Rome and why was there so much political change?
- 5C** What role did the Roman army play in the growth of the Roman Empire?
- 5D** Where did Roman culture extend throughout the ancient world?

GLOSSARY

agricultural plain an extensive area of level or rolling treeless land, used for farming

auspices signs of approval or disapproval from the gods

equites wealthy plebeians who were involved in commerce and finance

freedmen/freedwomen slaves who were granted freedom by their master

imperium power and authority originally given by the Roman gods to the kings

legion the main unit of the Roman army, which was made up of about 5000 men

monarchy a system of government in which power is held by a king or queen

patricians the old noble families of Rome

Pax Romana the name given to a period when there was a long time of peace within the Roman Empire; it lasted for nearly 200 years

peninsula a portion of land nearly surrounded by water; a peninsula is connected to the mainland

plebeians the common people of Rome

princeps a term for the first (most important) citizen of Rome

republic a system of government in which the public is involved

Triumvirate a term used to describe the time when three generals ruled jointly in Rome



Before you begin

5.0.1 The Colosseum was used as a venue for gladiatorial contests in ancient Rome

Timeline

Ancient Rome

The Romans are remembered for building the largest and most impressive empire in the ancient world. Their success was built on leadership, organisation and ingenuity, but was not without internal conflict and civil war.

KEY EVENTS

1000 BC

Farmers living in villages on the hills of Rome

509 BC

Tarquinius is overthrown as king

753 BC

Rome is founded by Romulus

62 BC

Julius Caesar's rise to power begins when he becomes a government official

79 BC

Mount Vesuvius erupts; Pompeii is destroyed

80 BC

The Colosseum is completed

1000 BC

900 BC

800 BC

700 BC

600 BC

500 BC

400 BC

300 BC

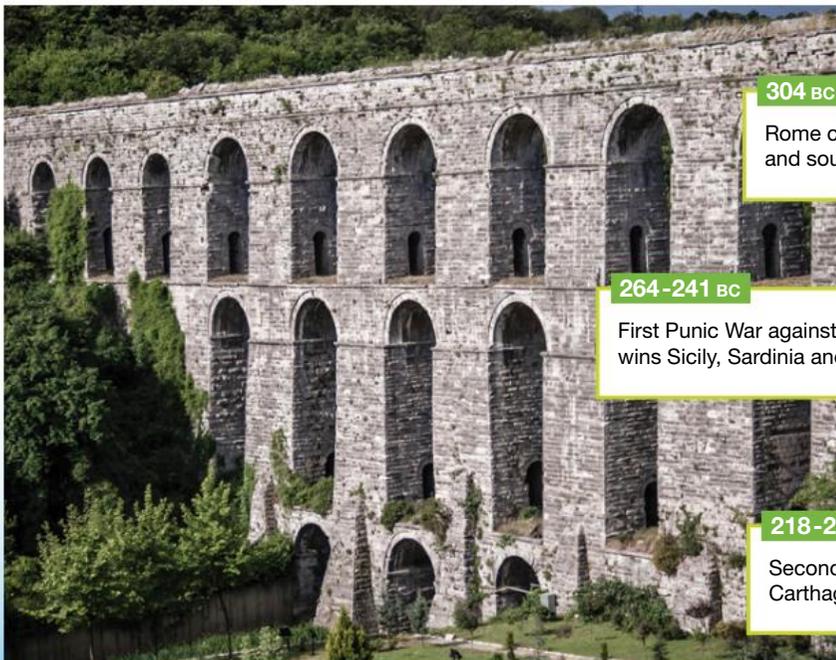
200 BC

100 BC

753–509 BC
Roman Monarchy

509–31 BC
Roman Republic

ROMAN EXPANSION



304 BC

Rome controls central and southern Italy

264–241 BC

First Punic War against Carthage; Rome wins Sicily, Sardinia and Corsica

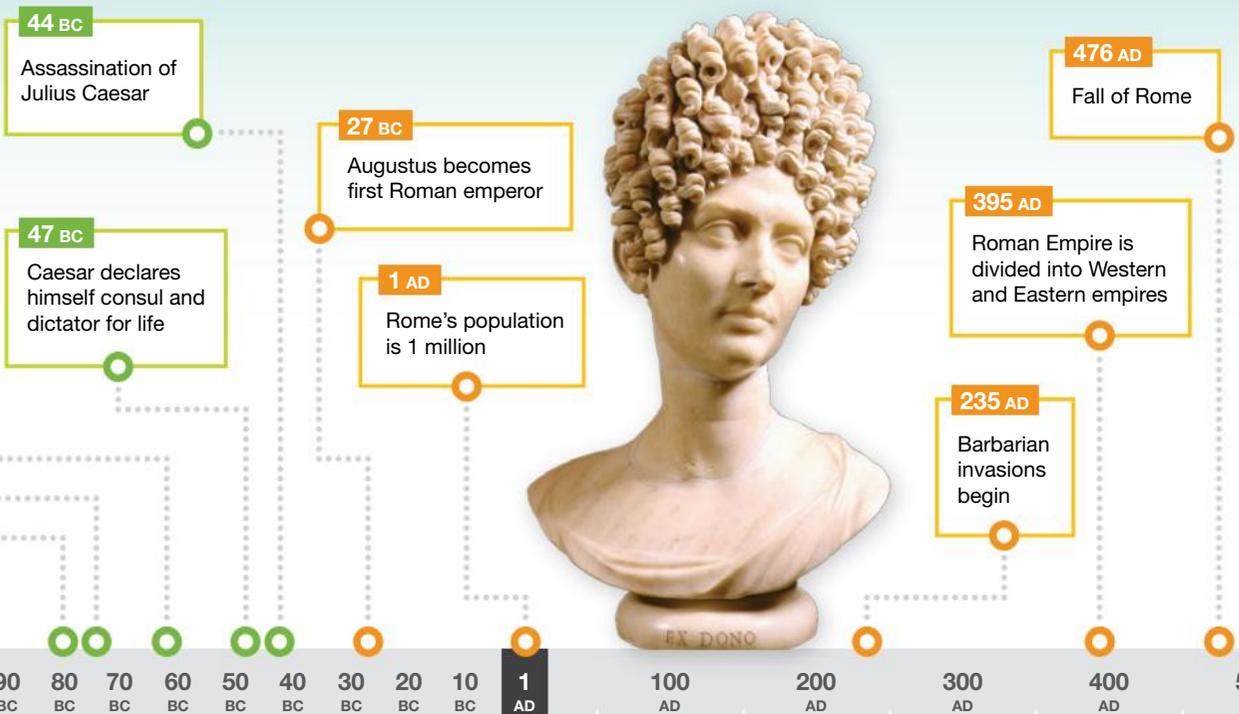
218–201 BC

Second Punic War; Rome defeats Carthage and gains control of Spain

▲ Aqueducts like this one found in Turkey were built by the Roman Empire

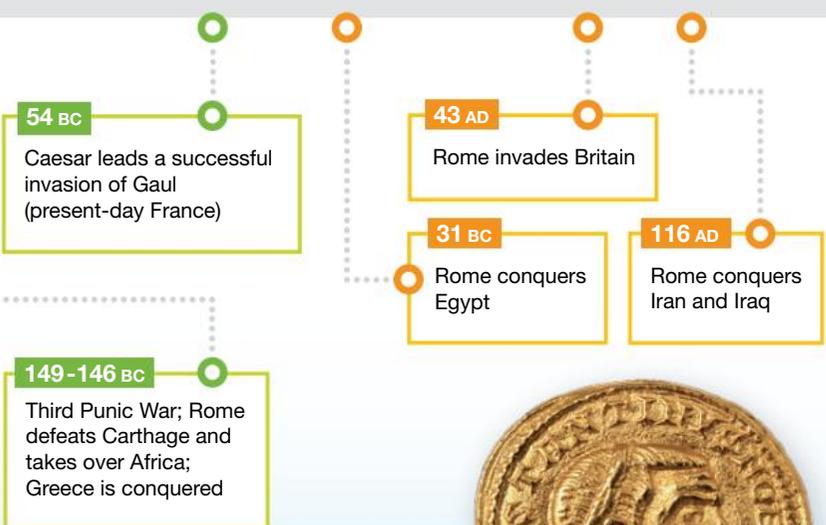
KEY EVENTS

A bust of a wealthy Roman patrician woman from 120 AD



31 BC – 476 AD Roman Empire

ROMAN EXPANSION



A coin used during the Roman Empire, dating from 306-337 AD



A statue of the Roman god Mars, dating from 100 AD

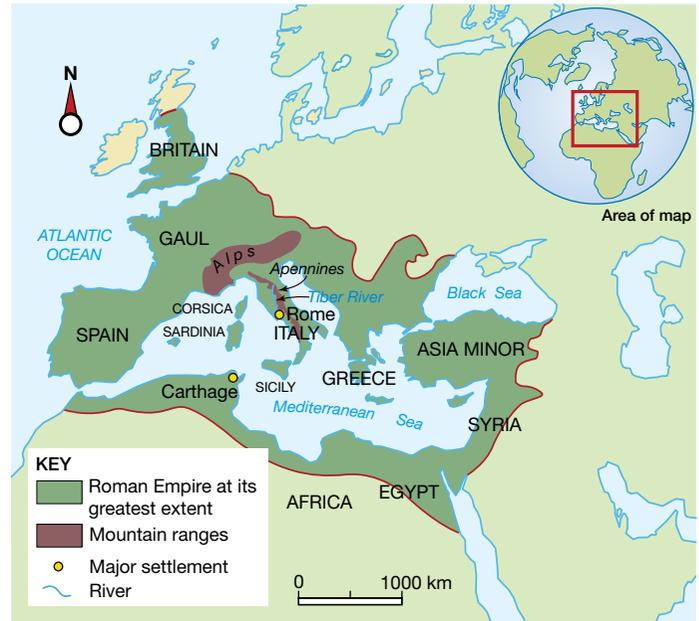


5.1 Geography of ancient Rome

The geographical setting

The city of ancient Rome was in central Italy. It was built near the west coast and developed over many centuries. Rome's earliest inhabitants settled beside the Tiber River, which flows from the centre of the Italian **peninsula** into the Mediterranean Sea. They chose a position about 24 kilometres upstream from the coast because it featured a safe crossing point, a fresh water supply and fertile soil for farming. This crossing point was near seven hills. The earliest Romans established their farms on these hills high above the swamp land of the valleys. The three hills closest to the river came to be known by the Romans as Capitoline, Palatine and Aventine. The four hills a little beyond these are the Quirinal, Viminal, Esquiline and Caelian.

Further past the hills, the vast and rich **agricultural plain** of Latium spread out to the west. Ancient volcanic activity in this region helped to create the fertile soil of the plain.



5.1.1 The Roman world



5.1.2 An artist's impression of ancient Rome

5.1.3 Geographic features that led to the rise of Rome as an ancient world power

Feature	Benefit
Natural defences	Ancient Rome was surrounded by the Apennines to the east and the Alps to the north. These mountain ranges protected Rome's inhabitants from attack; especially during winter, when snow made it difficult to cross the mountains. They also provided safe higher ground when the Tiber River flooded. The Pontine marshlands protected Rome from the south, and the Mediterranean Sea provided a barrier in the west; especially in earlier times, when enemies skilled in shipbuilding and navigation were not yet common.
Fertile land	The rich agricultural land of the Latium plain allowed farmers to grow larger and better crops. This abundance of food contributed to population growth. Successful agriculture also meant that Rome could feed its growing army.
Trade routes	Ancient Rome was located at the intersection of several important trade and communication routes. It dominated the main roads that ran north and south along the peninsula, and west to east from the sea into the interior. This connected Rome with other settlements in Italy for trade.
Tiber River	The Tiber was navigable by ships allowing goods to be carried to and from the Mediterranean coast. This was particularly important as there was no natural harbour or port along this part of the west coast of Italy.
Mediterranean Sea	As Rome had easy access to the Mediterranean Sea it could reach the rich trading cities of the East, northern Africa, Spain and Gaul.
Central location	Rome's central position enabled it to control the Italian peninsula. In turn, the peninsula's central location in the Mediterranean led to Rome's control of the region and beyond.

Did you know?

- Rome is traditionally believed
- to have been founded on
- the Palatine Hill by Romulus.
- Initially, there were seven
- settlements on seven hills.
- Over time, the people of
- each hill began to meet
- for religious games, which
- then led to cooperative
- efforts such as draining
- marshlands. Thus, the city of
- Rome came into being.

Access to natural resources

The Romans were able to access valuable resources from their region. The nearby Alban Hills were quarried for a volcanic stone called 'tufa'. This material was used for building. There were also other stones such as marble, and clay for pottery. The Apennines are a mountain range that extends across the length of the Italian peninsula. They were thickly forested with trees that were useful for building ships and housing. Also, the salt pans at the mouth of the Tiber provided sea salt. This was highly prized by communities on the Italian peninsula.

Creating an empire

Source 5.1.3 shows how ancient Rome's physical features allowed for the successful growth of its civilisation on the Italian peninsula. Eventually the Roman Empire would spread around the Mediterranean region and beyond.

Activities

Remembering and understanding

- 1 Identify at least two key reasons for the choice of location by the first settlers of Rome.
- 2 According to the Timeline on pages 114 and 115, when was Rome founded?

Applying and analysing

- 3 Rank the geographic features outlined in Source 5.1.3 in order of most important to least important. Explain your ranking to a partner.
- 4 The Latin term *mare nostrum* means 'our sea'. Formulate a hypothesis that explains why the ancient Romans used this term.

5.2 From monarchy to republic

The monarchy

Ancient Rome's earliest rulers were kings. The **monarchy** lasted for about two and a half centuries, from 753 to 509 BC. Historical records show that there were seven kings:

- Romulus
- Numa Pompilius
- Tullus Hostilius
- Ancus Marcius
- Tarquinius Priscus
- Servius Tullius
- Tarquinius Superbus.

Imperium

Ancient Rome's monarchy was non-hereditary, meaning that a king could not inherit his position from his father. It was based on the accepted authority of the king. Romans believed that this authority, called **imperium**, was given to Romulus by the god Jupiter. It meant that the gods gave the king the ability to issue orders and to rule society.

Did you know?

Legend tells us that the first king of Rome, Romulus, and his twin brother, Remus, were the sons of Mars, the Roman god of war. They were abandoned as babies but saved by a she-wolf who fed them her milk. Later a shepherd brought them up as his own sons. When they were grown they decided to start their own settlement on the hill where they had been saved, but the brothers quarrelled. Romulus killed Remus and declared himself king of Rome.



5.2.1 A bronze statue of Romulus and Remus, the legendary founders of Rome, in the Capitoline Museum in Rome

Roman society

Romulus, as the first king of Rome, organised Roman society into groups. These included citizens, non-citizens and slaves. The **patricians**, or nobles, were citizens who enjoyed an important status. Romulus also chose a small group of wise patricians as his advisers. This group was called the Senate. The rest of the citizens, called **equites** and **plebeians**, could participate in the people's Assemblies, where they could vote on proposed new laws.

Absolute power of the king

Initially, Romulus governed Rome with the advice of the Senate, but over time he began to make independent decisions. By the end of his reign, Romulus had gained 'absolute power' for the kings of Rome. This meant that kings could rule Rome as they wished. The kings controlled religion, lawmaking, the courts, the military and all treaties with neighbouring tribes.

Beginnings of the republic

The monarchy came to an end in 509 BC. The last king, Tarquinius Superbus, was seen as a tyrant. He was unpopular among the nobles, who were probably competing for political power. He was overthrown and a new system of government was established. This new political system was called the **republic**. It was designed to avoid giving one man too much authority and power. The Roman Republic (509–27 BC) developed over many generations. The term 'republic' comes from the Latin *res publica*, which means 'a public thing or matter'.

Ancient Roman law

Little is known about ancient Roman law during the period of the monarchy. However, during the early republic, existing laws were published in a document called the Twelve Tables. All the laws were clarified (or set out clearly) so that careful and consistent rulings could be made. This made the system fairer. The process of legislation was also established during this period. Legislation began with the proposal of laws during Senate meetings by patricians. Once the Senate had given its approval, the plebeians would enact the legislation during a vote in the Assemblies.

5.2.2 The Roman Empire's area and population compared with other civilisations

	Year	Area in square kilometres	Population
Australia	2018 AD	7.6 million	24.5 million
Roman Empire	300 AD	5.9 million	60 million
Ancient Egypt	30 BC	1.0 million	5 million
Ancient China	210 BC	5.0 million	40 million

Ancient Roman religion

The earliest Roman gods were impersonal spiritual powers. They represented natural forces such as weather and fertility. Roman religion changed significantly when Greek colonists arrived in the Italian peninsula. The Greeks brought new ideas about religion with them. Greek gods and goddesses had human form and they were absorbed into Roman culture. They became the major Roman gods and goddesses, although many had different names. The three most important, Jupiter, Juno and Minerva, were worshipped in a temple on the Capitoline Hill in Rome.



5.2.3 A nineteenth-century AD etching depicting the Roman Capitol being dedicated to the gods Jupiter, Minerva and Juno in 509 BC

Beliefs and rituals

Early Roman religion developed from the rituals performed by the first farmers who lived in the hills of Rome. The Romans believed that the gods could be appeased or kept happy by correctly and carefully performed offerings and rituals.

They could include the humble (meaning simple) offerings of a grain cake, honey, oil or wine on a household altar. Sometimes this could involve a more elaborate public blood sacrifice of animals. In return for these offerings, the gods would look after the Romans by providing protection and good fortune.

The role of priests

Originally it was the king's role as priest to take the **auspices**. This was the practice of consulting the gods for approval. Approval was shown through signs in nature such as unusual flight patterns of birds or extreme weather conditions. Divine messages were checked in the entrails (insides) of sacred animals and dreams were interpreted. Over time other officials took on the roles of making sacrifices and performing rituals, and only patricians held the major priesthoods.

Activities

Remembering and understanding

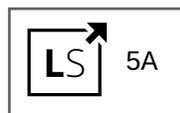
- 1 Identify the first king of Rome and create a list that shows his achievements.
- 2 What contributions did the gods make to Roman life?
- 3 Refer to the Timeline. For what length of time did the monarchy exist in ancient Rome? Was this longer or shorter than the republic?

Applying and analysing

- 4 Why do you think that the ancient Romans ended the monarchy?
- 5 Look closely at Source 5.2.1 and consider the legend of Romulus and Remus carefully. Suggest some interpretations about the symbolism of this statue and of the legend.

Evaluating and creating

- 6 Evaluate the advantages of the two systems of government described in this chapter: monarchy and republic. Explain which of the two systems you would prefer to live in.



5.3 Republic and empire

The Roman Republic

For the *populus Romanus* or community of Rome, social status was very important. The structure of society was rigid and strict laws ensured that some people had more power than others. There were two important distinctions between groups of people. First, there was the legal distinction between those who were free and those who were slaves. Second, Romans who were freeborn (that means, not a slave) could be citizens or non-citizens. Ultimately those who were citizens were the most important people in Rome (see Source 5.3.1).

The consulship

The leadership of Rome during the republic was very different from that during the monarchy. In the Roman Republic, two men were elected as leaders or consuls from among the Senate. These men shared the imperium (supreme power) for 1 year only. Consuls could not be immediately re-elected. Consuls had full command of the army and the power to impose the death penalty.

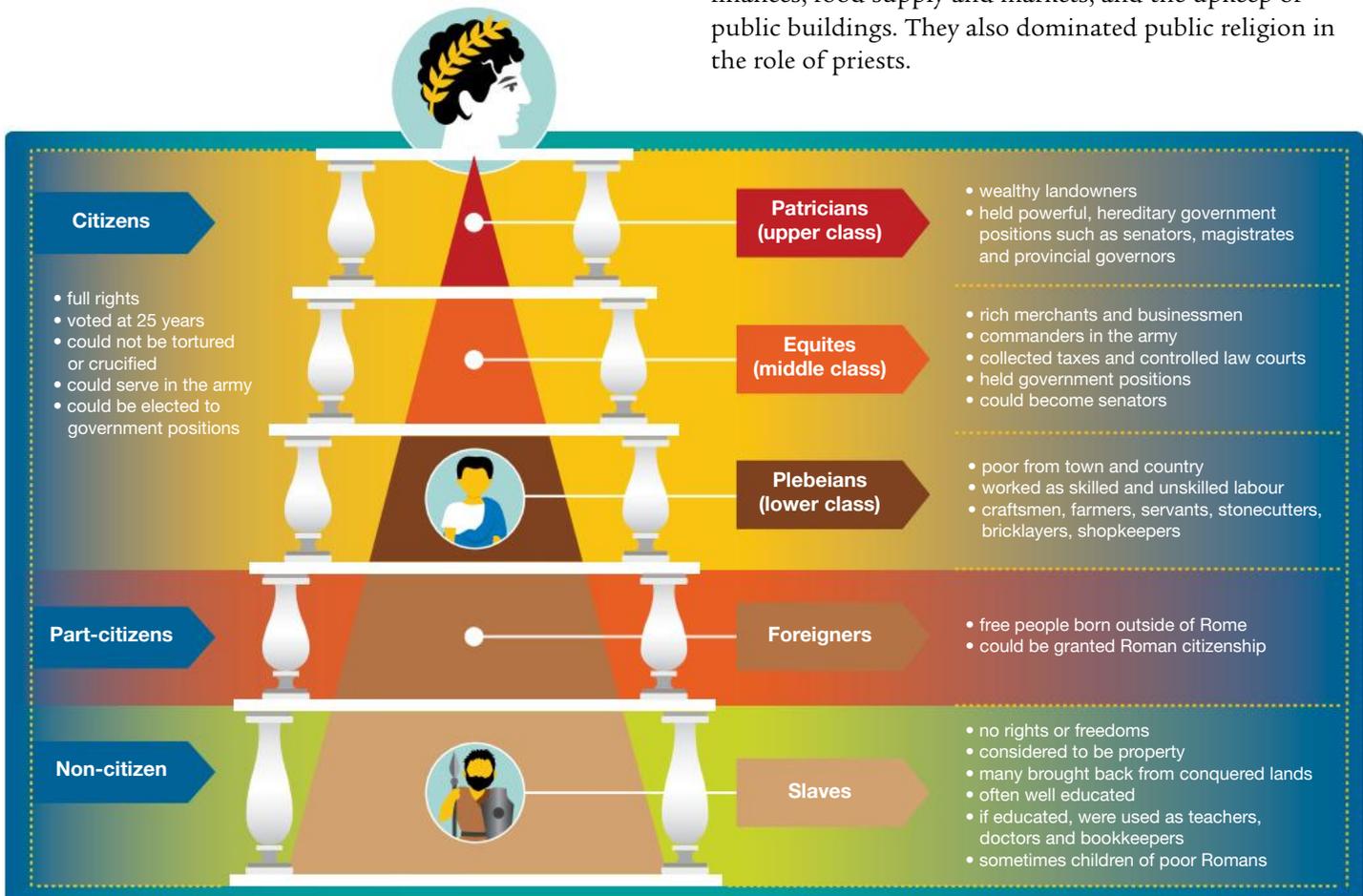
Unlike kings, consuls were accountable for their actions. This meant that they had to obey the laws and customs of the republic. They could be prosecuted for any offences once their term of office expired.

The Senate

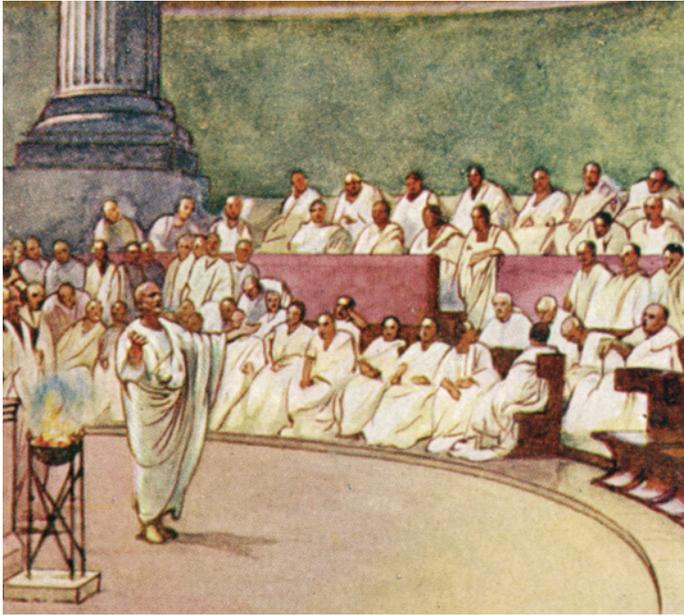
Originally a new Senate was chosen every year. However, over time this changed so that senators were appointed for life. During Senate meetings, a consul would present a matter for discussion and then ask each senator for his opinion. When the senators all agreed on a point, or reached a consensus, the consul would accept their advice.

Magistrates and public duty

The public duties of the consuls gradually grew. Eventually, other men from the Senate were elected to assist them. These men were called magistrates. Like the consuls, the magistrates served for a fixed time and they were held accountable for their actions. They administered (or took care of) important aspects of daily life in Rome including the record of citizenship, the law courts, public finances, food supply and markets, and the upkeep of public buildings. They also dominated public religion in the role of priests.



5.3.1 Social status in ancient Rome



5.3.2 A painting showing what the Roman Senate might have looked like

Plebeians

Citizens who were not patricians were known as plebeians (or common people). There were vast differences in wealth between these two groups and even among the plebeians themselves. For the majority of the plebeians, life was hard and unpredictable. Rome was an agrarian society (dependent on agriculture) with many poor farmers. Most of the plebeian population suffered from poverty, lack of land, famine and financial debt.

Equites

Some richer plebeians made their wealth by investing in business and finance. They became known as the *ordo equester* (equestrian order) and their members were called *equites*. Over time they were given the right to become part of the Senate.

Assemblies of the people

There was a democratic element to the government of Rome. The republic maintained the Assemblies of the people. During the Assemblies, the plebeians had the right to enact laws through a vote. They also had the right to vote for patricians who were running in elections for the magistracies and consulships.

Women

Women were excluded from participating in public life. The only exception was that women from wealthy patrician families could be priestesses. Women could, however, share in some behind-the-scenes political power if they were directly related to an important politician. The primary role of women was to run the household and care for the children. Poor plebeian women could work outside of the home to earn money (see Source 5.3.4).

Slaves

Slaves were an important group of people in Rome because they were a vital part of the economy. Slaves provided both skilled and unskilled labour in Roman society. They worked in mines, small industries, households and on farms. (See over.)



5.3.3 A fresco (wall painting) from Ostia, Rome's ancient port, showing the loading of grain onto the ship *Isis Giminiiana*, second to third century AD



5.3.4 A fresco showing a woman pouring perfume into a phial, first century AD

Slave traders, people who bought and sold slaves, obtained them from pirates and slave markets throughout the Mediterranean region. Sometimes, poverty-stricken Roman parents sold their children into slavery. Slaves could be granted freedom by their owners or they could raise money to buy their freedom. These ex-slaves were called **freedmen** and **freedwomen**. In some cases, freedom and citizenship were granted at the same time.

Did you know?

- There were three slave rebellions during the late Roman Republic. They were called the Servile Wars.
- The most famous of these was the Third Servile War (73–71 BC). This was a slave revolt that was led by an escaped gladiator called Spartacus. He successfully defeated the Roman army in seven battles before finally being defeated by general Marcus Crassus.
- At its peak, Spartacus's army was believed to have been 90 000 to 120 000 men strong.

From republic to empire

Towards the end of the republic, Roman society was characterised by civil war. This was an internal conflict. Competing groups of people attempted to gain power. Julius Caesar (100–44 BC) became the most powerful man in Rome in 49 BC. He declared himself consul and dictator of Rome for life. Many Romans feared that he was going to declare himself king of Rome, and so he was assassinated in the Senate on the Ides of March (15 March) in 44 BC. After his death, there were continual struggles for power between different leaders. Finally, in 27 BC, Octavian Caesar (Julius Caesar's great-nephew and adopted son) took absolute power. He became the first emperor of Rome, taking the name of Augustus.

Society during the empire

Many aspects of Roman society remained the same during the empire. The wealthy patrician and plebeian families still held important political positions in Rome. The political bodies such as the Senate and the Assemblies remained. However, the emperor introduced several important changes. These changes reflected a shift in the balance of power away from the Senators. This began when Augustus assumed many powers over the whole of Roman society. Source 5.3.5 shows some of the changes to the social and political structure that were introduced by Augustus.

Skills builder

Sequencing chronology

An important skill in history is to be able to sequence (arrange) events in chronological order, which means the order in which they occurred in time. This is a key skill in itself, but it also allows us to see the links between events, and helps to determine cause and effect.

Based on the information in this chapter, develop a timeline of the key events that occurred as ancient Rome moved through the phases of monarchy, republic and empire. The information provided in the Timeline at the beginning of the chapter will also be of assistance.

When you have finished, use your timeline to help you identify the long-term causes of change, as well as the short-term triggers.

5.3.5 Changes made by Emperor Augustus to the social and political structure of Roman society

Emperor	<ul style="list-style-type: none">• He held the title <i>princeps</i> or first citizen.• He also held supreme power (<i>imperium</i>) over the army and finances of Rome.• He was the head of civil, judicial, military and religious life of Rome.• The army owed him allegiance.• He was the head of the imperial household.
Patricians	<p>This group still dominated the Senate and magistracies, but in limited capacity:</p> <ul style="list-style-type: none">• Political power of the Senate was reduced.• The size of the Senate was reduced and limited to 600.• The Senate was given control of the state treasury.• The Senate became a legislative body.• Assemblies of the people lost all importance, and the emperor adopted their powers and roles.• The role of censor was taken by the emperor.• Magistrates lost their roles to equites and freedmen.• Equites lost their political power but assumed new bureaucratic responsibilities (see below).• The provincial elite were attracted to the new political opportunities in Rome.
Equites	<p>These wealthy plebeians were traditionally the citizens who were the businessmen in Roman society. They were now given military and administrative responsibilities to run the empire:</p> <ul style="list-style-type: none">• Some received the title of prefect or commander, such as Commander of the Corn Supply to Rome, Commander of the Fire Brigade and Police Force in the City of Rome, or Commander of the Praetorian Guard (the emperor's personal bodyguard).• Others were given the title Procurator, which meant that these men worked as agents for the emperor in the provinces. They managed the overseas properties of the emperor.
Governors in the empire	<ul style="list-style-type: none">• These men were paid a salary during the empire.• They had been consuls and this was the career path offered once the consulship expired.• They were often appointed by the emperor himself.
Law	<ul style="list-style-type: none">• The law courts continued to function as under the republic.• Two new courts were created to deal with cases of treason against the state and poor administration.• Consuls or the <i>princeps</i> himself presided over these courts.• The <i>princeps</i> was the final court of appeal, meaning that the emperor could be approached for a verdict directly.• The office of city prefect was created, providing Rome with a judge and chief of police.

Activities

Remembering and understanding

- 1 Outline the main differences between citizens and non-citizens.
- 2 What was the role of a consul in Rome?
- 3 What contribution did the magistrates make to Roman public life?
- 4 Explain the importance of slaves in Roman society.

Applying and analysing

- 5 With a partner, hypothesise the ways that Roman women could influence society.
- 6 In Roman society, the key indicators of high social status for men were freedom, being born into a wealthy and powerful patrician family, a senatorial career and the ownership of slaves. Using a Venn diagram, compare and contrast the key indicators of social status (for men and women) in Australian society today.
- 7
 - a Analyse the changes made by Emperor Augustus to the social and political structure by using a T-chart to compare and contrast them with the social and political structure of the Roman Republic.
 - b Explain how these changes consolidated Augustus's power.



5.4 Everyday life

Roman family life

Ancient Roman households were like modern nuclear families because they included the married couple and their children. Wealthier households included slaves. The *paterfamilias* or father was the head of the family. He had absolute control over the household. Wealthier Roman families lived in a town house or an atrium house. Other families lived in one or more rented rooms in a crowded apartment block, called *insula*.

Role of women

Roman women ran the household and cared for the children. Patrician women had some financial freedom and could inherit (receive from their family) and dispose of (sell) property. During the early Roman Republic, married women and their finances were under the control of their husbands. By the end of the republic, a woman's father maintained control over her. He could make decisions about her finances and whether to make a different marriage for her. Women from patrician families were valuable in creating political alliances through marriage. Getting a divorce was easy and remarriage was frequent. Husbands could divorce their wives on the grounds of infertility or adultery.

Children

Children legally belonged to the father. He had the power to disown or sell his children into slavery. Adoption of boys within elite families was common, especially if a father had no male children to inherit his property. Patrician boys had three names: a personal name, a clan name and a family name; for example, Marcus Aurelius Antoninus.

Girls were given one name, which was the clan or family name in feminine form. For example, the daughters of Antoninus would be called Antonia Major and Antonia Minor if there were two daughters in the family. If there were three or more daughters, they would be numbered.

Learning and play

Children were instructed or taught about the following:

- obedience and respect
- *pietas* or behaving correctly towards the family and the gods
- ancestors and customs
- virtues including persistence, courage and loyalty.

During the republic, fathers taught their sons to read, write and use weapons. Later on, freedmen and educated slaves took on this role. Patrician boys studied literature and public speaking. At sixteen or seventeen years of age, they might be taken to observe the Senate and they could spend time with the army. Girls were taught how to manage a home by their mothers, and to read and write. Children played with a range of toys made from wood or bones. Children in poorer families started work as young as six.

Food and drink

Only wealthy Romans ate three meals a day. Breakfast was a luxury. Most Romans relied on handouts of grain to make porridge or rough bread. On special occasions they were given meat, sweet wine and vegetables.

Romans loved intense flavours. The strong, fish-flavoured sauce called *garum* was very popular. Pepper, spices and herbs were available, although pepper was very costly. Romans enjoyed sweet dishes flavoured with honey and fruit as well as pastries and cakes. They also enjoyed pork, domestic fowl (like chickens and ducks), fish and shellfish.

A wide range of vegetables were grown including cabbage, lettuce, asparagus, onions, garlic and beans. Olive oil was a staple. Vendors at the markets sold fresh meats, vegetables, fish and shellfish. Food could not be stored for long because of a lack of refrigeration. Smoking, pickling or salting were used to make meat and fish last longer.

Commercial and home ovens were used for baking bread and pastries. Meals were cooked in cauldrons (large pots) hanging over braziers or open fires. People who lived in apartment blocks had no kitchens. They relied on communal (or shared) ovens and foodstalls, or bars that sold hot food. Watered wine was the most common drink and was sometimes drunk spiced and heated. Milk was used for making cheese or medicine and was considered an uncivilised drink.

Clothing

All ancient Romans, whether rich or poor or male or female, wore a simple tunic with a cord or belt. However, wealthy Romans had clothing made of richer fabrics and colours, and wore decorative brooches and clasps. So, clothing was important as it showed people's social standing or rank (see Sources 5.4.1 and 5.4.2).



5.4.1 Clothes worn by Roman men



5.4.2 Clothes worn by Roman women

Public entertainment

Entertainment was an important feature of Roman society.

Gladiatorial games

Public games were spectacular and included gladiatorial fights. Gladiators were condemned criminals, slaves or prisoners of war who fought to the death. Romans found this entertaining to watch. Mosaics and terracotta figurines provide evidence for the different types of helmets, shields and swords or daggers that they used. For example, a *retiarius* fought with a net and a trident, while a Thracian (eastern European tribesman) fought with a curved sword and a round shield. Women, dwarves and wild animals also fought against gladiators for the shock value. A large and expensive trade in supplying animals for the games developed during the empire. Many large and ferocious animals were imported from Egypt and elsewhere in Africa. These bloody combats took place in the arena of an amphitheatre.

Chariot racing

Chariot racing dates back to the monarchy and was the most popular form of public entertainment. There were four teams: blue, green, white and red; the rivalry between them and their fans was intense.

Theatre

More sedate (that means, less energetic and/or violent) entertainment could be found in the theatres where plays, mimes and pantomimes were performed. Only men could act in plays, but women could perform in mimes and pantomimes. Pantomimes with lots of singing and dancing were considered unsophisticated and tasteless.



5.4.3 A terracotta relief of gladiators in combat with a bear, a lion and a lioness, 2nd century AD

Private entertainment

Public baths

Bathing was a recreational and social activity in Roman society. Citizens attended the public baths. Some wealthier households had private baths. A visit to the baths could include enjoying the hot and cold plunge pools, getting a massage and having body hair removed. Public baths might have an exercise area and offered the sale of takeaway food.

Banquets

Lavish banquets also provided entertainment. Roman writers describe gourmet treats and eye-catching food creations. The wealthy enjoyed delicacies such as snails, dormice (small rodents with furry tails) and small wild birds. Entertainment of music and dancing was offered at dinner parties. Poorer citizens visited taverns and played gambling games with dice, knucklebones and gaming counters.

Punishment and the law

The Romans distinguished between public and private law. The consequences of breaking the law focused on vengeance and deterrence. This means that the idea of giving a criminal 'payback' was just as important as encouraging other people not to commit crimes.

Torture was common by the first century AD and prisons were also used as a form of punishment. In some cases, exile (removal from one's native country) was used as a punishment. Emperor Augustus had his own daughter Julia exiled for adultery (extramarital affairs).

5.4.5 Roman penalties for crimes

Public offences	
Offence	Punishment
<ul style="list-style-type: none">• treason against the state• murder	<ul style="list-style-type: none">• decapitation• crucifixion• exposure to wild animals• beatings• heavy fines• working in the mines
Private offences	
Offence	Punishment
<ul style="list-style-type: none">• theft• assault	<ul style="list-style-type: none">• fines• confiscation of property

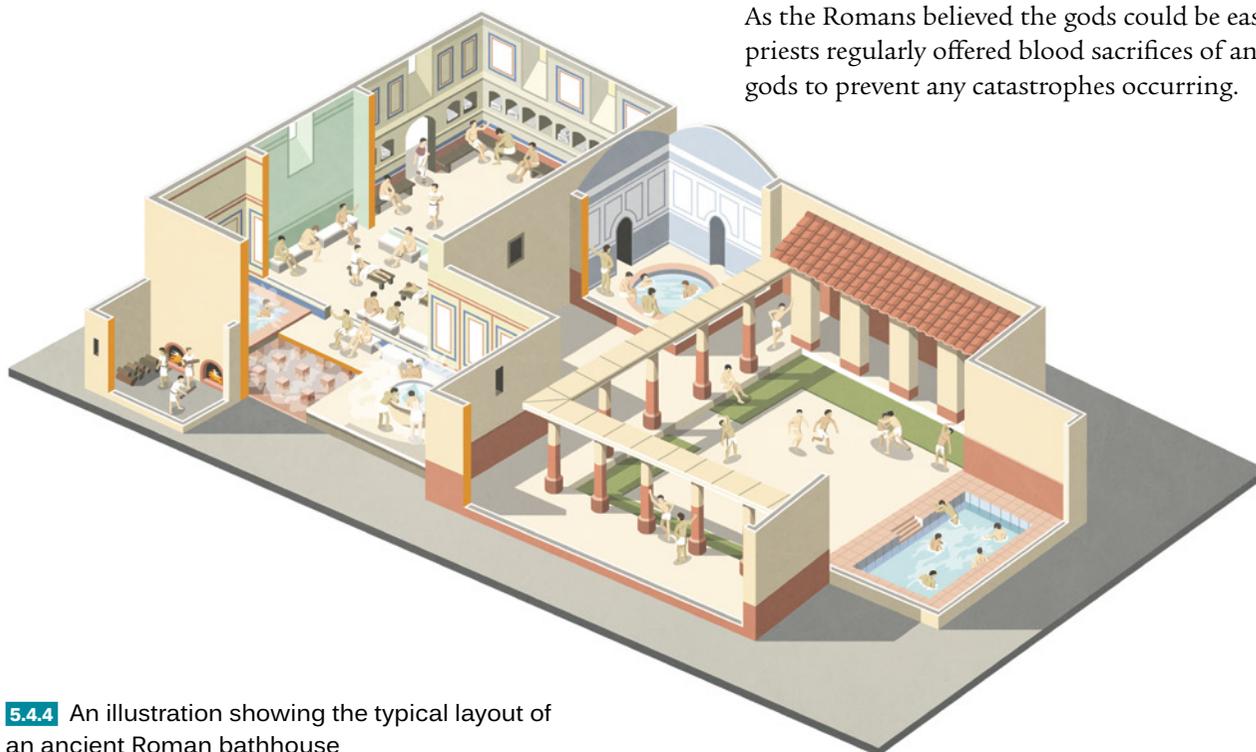
Health and medicine

Romans believed that making offerings to the gods would help with ill health. They wore amulets and bought magical spells. However, they also knew about the medicinal properties of herbs and drugs. There are many letters that mention health problems such as eye infections and bad teeth. Henbane and opium were used for pain relief, and vinegar was used as an antiseptic. Wealthy families had the use of doctors, and midwives specialised in helping women in childbirth. An interesting range of metal surgical instruments has survived including needles, scalpels, probes and hooks.

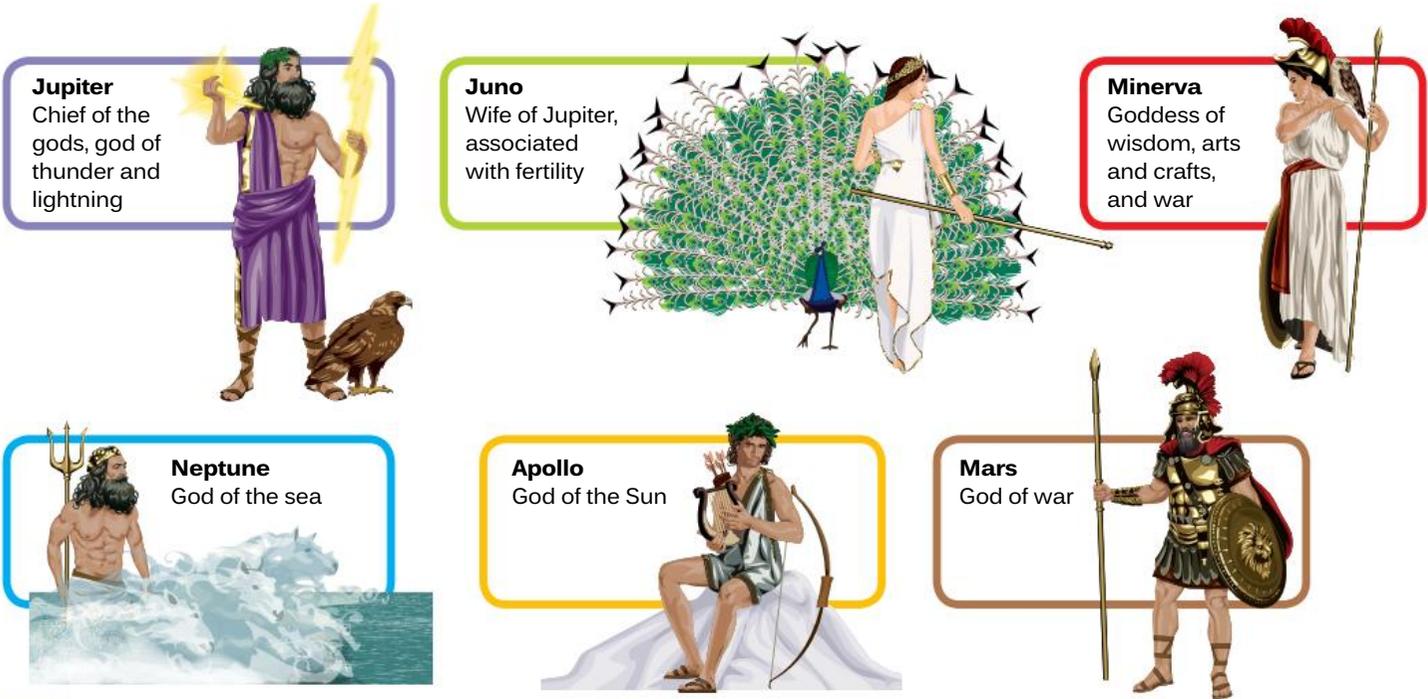
Religion

The Roman people worshipped a pantheon or collection of gods, whom they believed controlled the different facets of life and nature (see Sources 5.4.6 and 4.5.7). Every home had a shrine to the goddess of the hearth, home and family, Vesta.

As the Romans believed the gods could be easily angered, priests regularly offered blood sacrifices of animals to the gods to prevent any catastrophes occurring.



5.4.4 An illustration showing the typical layout of an ancient Roman bathhouse



5.4.6 Other ancient Roman gods and goddesses

5.4.7 Some of the major ancient Roman gods and goddesses

God/goddess	Description
Venus	goddess of love and fertility
Vulcan	god of fire
Ceres	goddess of the Sun
Pluto	god of the Underworld and of death

God/goddess	Description
Saturn	god of time
Cupid	god of love
Bona Dea	an earth and fertility goddess, worshipped exclusively by Roman women

Activities

Remembering and understanding

- 1 Identify two ways that Roman families were similar to modern Australian families and two ways in which they differed.
- 2 Use a T-chart to list the similarities and differences in Roman food to the foods we eat today.
- 3 List the forms of public and private entertainment common in Rome.
- 4 Describe Roman medicine.

Applying and analysing

- 5 Examine the values that children in ancient Rome were expected to follow under the heading 'Learning and play'. Discuss, with a partner, why these virtues were so important in Roman society.

- 6 Interpret the ancient Roman diet by creating sketches for either an audiovisual display or an illustrated concept map.
- 7 Devise a hypothesis to explain why gladiatorial games were so popular in ancient Rome.

Evaluating and creating

- 8 Develop a system of rankings for the types of entertainment available in ancient Rome. Devise a range of criteria which can be used to rate each activity.

5.5 Death and funerary customs

Belief in the afterlife

Ancient Romans valued the correct observation of funerary rituals; they believed that these practices ensured the souls of the dead reached the afterlife. Thousands of funerary portraits, monuments and inscriptions survive in the archaeological record as evidence of how important this was to the Romans. The Romans believed that the dead lived on in their tomb and that they could influence the fortunes of their surviving relatives. It was important to secure the good favour of the dead. Therefore, offerings to the dead were a crucial part of everyday life. Offerings could be made in front of images of the household ancestors or at their tombs.

The Underworld

Romans believed that after death the soul was taken across the River Styx by Charon, the ferryman, to Hades or the Underworld. Hades was located in the centre of the Earth and was ruled by the god of death, Pluto. The entrance to the Underworld was guarded by the three-headed dog Cerberus, who ensured that no souls could escape. In Hades, the souls were judged on their deeds (see Source 5.5.2).



5.5.1 Pluto, the ruler of the Underworld with the three-headed dog, Cerberus, at his feet. In Greek mythology 'Pluto' is known as 'Hades' or 'Dis'.

5.5.2 The judgement of souls

Judgement	Type of people	Destination in the Underworld
good	warriors and heroes	Elysian Fields or paradise
neutral	good, honest people	Plain of Asphodel
bad	people who had committed bad deeds or had offended the gods	Tartarus or the Hall of Fury

Funerary practices

Ancient Romans practised cremation (burning the body of a deceased person) and inhumation (burial). These practices varied over the 1000 years of ancient Rome's existence.

Burials were conducted in cemeteries outside the city. Funerals ranged from simple rituals to elaborate and expensive public performances by rich patricians. At an expensive funeral, there would have been professional mourning women, musicians and dancers. The public funeral procession might also have included a *laudatio*. This involved a ceremony in which a funeral speech was read aloud while the deceased person was displayed in an upright position.

The poorer citizens belonged to a funeral club to help them afford funeral expenses. Whatever the social status of the deceased and their family, all burials at the grave site included rites that involved the offering of food and drink to the deceased. The mourning period lasted for 9 days, finishing with a feast.

Tombs

Tombs varied greatly and were often designed for more than one burial. Wealthy patricians could afford large and elaborate monuments. For example, the tomb of a wealthy magistrate, Gaius Cestius, is an impressive pyramid that was built at the end of the first century BC (see Source 5.5.3).



5.5.3 The tomb of the magistrate Gaius Cestius, in Rome, built between 18 and 12 BC

Catacombs

The Romans also built underground or rock-cut tombs called catacombs. These included a network of passages leading to burial chambers. The best-known catacombs are underneath St Peter's Basilica in Rome. Funeral clubs built collective tombs called *columbaria*, which translates as 'dovecotes'. The ashes of deceased were placed in a little cupboard. Columbaria contain hundreds of these little cupboards (see Source 5.5.4). The deceased was buried with grave goods such as food, drink and lamps. Perfumes and gold rings were included to indicate the high status of the deceased.



5.5.4 The interior of the Columbarium of Pomponius Hylas, Rome, first century AD

Remembering the dead

Romans also valued rituals associated with remembering the dead. A family's public reputation was important in death as well as in life. The tombs that were built along the main roads leading in to Rome featured highly visible portraits and inscriptions (see Source 5.5.5). Patrician houses displayed bronze or stone portrait busts of the family ancestors. Sometimes these portraits included a list of a person's achievements. There was a lot of family pride behind these displays. Funerary busts showing a deceased married couple were also popular. Even the poorest Romans were identified in death by simple inscriptions with the deceased's name. About three-quarters of the 2,500,000 Latin inscriptions that have been found are funerary inscriptions.



5.5.5 A pair of ancient Roman marble funerary reliefs, c. first century BC or AD

Did you know?

- Some Roman funerary portraits were more like masks made from wax. They could be worn by the living members of the family during public funeral processions. Other portraits in marble were painted with bright colours.

Activities

Remembering and understanding

- 1 Identify three examples of Roman funerary practices.
- 2 Explain the importance of funerary rituals to the Romans.

Applying and analysing

- 3 Interpret what archaeological evidence suggests about Roman burial practices, using Sources 5.5.3, 5.5.4 and 5.5.5 and information from this unit.

5.6 The Roman army

A warlike society

From Rome's earliest days, Romans expected their generals and soldiers to march out and fight neighbouring communities. They valued victory in war and they believed that the gods, especially Jupiter, Mars and Minerva, would help them to win battles. Romans enjoyed watching their generals celebrate military victories in public processions through Rome called 'triumphs'.

The army

The Roman army was first established with the conscription of citizens for a limited time during the warmer months. During the republic, men volunteered eagerly when they were presented with a military expedition (or campaign) that promised killing, plunder and the prestige associated with victory. Towards the end of the republic, generals rewarded the veterans of campaigns with land. Allies who volunteered to fight for Rome were rewarded with Roman citizenship. This was because Roman citizenship included many privileges.

The main unit of the army was the **legion** (about 5000 men who were known as legionnaires). Each legion was divided into cohorts. Each cohort was further divided into centuries (units of 80 to 100 men). During the rule of Augustus, there were about twenty-five Roman legions.

The army also included specialised units of cavalry and archers. These were called auxiliary units.

Where did the army fight?

The legions and auxiliaries were moved around the empire as it grew. Legions were posted to different provinces (regions that were part of the empire) to provide permanent garrisons in cities. Legions would also guard important geographical locations such as overland trade routes, river crossings and even mines. Guarding the frontier (which was the outer edge of the empire) was the most important role of the provincial army. This included monitoring the progress of the local tribes and crushing rebellions.

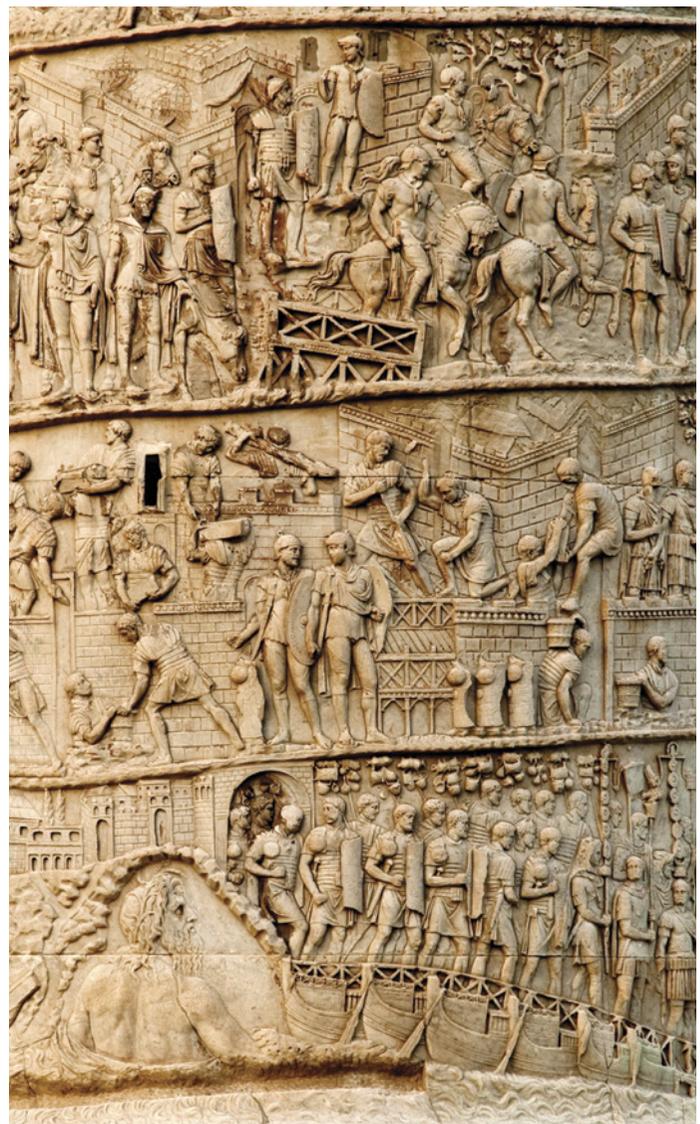
Being in the army

During the early Roman Empire, the pay for soldiers and period of service were increased. A soldier could be in the army for 25 years. He was granted a share in any plunder (items of value captured during a campaign) and was given a final payment at the end of his service. Soldiers were not allowed to marry, although many had 'unofficial' wives and children.

The basic diet of the soldier was a baked wheat biscuit, bacon, cheese and sour wine. He had to carry enough food rations to last for 15 days on a march. When camp was established, soldiers were given meat, fish, fruit, vegetables, and salt and wheat to make their own bread.

Training and battle were tough and brutal experiences. Being in the army was about discipline and duty. Training included endless drills such as running in armour, cleaning weapons, marching and parade practice (see Source 5.6.1).

Soldiers had to be ready for any circumstance and able to ride a horse, swim, or build a camp or a road. In battle, soldiers were armed with a sword, a javelin and a shield.



5.6.1 A detail from Trajan's Column in Rome (built in 113 AD) showing soldiers completing various activities and drills



5.6.2 An artist's impression of a Roman soldier in uniform. A typical soldier's uniform would consist of a woollen tunic, body armour, shoulder plates, a helmet, groin protection and sandals. His weapons included a javelin, a sword and a shield.

Deadly attack

During battle, the cohorts were drawn up in rows that could be made into a deadly wedge formation to break through the enemy line. Soldiers began their attack by throwing javelins from a distance to disrupt the enemy lines, and then charged forward with swords and shields for hand-to-hand combat. The Roman army's success in battle was based on discipline and excellent training.

When legions besieged or surrounded cities, they used several tactics including battering rams tipped with iron, timber ramps and siege towers on rollers. Siege towers were useful for helping soldiers to climb over city walls and defences. The Roman army also used artillery including bolt-shooting machines called *catapultae* and stone throwers.

The latter could hurl stones up to 500 metres and break walls of brick, wood and stone. The soldiers themselves could raise their shields to form the *testudo* or tortoise formation (see Source 5.6.3).

The Romans showed little mercy once they defeated an enemy. Inhabitants of cities were either killed or sold into slavery and the towns were pillaged.



5.6.3 A detail from Trajan's Column showing the *testudo*

Activities

Remembering and understanding

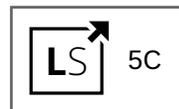
- 1 Paraphrase the development of the Roman army using a flow chart to select the key points of change.
- 2 With a partner, discuss the types of drills that soldiers completed when they were not fighting and explain why these drills were important.

Applying and analysing

- 3 Look carefully at Source 5.6.1 and interpret what the soldiers are doing in this scene. Compare this with the activities shown in Source 5.6.3.

Evaluating and creating

- 4 Work in pairs and prepare a dramatisation of a TV interview between a presenter and a Roman legionary (soldier), who is stationed along a provincial frontier. In your script you should recreate the typical experience of such a legionary. What are the highs and the lows of being in the Roman army?



5.7 Contact and conflict

Rome and Italy

From the earliest days, Rome was almost continuously at war against its neighbours. By the late fourth century BC, the Romans had conquered the entire Italian peninsula. Territory that was conquered was annexed (assigned) to the Romans, either through an alliance or through settlement. Some communities were granted Roman citizenship, which meant they owed loyalty to Rome and that the local men had to serve in the Roman army.

Contact beyond Italy

During the republic, Rome also came into conflict with communities beyond Italy. Initially, Greece and northern Africa were conquered after a series of long and hard-fought wars. Over time, Rome sought more territories to conquer and came into conflict with the peoples of Spain, Gaul (France), Britain, Egypt and Syria. This contact was violent and bloody; Rome inflicted massacres (mass killings), deportations (sending people away), enslavement, the destruction of cities, as well as imposing taxes and forced recruitment into the Roman army.

The Punic Wars

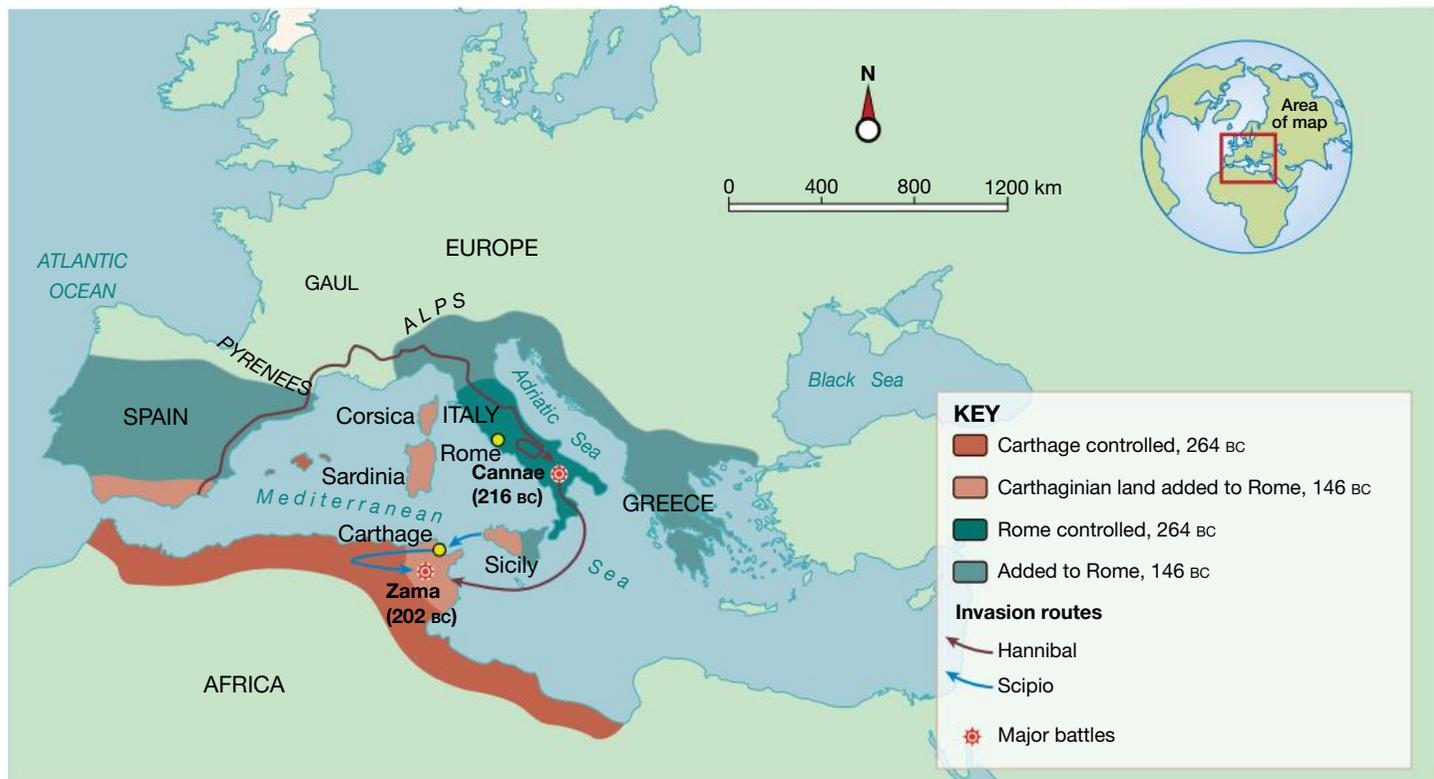
The Phoenician city of Carthage, in northern Africa, dominated the Western world and was Rome's greatest rival for control of the Mediterranean region.

Originally Rome and Carthage had relied on treaties to ensure friendly relations and to prevent Rome from intruding on Carthage's trade routes. This changed when Rome engaged in three wars against Carthage between 264 and 146 BC. These are known as the Punic Wars.

Rome and Carthage first came into conflict over the island of Sicily in 264 BC, which was controlled by the Carthaginians. This was the First Punic War, which ended with the Romans gaining partial control of Sicily, giving them an opportunity to develop as a naval power.

A turning point

The Punic Wars represented an important turning point in Roman history. The Romans themselves considered it to be their finest hour. Fighting against the military genius of Carthage's general, Hannibal, made the Roman generals rethink the structure of their army. This included how to best mobilise their resources and manpower. From this point onwards, Rome was able to sustain (meaning care for, supply and look after) troops in the field (fighting in a campaign) anywhere in the Mediterranean. No other ancient state had been able to do this as successfully as the Romans. Rome also gained a reputation for dealing harshly with states that broke treaties, and thus caused long and costly wars.



5.7.1 Key routes and sites of the Punic Wars

The Second Punic War

The Carthaginians and their generals did not give up easily. They provoked another war with Rome when Hannibal (see Source 5.7.2) captured the town of Saguntum on the Spanish peninsula. Both sides were ready for war and Rome had planned to fight it in Spain and Africa. However, Hannibal outmanoeuvred the Romans. Unexpectedly, he marched his army from Spain through southern France and across the Alps into Italy. This was a very treacherous journey. Hannibal crushed the Roman legions in a series of battles that ended in southern Italy, at Cannae. The defeat at Cannae was crushing, and Hannibal expected Rome to surrender.



5.7.2 A fresco by Jacopo Ripanda (c. 1510 AD) shows Hannibal using elephants to traverse the Alps during the Second Punic War

The Roman response was immediate. Generals raised new legions, which means they added strength to their army. A talented young Roman general called Publius Cornelius Scipio took the war to Carthage (see Source 5.7.3). He invaded Africa and forced Hannibal to retreat from Italy. Carthage was defeated and forced to pay Rome a huge amount of money. Rome also annexed Spain, which was rich in copper, lead, tin, and gold and silver mines.

The Third Punic War

By 150 BC, however, Rome was looking for another opportunity to fight Carthage. It pushed Carthage into breaking the peace treaty and declared war. The Romans captured Carthage after a siege. By the final year of the war, Rome had become so powerful in the Mediterranean region that it was fighting wars on two fronts: northern Africa and Greece. In 146 BC, Rome utterly destroyed the ancient cities of Carthage in northern Africa and Corinth in Greece, cementing Rome's position as the superpower of the Mediterranean region.



5.7.3 A sixteenth-century AD painting of the Battle of Zama in 202 BC, in which Scipio defeated Hannibal

Activities

Remembering and understanding

- 1 Refer to Source 5.7.1.
 - a Where was Carthage located in relation to Rome?
 - b Explain why both the Carthaginians and the Romans were interested in controlling Sicily, Sardinia and Corsica.

Applying and analysing

- 2 Assess what Rome gained from these long wars with the Carthaginians.
- 3 Write a news report that examines the Roman victory at the end of the Punic Wars. Write it from either a Roman or a Carthaginian perspective.

Evaluating and creating

- 4 Decide which of the Punic Wars was the key to the eventual Roman victory over the Carthaginians. Propose three well-argued reasons to support your decision.

5.8 The end of the republic and the growth of the empire

Political crisis in Rome

The last two centuries of the Roman Republic were a period of political crisis. The system of government that had worked so well gradually broke down. The republic ended in a violent civil war. The competition between the members of the political elite for political control and personal power through legislation corrupted the system. This weakened the republic and eventually destroyed it. Civil wars were fought between competing consuls who commanded their own armies in Italy and around the Mediterranean. Some generals even marched on the city of Rome, bringing the civil war to the capital.

The First Triumvirate

During the first century BC, three extraordinary generals came to power. Pompey, Caesar and Crassus were patricians who had common interests. They saw value in joining together against the Senate, which was trying to retain its traditional role and the traditional practices of government.

All three generals were talented. Each enjoyed the loyalty of their legions and all were focused on maintaining their imperium beyond the 1 year allowed by the consulship.

The three generals formed an alliance called the First **Triumvirate**. The three men worked together to push legislation through the Senate and the Assemblies. They were also prepared to use force (in the form of their legions) to intimidate Rome. All these actions were against the principles of republican rule. One of the central achievements of Caesar and Crassus was to gain continued military command in the provinces of Gaul and Syria respectively. Both generals wanted more military victories and glory, as well as wealth from plunder. Pompey, also a brilliant general, was able to maintain the consulship, eventually becoming sole consul.



5.8.1 A late eighteenth-century AD painting of the murder of Caesar

End of the Triumvirate

The First Triumvirate ended when Crassus was killed and the balance of power shifted in favour of Julius Caesar. He took control of Rome when he and his legions crossed the Rubicon River, in January 49 BC. This led to civil war between Caesar and Pompey, which was fought in several areas across the empire, even as far away as Greece and Egypt. Following his victory over Pompey, Caesar had himself appointed consul for several years in a row and finally, in 44 BC, dictator for life. He was assassinated in March of that same year by members of the Senate in an attempt to return to a normal republican political system (see Source 5.8.1).

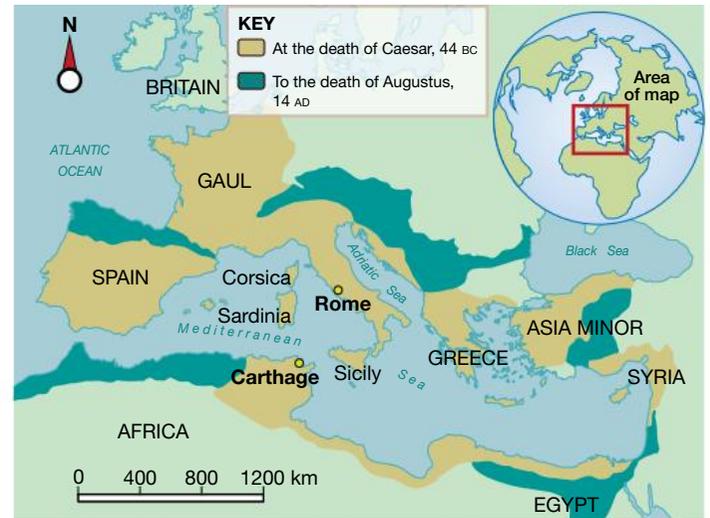
Rome's first emperor

The senators were outsmarted by Caesar's adopted nephew Octavian. Like his uncle, Octavian formed an alliance with two important senators: Lepidus and Marcus Antonius. This was the Second Triumvirate.

This proved disastrous for Rome as this alliance was also short-lived. Rome was again plunged into civil war. Octavian was the military and political victor. After the final battle of a civil war between Octavian and Marcus Antonius, the Senate gave Octavian the sacred role of 're-founding' Rome. He did this, but not in its previous form. He introduced a series of reforms and changes that made sure he remained the first citizen, what was known as the *princeps*, who held the ultimate imperium, called *maius imperium*. Octavian is referred to by historians as the first emperor of Rome. Octavian chose to use the name Augustus.

The growth of the empire

Rome gained much new territory during the first century BC. It had already acquired Greece, Spain and northern Africa by the end of the previous century. New provinces were added because of the aggressive wars fought by the generals Pompey, Caesar and Octavian. In the east, Syria was added by 62 BC and the province of Judaea (modern Israel and State of Palestine) was added by 6 AD. In the west, Caesar and his army had conquered the rest of Gaul up to the Rhine River by 50 BC. Augustus expanded Rome's control into Europe. He sent his trusted friend Agrippa and his sons Tiberius and Drusus to establish the northern frontier at the Danube River. They added the geographical region of modern Switzerland and southern Austria. In Africa, Julius Caesar had added the kingdom of Numidia and in defeating Marcus Antonius and his ally Cleopatra VII of Egypt, by 30 BC Augustus added the ancient land of the pharaohs.



5.8.2 The extent of Rome under Julius Caesar and Emperor Augustus

Activities

Remembering and understanding

- What was the First Triumvirate and who did it include?
 - What does the creation of a Triumvirate suggest about politics during this period?
- What was significant about Caesar crossing the Rubicon River with his army?
- Examine Source 5.8.2. What does this source suggest about the impact of the political struggles on the Roman Empire over this period?

Applying and analysing

- Look carefully at Source 5.8.1. Record what you see in this painting. What do you think about the actions shown in the painting? What does this painting suggest about how people in later periods imagined this event?
- Think, Pair, Share. Recall the meaning of 'imperium' and discuss the impact of Augustus taking on the ultimate imperium himself.

5.9 Consequences of contact

Imperial expansion comes to an end

One of the consequences of contact and conflict with other peoples was the possibility of military defeat. Emperor Augustus avoided expanding the empire any further after German tribes destroyed three legions along the Rhine frontier in 9 AD. Augustus was a realist, meaning that he understood the reality of the situation. He did not want to overstretch the army and Rome's resources. Instead, wherever possible, Rome established friendly diplomatic relations. Augustus chose to concentrate on maintaining peace in the empire and on securing provinces that had already been gained. It was not until 43 AD that Emperor Claudius added Britain, more territory from north-west Africa and also northern Greece. In 69 AD, Emperor Vespasian re-established Augustus's policy of strengthening the existing frontiers. This continued throughout most of the second century AD.

Pax Romana

Pax Romana means 'Roman peace'. It refers to the long period of general stability that began with the rule of Augustus in 27 AD and lasted until 180 AD. For nearly 200 years, the people of Rome and the empire enjoyed peaceful conditions. The end of war allowed for the development of stable government. The provinces were carefully administered. A strong legal system developed, trade networks flourished and local religions grew. Aspects of Roman life were adopted in the provinces by the local elites, and, in turn, Roman culture absorbed or took in many foreign elements.

The impact of Rome on the provinces

When the Romans conquered territory, they established forts manned by soldiers (usually veterans) who could maintain peace and monitor the movements of the locals. The Romans built roads for the movement of troops and for the development of trade. Soldiers needed olive oil, wine and equipment. These items could be imported from Italy, but soldiers also bought locally made goods that were produced to satisfy Roman tastes. This activity stimulated (or kickstarted) local economies.



5.9.1 A recent photograph of a Roman road in Syria running between Antiochia and Aleppo

Apart from roads the Romans also built structures like amphitheatres (see Source 5.9.2), theatres, bathhouses, villas and temples. These structures reflected the changing nature of the provinces in a process that historians call 'Romanisation'. This does not mean that the people of the provinces adopted every aspect of Roman culture and life. Instead, the consequence of contact with Rome led to the creation of a rich hybrid (or mixed) culture that developed over time.



5.9.2 Remains of the Roman amphitheatre in Sabratha, Libya

Trade

Trade in the Roman Empire happened on a vast scale. Merchants who tried to satisfy the spread of Roman tastes made good profits. The long peace meant that people in the empire enjoyed improved economic conditions. Merchants could travel safely by roads, across the Mediterranean Sea and along rivers. Goods were moved in great quantities around the Roman world and were sold in local markets. The archaeological record of shipwrecks shows the movement of wine, olive oil and pottery tableware bowls called *terra sigillata* throughout the provinces (see Source 5.9.3). Even exotic and luxury goods like ivory, pearls, gemstones, silk, pepper and perfumed oils were transported overland in long caravans. These were groups of merchants and their animals, protected by soldiers, as they transported their goods.



5.9.3 Two terracotta wine amphoras from the second and first centuries BC, found in a shipwreck in the Mediterranean. They hold 25 and 40 litres.

Religion

Rome tolerated other forms of rituals and worship within the empire. This meant that many religions were allowed. The Romans also adopted or took on many religions, such as Mithraism and Christianity, and the worship of the Egyptian goddess Isis. The god Mithras was originally a Persian god and was a favourite of soldiers.

Throughout the empire, Roman and local gods were often merged in worship. For example, statuettes of the goddess Isis-Fortuna have been found in Germany. In the British town of Bath, a cult statue of Sulis Minerva demonstrated the dual worship of the Celtic goddess and the Roman goddess. And at the fort at Vindolanda in northern England, archaeologists have found an altar dedicated by a soldier to his favourite god Jupiter Dolichenus. This deity seems to be a fusion of the Roman god Jupiter and the god Baal of the city of Doliche in Asia Minor (present-day Turkey).



5.9.4 An altar dedicated to the goddess Cybele and her lover, the hunter-god Attis (c. 295 AD). Cybele, the 'Great Mother', was identified with Earth, nature and fertility. Her cult began in Phrygia in Asia Minor, but, like the other Eastern cults of Mithras, Isis and Bacchus, spread widely throughout the Roman Empire.

Activities

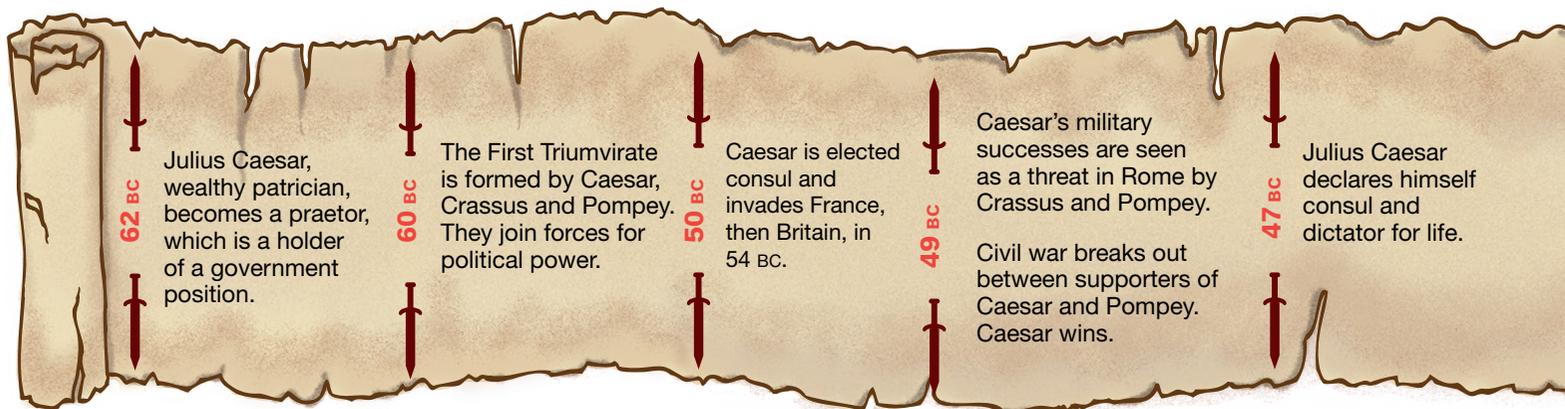
Remembering and understanding

- 1 Outline Emperor Augustus's attitude to the continued expansion of the Roman Empire.
- 2 What was *Pax Romana*?
- 3 Identify the changes that the Romans brought to the provinces during the *Pax Romana*.

Applying and analysing

- 4 With a partner, discuss and interpret Rome's motives for being so tolerant of other religions.

5.10 Significant individuals



5.10.1 A timeline of key events in Julius Caesar's life

Julius Caesar

Julius Caesar (100–44 BC) remains one of the best-known figures of ancient Rome. This is largely because many Greek and Roman writers wrote about his life and achievements. The Roman historian Suetonius (c. 69 – c. 122 AD) outlined Caesar's spectacular political career. Caesar rose quickly through the positions of magistrate and consul, and ended with his extraordinary dictatorship. Caesar's achievements are also well documented by his own written accounts of his wars in Gaul.

Caesar: The great general

The Greek historian Plutarch (c. 46 – c. 120 AD) described Caesar's ability as a general during his war against the tribes of Gaul between 58 and 52 BC (see Source 5.10.2).

For although it was not full ten years that he waged war in Gaul, he took by storm more than eight hundred cities, subdued three hundred nations, and fought pitched battles at different times with three million men, of whom he slew [killed] one million in hand-to-hand fighting and took as many more prisoners. His soldiers showed such good will and zeal in his service that those, who in their previous campaigns had been in no way superior to others, were invincible and irresistible in confronting every danger to enhance Caesar's fame.

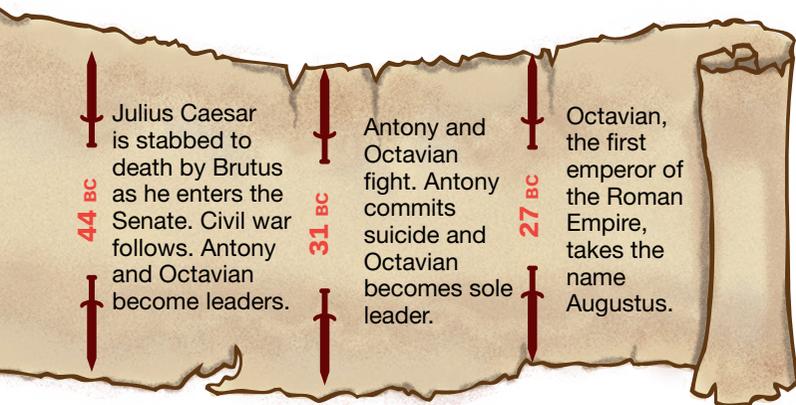
5.10.2 Extract from 'Julius Caesar' in Plutarch's biographical series *Parallel Lives*

Caesar: The builder

As part of his role as leader of Rome, Caesar introduced a building program. This was intended to repair the huge damage caused during the violence of the civil wars. He demolished the burnt-out remains of the old Senate House called the Curia and built a new one, the Curia Iulia. He commissioned a new building called the Basilica Iulia to house the law courts. He laid out a new forum (public square) also named after himself and dedicated a temple to the goddess Venus, the patron goddess of his family (see Source 5.10.3).



5.10.3 The archaeological remains of the Temple of Venus dedicated by Julius Caesar and the Roman Forum. The temple was built in 46 BC.



Caesar: The man

The Roman historian Suetonius wrote many biographies of famous Romans, including one of Julius Caesar. This work gave a great insight into Caesar's deeds and character (see Source 5.10.4).

He was highly skilled in arms and horsemanship, and of incredible powers of endurance. On the march he headed his army, sometimes on horseback, but oftener on foot, bareheaded both in the heat of the sun and in rain. He covered great distances with incredible speed, making a hundred miles a day in a hired carriage and with little baggage, swimming the rivers which barred his path or crossing them on inflated skins, and very often arriving before the messengers sent to announce his coming ... He is said to have been tall of stature, with a fair complexion, shapely limbs, a somewhat full face, and keen black eyes; sound of health, except that towards the end he was subject to sudden fainting fits and to nightmares as well. He was twice attacked by the falling sickness [thought to have been epilepsy] during his campaigns. He was somewhat overnice in the care of his person, being not only carefully trimmed and shaved, but even having superfluous hair plucked out, as some have charged; while his baldness was a disfigurement which troubled him greatly, since he found that it was often the subject of the gibes of his detractors. Because of it he used to comb forward his scanty locks from the crown of his head, and of all the honors voted him by the senate and people there was none which he received or made use of more gladly than the privilege of wearing a laurel wreath at all times.

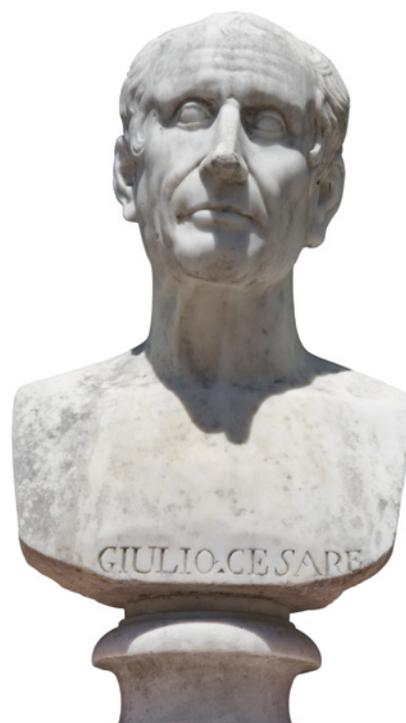
5.10.4 Description of Caesar by Roman historian Suetonius, in *De Vita Caesarum: Divus Iulius* (On the Lives of the Caesars: the Deified Julius), written c. 110 AD

Caesar: A modern assessment

Historians of the modern period have read and interpreted the descriptions of Caesar written during the ancient world. They have written their own works about Caesar's life and his achievements. As secondary sources, these modern perspectives provide some objective assessment about Caesar and contribute to an ongoing debate about his personality, his achievements and his downfall. Source 5.10.5 is an example of a modern historian's viewpoint of Julius Caesar.

Caesar's outstanding abilities are unquestioned. One of the world's greatest soldiers, he was also a writer of great distinction and an orator of the first rank. Urbane, cultured and courteous, he possessed a will of steel and an intensity of intellect that may have been reflected in his tall spare figure, his clear complexion and his lively dark eyes. An aristocratic by birth and nature, he had a true Roman sense of the practical: clear in purpose and swift in decision, he could be ruthless and coldblooded, but was more often clement and generous. The charm, as well as the force, of his personality captivated the loyalty of his troops and supporters, but awareness of his genius engendered in him a certain aloofness.

5.10.5 A modern perspective of Caesar, in H.H. Scullard, *From the Gracchi to Nero: A History of Rome from 133 BC to 68 AD*, first published in 1959



5.10.6 Julius Caesar

Augustus

Like his adopted father, Julius Caesar, Augustus (63 BC – 14 AD) left behind a rich legacy of written and archaeological evidence. Augustus wanted to build a more beautiful Rome and to consolidate the empire. This involved strengthening the empire in its current form. As a result, Augustus brought peace to Rome and the end to civil war.

The founder of a dynasty

The family of Augustus held an important political and social position in Roman society. The imperial household included his wife Livia, his adopted sons and his grandsons (see Source 5.10.7). It became increasingly important to Augustus to have a suitable successor who could carry on his work.



5.10.7 A relief from the Altar of Peace showing Augustus and his family in procession. This altar, dedicated to the Roman goddess of peace, was built in 13 BC in honour of Augustus, to celebrate the peace following his military victories in Spain and Gaul.

The Father of his country

Augustus was the spiritual leader of Rome in his role as *Pontifex Maximus* (see Source 5.10.8). He was also given the title 'Father of Rome' in 2 BC as Augustus records in his writings (see Source 5.10.9).

Did you know?

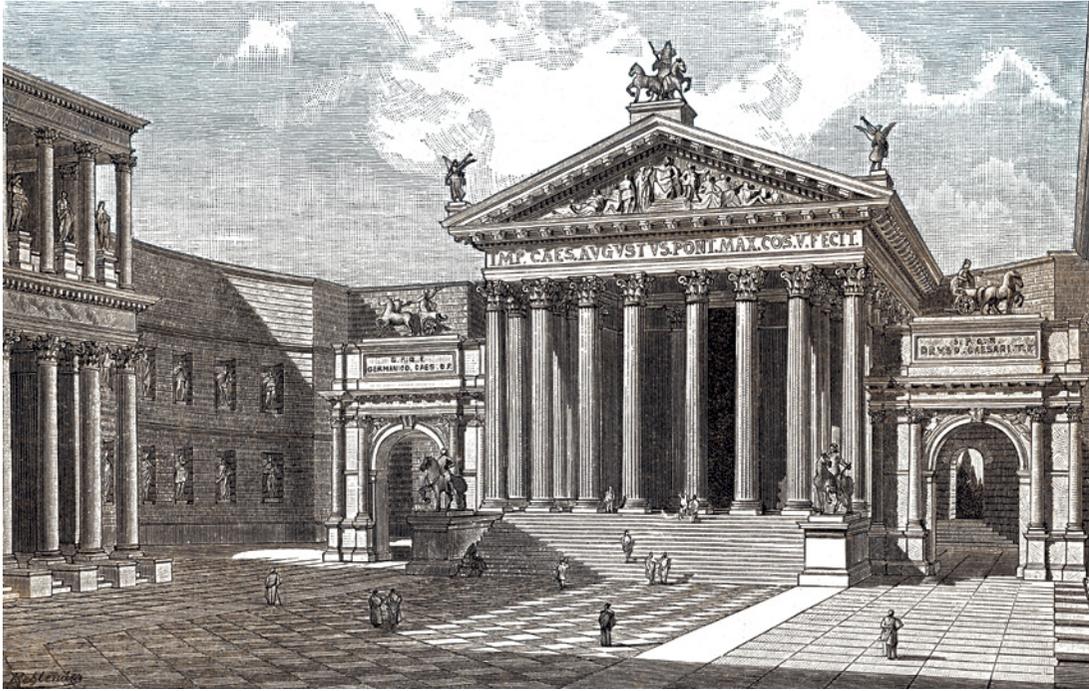
- Julius Caesar and Augustus had the months of the year, July and August, named after them by decree
- (or order) of the Roman senate in around 8 BC.



5.10.8 A statue of Augustus in religious mode, as *Pontifex Maximus*, with his head veiled (covered) for a sacrifice (c. 12 BC)

In my thirteenth consulship the senate, the equestrian order and the whole people of Rome gave me the title of Father of my Country, and resolved that this should be inscribed in the porch of my house and in the Curia Julia and in the Forum Augustum below the chariot which had been set there in my honour by decree of the senate.

5.10.9 Augustus describes how he was given the title 'Father of my Country', in *Res Gestae Divi Augusti* (The Deeds of the Divine Augustus)



5.10.10 A reconstruction of the Forum of Augustus in ancient Rome

The golden age of Rome

Augustus's reign as emperor has been regarded as a golden age for Rome. He restored the *Pax Romana* (Roman peace), which enabled the economy, the arts and agriculture to thrive. Augustus initiated an impressive building program whereby he completed the buildings planned by Julius Caesar and then built his own grand buildings.

Augustus wrote a book called *Res Gestae Divi Augusti*, which translates as 'The Deeds of the Divine Augustus'. In it he claimed that in 1 year alone he restored or built eighty-two temples. He also ordered the construction of the now famous public baths of Rome. Augustus took great personal

concern in the arts and was a personal patron (supporter) of many artists, such as the poet Virgil, who completed his epic, *The Aeneid*, during this period.

Augustus also passed many major reforms to the law. These helped to maintain the stability of Rome. For example, adultery was made illegal and therefore marriage became more stable. Augustus offered tax incentives to families with more than three children (and penalties for childless marriages) which meant that the birth rate increased. Augustus held his own family accountable to the law. He banished his own daughter, Julia, and his granddaughter for adultery.

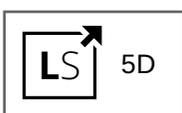
Activities

Remembering and understanding

- 1 Examine Sources 5.10.1 and 5.10.2 carefully. What aspects of Caesar's role in Rome do they share?
- 2 Choose three words that capture the essence of Scullard's perspective of Caesar. Justify your choice.
- 3 **a** List Augustus's achievements as first emperor of Rome.
b Explain why his reign was called 'the golden age of Rome'.

Applying and analysing

- 4 Sketch a portrait of Julius Caesar based on Suetonius's description of him in Source 5.10.4.
- 5 What do Sources 5.10.7 to 5.10.9 reveal about how Augustus wanted to represent himself and his family?
- 6 Formulate a hypothesis that would explain why Julius Caesar and Augustus wanted to repair and add more buildings to the city of Rome.
- 7 Construct a Venn diagram to compare and contrast the achievements of Julius Caesar and Augustus.



5.11 Legacy of ancient Rome

Ancient Roman culture

The ancient Romans left a rich legacy that can be seen in many aspects of modern Western culture. Roman organisational ability and knowledge has been remembered and used by others for many centuries. Physical remains such as the Roman Forum and the Colosseum in Rome remind us that this was a powerful civilisation (see Source 5.11.1). Today, these are well protected by law to help preserve the link to the ancient past. For example, damage to the Colosseum is slowly being repaired and the movement of tourists who come to visit the site is strictly controlled. The archaeological remains in modern Britain, Spain, northern Africa and the Middle East, for example, also demonstrate how far Roman culture spread in the ancient world. Modern cities around the world feature architecture influenced by Roman designs. Other aspects of modern life also show links to the ancient past. Ancient Rome's influence has survived in art, language, government and law.

The past and the present meet

Urbs aeterna: Rome, the eternal city

Renaissance popes recycled Roman architecture and sculpture as they turned Rome into the City of God. This helped to ensure that buildings and sculptures were preserved. Other things have helped to make Rome *urbs aeterna*, the eternal city:

- Rome was chosen as the modern capital when Italy was reunited in 1870 because it represented the desire for a strong Italian nation and reflected a direct link with the glories of the past.
- The twentieth-century Italian dictator Mussolini commissioned archaeological excavations of the Forum and the Circus Maximus in order to connect Fascist Italy with the glories of ancient Rome.
- Modern Rome makes a great effort to preserve the ancient past. Locals and tourists can visit the Roman Forum, the Colosseum, the Circus Maximus and the remains of temples such as the Pantheon.



5.11.1 The Roman Forum and the Colosseum

Popular culture

Films and television series that reconstruct ancient Rome have been popular in the Italian and American filmmaking industry. Big-budget Hollywood historical epics such as *Ben-Hur* (1959), *Spartacus* (1960), *Gladiator* (2000) and *The Eagle* (2011) are just some examples of the hundreds of 'swords-and-sandals' films produced.

There are also many fictional novels set in ancient Rome. Examples include Rosemary Sutcliff's *The Eagle of the Ninth* and Lindsey Davis's series about the fictitious detective Marcus Didius Falco.

Roman food has been explored by the popular British chef Heston Blumenthal in *Heston's Feasts*.

Language

Latin, the official language of the Roman Empire, was the language of education in Western Europe until the late seventeenth century. In the Catholic Church, Latin was used until the 1960s, including in Australia. Also:

- ▶ modern languages such as French, Italian, Romanian, Spanish and Portuguese all have their basis in Latin; collectively they are known as the Romance languages
- ▶ Latin words remain in English; for example, the abbreviation 'etc.' from *et cetera* (and the rest), 'p.m.' from *post meridiem* (after the middle of the day), and 'contradict' from *contra* (against) and *dico* (I speak)
- ▶ important mathematical and scientific works of the seventeenth century appeared in Latin
- ▶ Latin texts by ancient Roman poets such as Virgil, Horace and Ovid were studied and imitated (or closely copied) from the Renaissance onwards; plays and poems written in English, for example, used themes and stories from ancient Rome.

Engineering

The Romans were great engineers, building roads and aqueducts that exist today.

- ▶ Modern cities and towns still use the Roman model of water supply. This involved collecting water in dams and then piping it to populated areas.
- ▶ The Romans invented the first central heating system called a hypocaust. Houses and public baths were built on raised brick pillars. Hot air from a fire circulated underneath the raised floor and into wall cavities to heat the building.

Did you know?

- The first known shopping mall was built by the Emperor Trajan. There were 150 shops on several floors selling everything from clothes to food. Citizens, freedmen, freedwomen and slaves could all shop there.

Architecture

Concrete was invented by the Romans. It allowed them to build great structures such as the Colosseum. It is difficult to imagine modern cities around the world without concrete.

The arch, vault, dome and decorative columns, all Roman inventions, are still common architectural features today. Well-known buildings such as the State Library of Victoria and the Exhibition Buildings in Melbourne, St Paul's Cathedral in London and the United States of America Capitol in Washington feature domes.

Government and law

Modern nations such as Great Britain, Australia and the US have adopted similar political systems to the ancient Romans. Two elected bodies (or houses) balance one another and share powers under the supervision of an elected leader (for example, the Prime Minister or the President). This model reflects the idea of representative democracy associated with the Roman republican model of government.

Roman models of systems for trade, communication, taxation and civil services, such as fire brigades and a police force, are reflected in modern states.

Roman law survived because Emperor Justinian of the Eastern Roman Empire created a legal code in 529–34 AD called the *Corpus Iuris Civilis* (Body of Civil Law). It was rediscovered in the Middle Ages, and became important in the study and development of modern law.

Activities

Remembering and understanding

- 1 Why is Rome referred to as the eternal city?
- 2 Provide further examples of how ancient Roman culture has survived into the twenty-first century in modern popular culture.
- 3 Outline how Latin affected later societies and cultures.

Applying and analysing

- 4 **a** Rank the legacies of ancient Rome in order from most important to least important.
b Justify your ranking to a partner or in a class discussion.



Ancient China

6

Ancient China, one of Asia's greatest civilisations, has a rich and varied history. Beginning with the establishment of the Xia dynasty in 2205 BC (BCE) and ending with the Han dynasty in 220 AD (CE), this vast empire dominated the Asian continent for more than 2000 years.

OVERVIEW QUESTIONS

- 6A** What were the first civilisations in ancient China and when did they occur?
- 6B** How did ancestor worship play a role in ancient Chinese society?
- 6C** What was the Silk Road and why was it essential to the development of ancient China?
- 6D** What inventions did the ancient Chinese give to the rest of the world?

GLOSSARY

artisans workers who create goods with their hands after training in the necessary skill; for example, metalwork, making silk, ceramics

concubine a woman who was not married to the emperor, but who still lived at the palace and had his children; some wealthy men also had concubines

Confucianism belief in the philosophical teachings of Confucius. These formed the basis of the government's official examination system

conscripts men forced to serve in the army or to work on some official project

Daoism belief in the philosophical teachings of Laozi. This includes the idea that people should live in harmony with nature

dynasty a family of rulers

Legalism the philosophy that people needed a strict set of laws with clear punishments

Mandate of Heaven the belief that the emperor was chosen by Heaven to rule. However, if the emperor (or his dynasty) was overthrown then Heaven had withdrawn that Mandate or right to rule

mausoleum a very large and elaborate tomb

polygamy having more than one spouse

scholar-gentry educated men in ancient China



Before you begin

6.0.1 A modern view of the Great Wall of China

Timeline

Ancient China

Ancient China was a mysterious land rich in culture and thought. It was isolated from the rest of the world for a long time because it was hidden by a veil of deserts and mountains.

c. 1700 BC

Silk is first produced



An axe blade made of bronze that was found in the Shang tomb at Anyang, next to forty-eight skeletons without heads

551 BC

Confucius is born

3000 BC

2000 BC

1000 BC

900 BC

800 BC

700 BC

600 BC

500 BC



c. 1122–481 BC Zhou dynasty

c. 1766–1122 BC
Shang dynasty

c. 2205–1766 BC
Xia dynasty

Emperor Shi Huangdi
(259–210 BC)



Buddha figures at the Longmen Caves in Henan province, China



221 BC

Qin conquer Warring States

210 BC

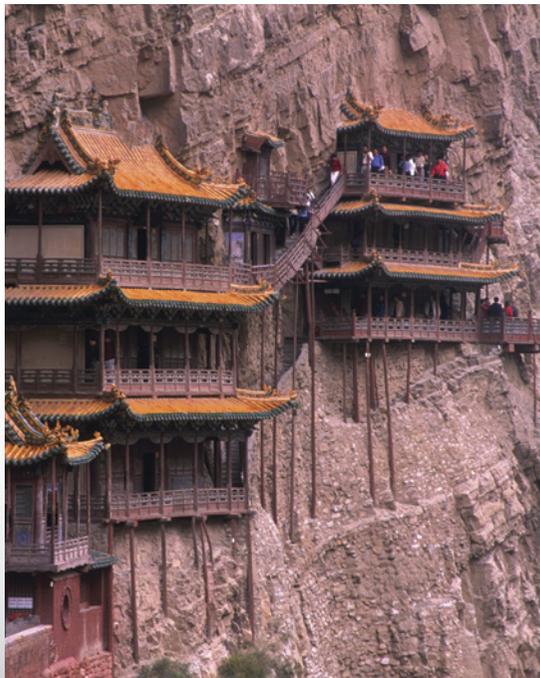
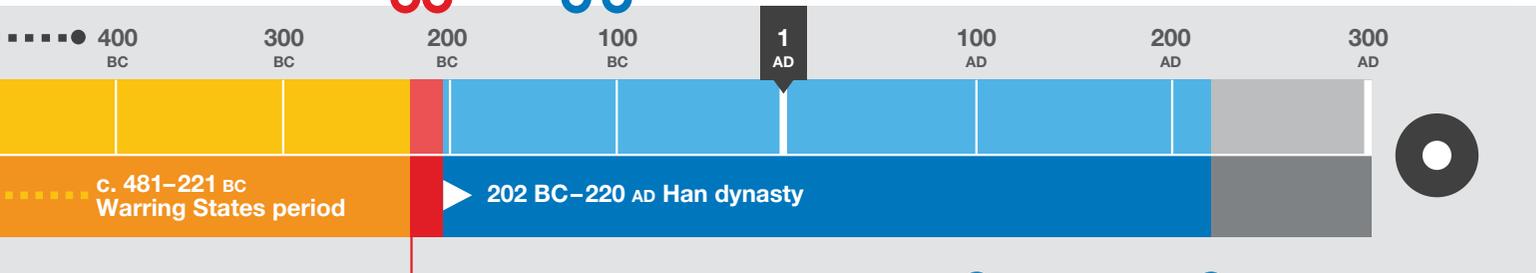
Shi Huangdi dies

124 BC

Emperor Wudi establishes the Imperial Academy

c. 100 BC

Sima Qian completes *Historical Records*; Buddhism reaches China



c. 100 AD

Roman ambassadors visit China

c. 220 AD

Han dynasty ends

Xuan Kong Si, or the Hanging Temple, is in north central China; the construction on this Daoist temple began in the fourth century AD



Bronze galloping horse statue from China's Eastern Han dynasty, 25 AD

6.1 Geography of ancient China

Location of China

Today, China is the third-largest country in the world with a land area of approximately 9.5 million square kilometres. China is located on the Asian mainland and shares borders with fourteen other countries. These include Mongolia in the north, Kazakhstan in the west, India and Nepal in the south-west, and Burma and Vietnam in the south. The Pacific Ocean borders China on its eastern side, with a coastline stretching to about 14 500 kilometres.

The Middle Kingdom

China is surrounded by natural barriers. The Gobi, a large desert, and the vast plains of Mongolia lie to the north. Mountain ranges and the dense jungles of South-East Asia to the south. To the east is the Pacific Ocean and to the west the Himalayan Mountains. These barriers caused China to be isolated from the rest of the world for a very long time.

As a result of this isolation, China regarded itself as the centre of the world, as the Middle Kingdom. Nevertheless, China's borders did change in ancient times due to expansions of empires and invasions. Source 6.1.1 shows the growth of China under different rulers.

Physical features

China's physical landscape is varied. Its mountains in the north and west become smaller and the landscape gradually flattens as you travel towards the plains in the east.

China's sheer size means that the climate also varies from north to south. In the north, the climate is mild in summer and very cold in winter. The main crops grown in the north of China included millet and wheat. These crops were used to make noodles, which was the staple of the northern Chinese diet.

In the south, due to the wetter and warmer climate, Chinese farmers grew rice. It was also in the south that the mulberry trees grew. These trees were the food source of silkworms from which silk was made. This silk formed a large part of the trade that ancient China had with the rest of the world.

Two major rivers

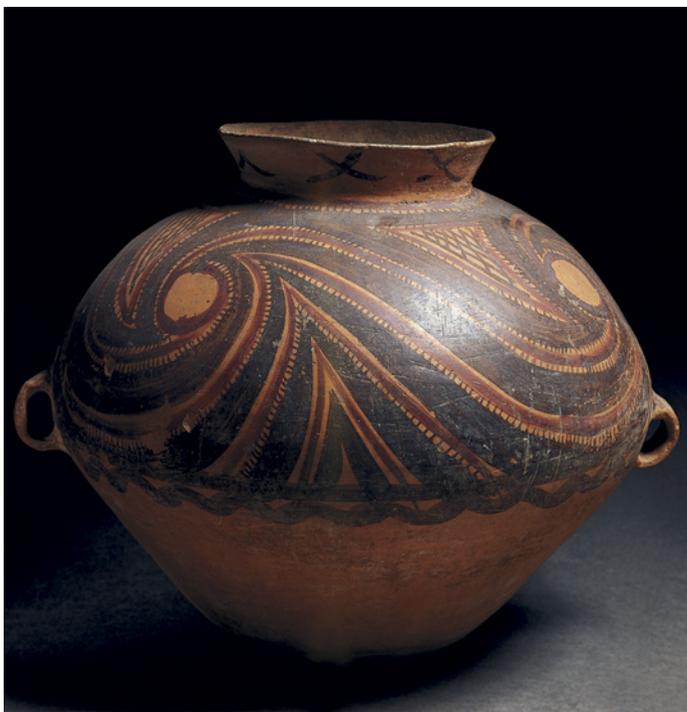
The rivers of China were also very important for the development of the country. The two major rivers, the Yangzi and the Huang He (Yellow River), are both over 5000 kilometres long. They were the main channels of communication and transportation in ancient times.



6.1.1 Ancient China

The flooding of these rivers was both good and bad for the Chinese people who lived alongside their banks. Millions died when the rivers flooded, both directly from the floods and indirectly from the famines that would often follow. However, the floodwater also left behind fertile silt that was essential in allowing the farmers to grow new crops to feed the people.

The first Chinese civilisations began along these rivers. Prehistoric people had been nomadic hunters and gatherers, but over time they began to settle in one place. The rivers provided the essentials for life: water and fertile soil. The Yangzi and Yellow rivers were the location of the first settlements in China.



6.1.2 An example of neolithic pottery from the Yangshao culture on the Yellow River, c. 5000–3000 BC

The settlement of Banpo was located near Xi'an in the Yellow River valley. This settlement has provided detailed archaeological evidence of what life was like in these early villages. One of the major archaeological finds at Banpo is a collection of pottery showing the skill and technology of early Chinese people (see Source 6.1.2).

Over time, these small settlements grew into towns and then into important cities, according to written sources from the first dynasties (successions of rulers).

The Gobi

The Gobi is a large desert in the north and north-west of China. This desert is one of the largest and driest in the world. As such, it did not have the resources that were necessary to support permanent settlements. The people that lived in the Gobi were nomads, which means they moved around and did not live in one place. They remained nomadic even after settlements began elsewhere in China.

Activities

Remembering and understanding

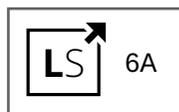
- a** List some of the modern countries that have borders with China.
b List the geographical features that form the natural borders around China.
- Explain why the ancient Chinese people regarded themselves as living in the centre of the world.
- a** Describe how the physical landscape of China changes from west to east and north to south.
b Outline what effect the physical landscape had on the development of agriculture in the various regions of China.

Applying and analysing

- Examine Source 6.1.1.
a Explain why the borders of China have not remained the same throughout history.
b Suggest a reason why the Great Wall of China does not exactly follow the borders of the country.
- Refer to the Timeline.
a When was silk first produced in ancient China?
b Explain the significance of the 'c.' next to the date on the timeline ('c.' stands for circa and means approximately).

Evaluating and creating

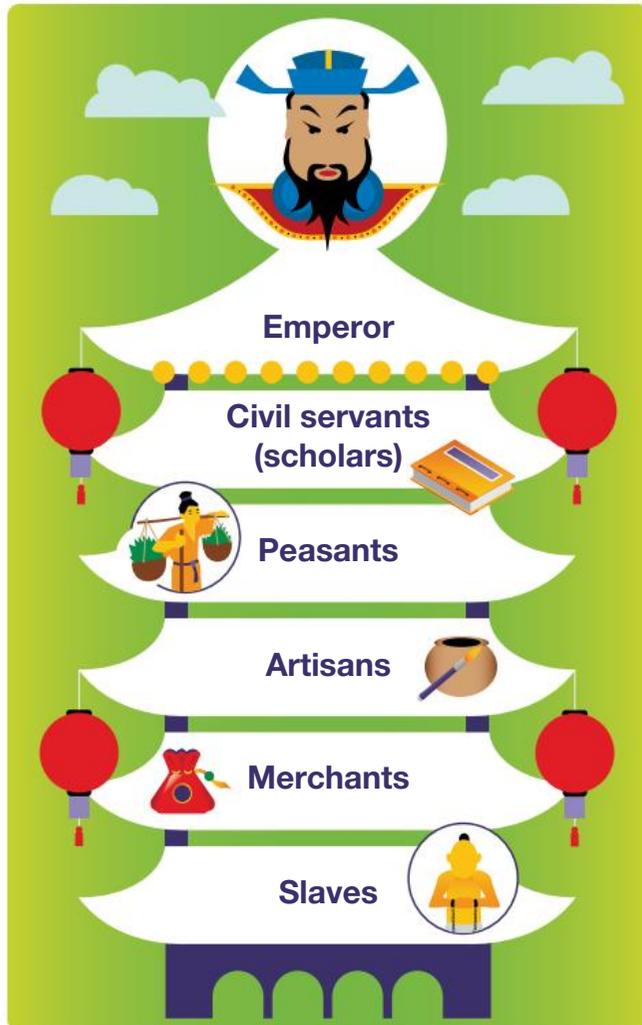
- Evaluate the importance of the two major rivers to the development of ancient Chinese civilisation.



6.2 Key groups in ancient Chinese society

Social organisation

Ancient Chinese society was strictly organised into classes. Source 6.2.1 shows how each group in society was placed during the Han **dynasty** (202 BC – 220 AD).



6.2.1 The social structure in ancient China during the Han dynasty (202 BC – 220 AD)

The emperor and the Mandate of Heaven

The emperor was the most important person in ancient Chinese society. He ruled from a variety of palaces. These tended to be built of stone and were often protected by walls and guard towers. The Chinese believed that the emperor had to be obeyed as he was chosen by Heaven to rule. This was referred to as the **Mandate of Heaven**.

To show obedience and respect, the people had to kneel in front of the emperor and touch the ground with their head. This action was known as ‘kowtowing’. The emperor was also the only person who could wear yellow silk as this was a sign of royalty.

An emperor could lose the Mandate of Heaven. When there were too many natural disasters, or when there was a series of wars that did not go well for China, a rebellion would often break out. If the rebellion was successful, the Chinese believed that Heaven had given the Mandate to the new leader, but if the rebellion failed, then Heaven still supported the emperor.

The position of emperor was passed from father to son, or to other male family members. This process created dynasties, or long successions of rulers from the same family. Each time a new leader succeeded in overthrowing the emperor, the dynasty would change.

Civil servants

Immediately below the emperor in social importance were the government officials in the civil service. These people were referred to as the **scholar-gentry**. They were called this because to become a government official or civil servant a man had to pass very difficult examinations. This meant that he needed to be highly educated. The examination system was based on the teachings of Confucius, who believed that a government needed qualified people to run it.

The Imperial Academy to train civil servants was established in 124 BC by Emperor Wudi. The examinations were open to any boy who was able to pass them (see Source 6.2.2).

It was not unusual for a rich nobleman to sponsor (support) a poor peasant boy from his estates to enter these examinations, as it would mean prestige (respect and admiration) for the noble, and for the peasant boy’s family and village.

Civil servants carried out the day-to-day running of the country. This occurred in much the same way as the public service operates today in Australia. The officials ensured that the emperor’s laws were obeyed. They collected taxes and managed public works.

Civil servants were also the emperor’s main source of information about the state of the country. They could report on issues such as civil unrest, natural disasters and the needs of the people.



6.2.2 This painting in the National Library of France shows Chinese scholars sitting the imperial civil service examination, early eighteenth century AD

Peasants

The peasant class made up 90 per cent of the ancient Chinese population. This class was the poorest of the free classes but were highly respected because they produced all the food.

The peasants worked very hard, using only basic tools to work the land. They rarely owned the land they farmed. This meant that they had to pay rent to the landowner. This rent was usually about 30 per cent of their produce but sometimes could be as high as 50 per cent.

In addition, peasants had to pay about 20 per cent of what they produced to the emperor in taxes. Peasants were generally taxed less than the wealthier merchant class (who were less highly regarded). Nevertheless, many peasants were left with very little income to support themselves.

Peasants worked with government officials to improve farming techniques. This included setting up irrigation projects (to provide water for crops) as well as better food storage facilities. The ancient Chinese had the best farming system in the ancient world.

Ancient Chinese peasants raised several different types of animals such as buffalo, goats, chickens and sheep. They also used oxen as working animals to pull their ploughs. Their main crops were barley, millet, rice and wheat.

The other role of the peasants was to help form the infantry (foot soldiers) in the army. This was compulsory, and many peasants died in battle due to lack of training and poor armour. If they were captured by the enemy, they were either executed or sold into slavery.

Artisans

Artisans were highly regarded people in society because they made things with their hands. These skills were respected. Artisans could produce items such as pottery, porcelain products, jade carvings, jewellery, lacquer wares and a variety of goods made from a range of metals, such as bronze.

Artisans were a small group within the society because only wealthy citizens could afford to buy their goods. Popular artisans could become quite rich this way. Artisans would train their children in their craft to ensure that their prized skills were kept within the family.

Merchants and traders

The least respected class in ancient Chinese society was the merchant and trader class. This was because they did not produce anything with their own hands. Instead, they bought and sold the goods that were made by artisans or grown by peasants.

Merchants and traders could become very wealthy. They were the people who travelled the most, and were the first to have regular contact with people outside China, along trade routes such as the Silk Road.

Different dynasties throughout China's history put restrictions on the activities of merchants. For example, merchants might not be allowed to live inside the walls of a town. They were also often not allowed to wear silk or ride horses, as these were signs of prestige in ancient Chinese society.



6.2.3 This painting depicts Chinese peasants growing and harvesting rice, thirteenth to fourteenth century AD

Slaves

The lowest class in ancient China were the slaves. Slaves were usually prisoners of war or criminals who had been sentenced to slavery. If the crime was serious enough, the entire family of the culprit (wrongdoer) could also be enslaved.

Sometimes, if a man could not pay his taxes he would have no other choice but to sell one of his children into slavery. This practice was, however, illegal.

Those who sell their children shall be punished for one year. [Those who sell] relatives of the same surname, who are their superiors or elders within the five grades of mourning, shall die. Those who sell their near relatives, or their concubines [unmarried women who were recognised as part of a man's household], or their sons' wives, shall be banished.

6.2.4 Extract from C. Martin Wilbur, *Slavery in China during the Former Han Dynasty, 206 BC – 25 AD*

The number of slaves in society varied during the rule of the different dynasties. It is known that slavery began during the Qin dynasty and was at its peak during the rule of the Han dynasty. Slaves worked in many occupations: in construction and building, as household servants and as government officials. The emperor and his court usually owned hundreds, or even thousands, of slaves at a time. Many female slaves served in the imperial palace.

Women

Women had the same status as the rest of their family. If they married, women took the status of their husbands. Despite this, women were not regarded as the equal of men in ancient Chinese society.

Very rich men would often have more than one wife.

Polygamy (the practice of having more than one wife or husband) was a sign of wealth. This practice was common in ancient China. The First Wife was the most important wife, particularly if she had sons to inherit the wealth of the family. She oversaw the other women and children in the household. This included her husband's other wives.

Another way a woman could rise to prominence was to become a **concubine**. These women were the mistresses of wealthy men. They would share his home with his other wives. They were also under the control of the First Wife.

The women in a wealthy man's home lived in their own part of the house where they were protected by eunuchs. These men were trusted and could become very powerful at court due to their position with the women.

The emperor would have several wives and concubines. The power struggle between the women could be quite fierce. This was especially so among the women who had sons with the emperor, as each woman wanted their son to be the next emperor.

Activities

Remembering and understanding

- 1 Outline the roles and responsibilities of the emperor.
- 2 Describe how a person could become a member of the scholar-gentry.
- 3 **a** What role did slavery play in ancient Chinese society?
b What type of slavery was considered illegal?
- 4 Use a PMI table to interpret the role of women in ancient Chinese society.

Applying and analysing

- 5 Examine Source 6.2.2.
a Which figure do you think is the emperor? Explain your reasoning.
b Identify the evidence in this painting that highlights the importance of the examination system in ancient China.
c Use a Venn diagram to compare and contrast this with the examination system used in Australian schools and universities today.
- 6 Use the information in this unit and Source 6.2.3 to discuss the role of peasants in ancient Chinese society in a short paragraph.

Evaluating and creating

- 7 Create a set of three criteria that a historian could use to confirm whether Sources 6.2.2 and 6.2.3 provide accurate representations of the ancient Chinese people.

6.3 Law and religion

Three major philosophies

Law and religion were very important aspects of life in ancient Chinese society. Both were deeply influenced by three major philosophies: **Confucianism**, **Daoism** and **Legalism**. All three schools (which means types) of philosophy were concerned with how to be a good person, how to create a good society, and understanding humanity's place within the world.

Confucianism

One of the most famous and enduring (lasting a long time) Chinese philosophies is Confucianism. This was based on the teachings of the philosopher Confucius (c. 551–479 BC). The true story of his birth and childhood is unknown. The legends surrounding his early life were written by the Han dynasty historian Sima Qian in the second century BC. What is known is that by middle age, Confucius had developed his philosophies and had gathered a group of disciples or followers who he taught his beliefs. Sima Qian and other sources claim that there were as many as 3000 disciples, while other sources put the number at around seventy.

The teachings of Confucius included a code to guide people's behaviour towards one another. For example, to preserve harmonious (peaceful) relationships with family members, you must show loyalty and obedience to your elders or betters. Therefore, a son must honour his father; a wife, her husband; a younger brother, his elder brother. Confucius believed that family relationships could be extended throughout society. So, just as a child was obedient to his or her father, so too a Chinese citizen should be obedient to the emperor. Confucius's teachings also said that the emperor should care for his people in the same way that a father cares for his children.

An important element of Confucianism was ancestor worship. This was the belief that a person's ancestors or dead relatives were able to influence people's lives. People would often have an altar or shrine to their ancestors in their homes. They would make offerings of food to these ancestor spirits.

Confucius believed that government officials should be chosen based on each individual's merit and ability. This was different to the more traditional approach, which was based on family and wealth. This explains why the civil service examination system was developed in the second century BC. Confucianism was the major philosophy underpinning Chinese life and government for about 2000 years. This only ended in the early twentieth century AD, with the collapse of the last Chinese dynasty.



6.3.1 A later portrait of Confucius; no paintings or sculptures of the influential philosopher survive from his lifetime

Did you know?

The first rulers of China were three half-human, half-divine beings: Fuxi, Nuwa and Shennong. Each of these beings taught important skills to the Chinese, such as how to tame animals.

- The three divine rulers were followed by five wise kings, or sage-kings, who ruled for the benefit of the Chinese people.

- **6.3.2** A painting of Nuwa (left) and her brother Fuxi, two of the three divine rulers of ancient China, mid-eighth century AD



Daoism

Another philosophical system was that of Daoism. This was based on the teachings of Laozi (c. 604–531 BC), who lived at about the same time as Confucius. He taught that living in harmony with nature was very important and would lead to happiness. This was called the Dao or ‘the way’. He also taught that government interference in people’s lives was unnecessary when people understood the natural world.

Laozi taught that the problems of the world occurred because people had turned away from nature in search of material possessions (things that they could own). Although it started as a philosophy, Daoism gradually developed into a religious belief system. Eventually it included gods, temples and priests to teach its beliefs. Artists and writers, in particular, were attracted to the teachings of Daoism.

Laozi taught that the Yin and the Yang were the two sides of nature. The Yin and the Yang refer to the dark and the light (see Source 6.3.3). The idea behind this was that people needed to have balance in their lives.



6.3.3 The Daoist symbol of Yin and Yang is today recognised around the world

Legalism

The philosophy of Legalism developed during the Warring States period (481–221 BC). This was a time of intense civil war and great uncertainty. Legalism proposed that for a society to achieve peace, its government needed a clear set of rules or laws. This included very strict punishments for wrongdoers. The basis of this belief was that people were essentially bad; for instance, they were selfish, greedy and full of fear. However, if people knew the consequences of their bad behaviour, they would be more inclined to do the right thing.

This belief taught people that the state was supreme or more important than the individual. All people, even the emperor, had to obey the law. Only then would peace be achieved. Legalism also taught that the emperor needed to be paternalistic. This meant that he should treat his subjects like a father would treat his children. At the same time, the emperor should not be too kind in case he spoilt his people. These two ideas came from Confucianism.

Activities

Remembering and understanding

- 1 Outline two key teachings of each of the three major ancient Chinese philosophies: Confucianism, Daoism and Legalism.
- 2 Describe how Confucius believed people should relate to each other for the good of society.
- 3 Explain your understanding of the significance of the Yin and Yang symbol.

Applying and analysing

- 4 Use your answer to Question 1 to help you complete the following questions.
 - a Compare and contrast the three philosophies in a three-circle Venn diagram
 - b In a group of three, debate the merits of each philosophical school and report the results of your discussion to the class.
- 5 Devise a T-chart to list and analyse the pros and cons of Confucianism-governing China for over 2000 years.

Evaluating and creating

- 6 Conduct research to find out why Confucianism fell into disfavour in the twentieth century. What conclusions can be drawn about the changes that were occurring in China at the time?

6.4 Everyday life

Daily life

In ancient China, the daily life of the people depended on their class and wealth. There was a great divide in the lifestyle of the peasants living on the land and that of town dwellers such as government officials.

Peasants

Peasants lived in the countryside as their occupation was growing food for the nation. Peasants made up 90 per cent of the population. The day-to-day life of peasants was very hard as it involved long hours and a great deal of manual labour.

The farming calendar

Farmers had to work year-round to produce food for the empire. They followed an annual farming calendar.

- ▶ spring: preparing the soil and sowing the new crops
- ▶ summer: caring for the crops
- ▶ autumn: harvesting the crops
- ▶ winter: complete maintenance on tools and other farming equipment.

Taxes

The peasants had to pay a tax of 20 per cent to the emperor on the produce from their farms. If they did not own their land, but rented it, they would also have to pay about 30 per cent of their produce to the landowner. In bad years, when the crops did not grow so well, the emperor often increased the taxes rather than reducing them. This made life even harder for peasants.

The emperor also required all peasants to spend 1 month every year working on his lands or to serve in the army. In peaceful times, the peasants would work on local projects such as roads and irrigation schemes in their community.

Food

The staple or main ingredient of peasant meals was rice or noodles and vegetables. While they kept some animals in the village, such as chickens and pigs, peasants rarely ate meat because they could not afford it. They might have hunted for some small animals or fished to add some protein to their diet. They often grew fruit trees near their homes, such as peaches or apricots, to supplement or add to their basic diet of grains and vegetables.



6.4.1 This painting shows Chinese peasants threshing, winnowing and sorting rice, thirteenth to fourteenth century AD

Women and children

Children of a peasant farmer were expected to help with the work on the farms. This happened as soon as they were able to help. Everyone in the family worked on the farm: men, women and children. Women were also responsible for the meals and the house. They were assisted by their daughters and daughters-in-law.

Despite peasants paying heavy taxes, the emperor or the state did not take care of them in times of hardship. This meant that sometimes parents were forced to either sell or kill their daughters because they could not support them. Sons were often safe because they had a duty to support their parents when they were old.

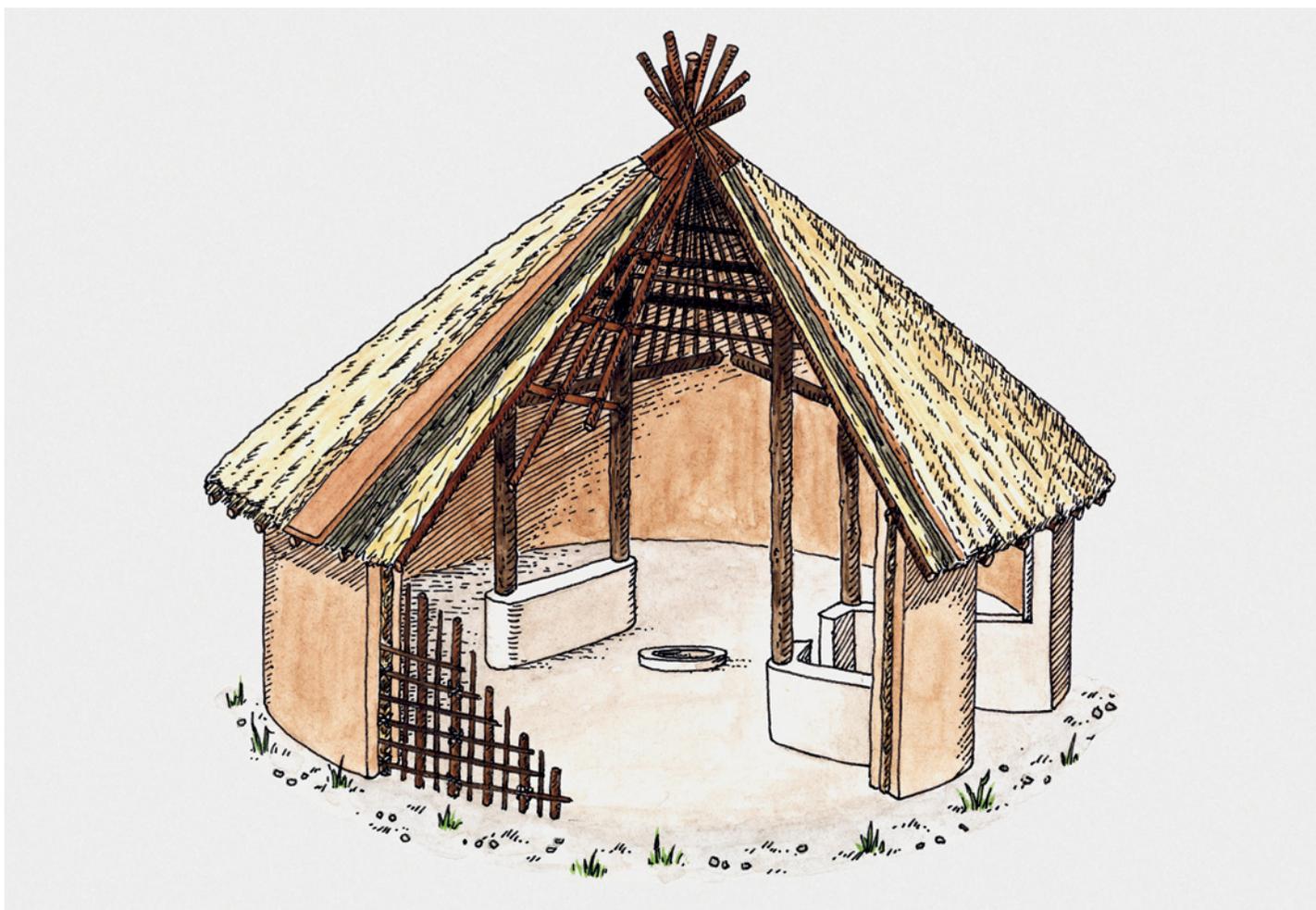
When daughters grew up, they married and left their childhood homes to live with their husband's family. When this happened, their day-to-day life remained the same. They were no longer under the control of their father or brother, but of their husband, father-in-law and mother-in-law. In time, they would take charge of the household.

Clothing

The peasants wore very simple clothing. It consisted of trousers made from a rough fabric called hemp. They would also wear a tunic tied in the middle with a belt. This was the same for both men and women. They would often go barefoot or wear straw sandals.

Housing

Peasants lived in small houses made from wood or mud with straw or tiled roofs. There would often be three generations living in each house. These houses were in villages, which often had a larger house for the landowner and a temple as well. The community would work together to decide on local projects that needed to be done.



6.4.2 Illustration of a Chinese peasant's wooden circular house with a thatched roof

Town dwellers

The emperor, artisans, scholar-gentry, merchants and traders all lived in, or very close to, the towns and cities. These groups made up about 10 per cent of the total ancient Chinese population.

Not all towns or cities had a palace for the emperor, but those that did had the emperor's palace as its central point. If the emperor did not have a palace in that town, there was usually some other central building. The richer people wanted to live as close as possible to the emperor, or the most important buildings in the town. This was because it was more prestigious to do so. The poorer people lived further away from the palace or major buildings.

Architecture

Each town was surrounded by walls to provide protection. Towns were also divided internally into sections or wards. Each ward was restricted to people of the same occupation. For example, all the butchers lived in one ward and all the metalworkers in another.

There were often markets inside one of the gates of the town where the traders would set up their stalls. People from all classes would come to shop there.

Houses varied in size reflecting the wealth of the owner. Houses in towns and cities were generally larger than the houses of the peasants in the countryside. The richest people had homes built out of stone or wood with tiled roofs.

Ancient Chinese society had many strict regulations that applied to the construction of residential houses, predominantly to distinguish between the houses of the common people and those of the wealthy officials. These regulations ranged from the layout of the house to its decorative aspect.

6.4.4 Extract from C. Yanxin, *Chinese Architecture*, 2011

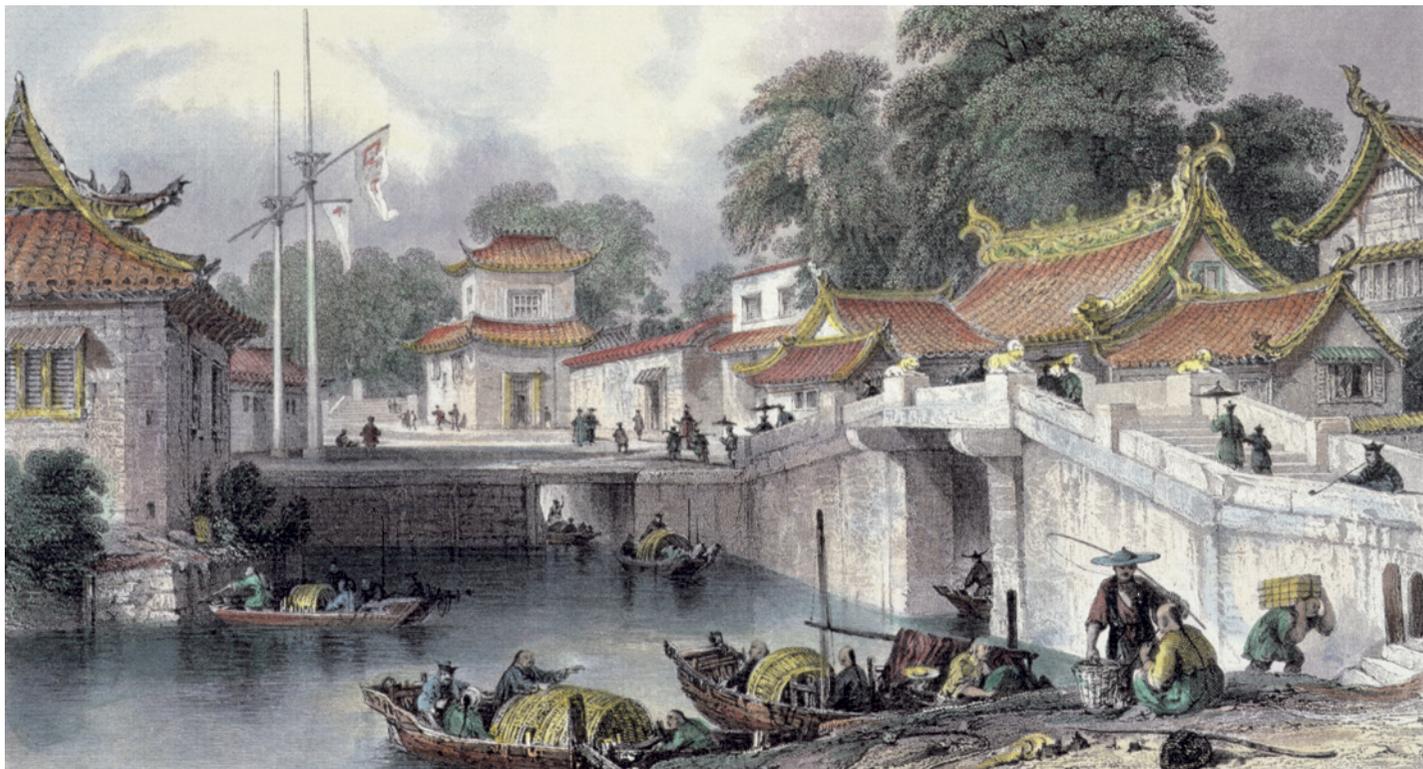
Food and clothing

The wealthy enjoyed a more varied diet than the poor. They could afford to buy meat and also ate more exotic foods such as snakes and snails.

Clothing for the rich indicated their rank. Only the wealthy could afford to wear silk. Jewellery was also a sign of wealth and status.

Children

Male children generally continued their father's profession. For example, the son of an artisan would also become an artisan. This was particularly true for the eldest son. An exception to this was when a talented but poor boy was sponsored by a wealthy patron to be educated to sit the civil service examinations. Daughters, like those in the country, would be married off by their fathers in an arranged marriage. They would then transfer their obedience and loyalty to their new family.



6.4.3 Ancient bridge over the river at Chapiro shown in a painting, c. 1850 AD



6.4.5 Reproduction of a twelfth-century AD copy of an original tenth-century AD painting by Gu Hongzhong called *Han Hsi-tsai's Night Revels*

Activities

Remembering and understanding

- 1 Outline the work of a peasant.
- 2 Create a table like the one below and fill in the blank cells based on the headings of the columns and rows.

	Rich	Poor
Houses		
Food		
Clothing		

Applying and analysing

- 3 Refer to Source 6.4.4.
 - a What was controlled by the regulations?
 - b Why do you think the regulations existed?
 - c Evaluate the accuracy of this source. Think about whether it is a primary or secondary source to help you with your answer.
- 4 Examine Source 6.4.3. How does this image support the information in Source 6.4.4?
- 5 Examine Source 6.4.5.
 - a Describe what you can see in this painting.
 - b Explain why a historian examining this image may hypothesise that this was the home of a rich family.
 - c Evaluate the accuracy of this source. Think about whether it is a primary or secondary source to help you with your answer.

6.5 Warfare

The beginnings of warfare

War was a common occurrence for ancient China over the centuries. There were both internal conflicts and wars with other nations. Warfare in ancient China began during the Shang dynasty (c. 1766–1122 BC), which ruled the area around the Yellow River.

The soldiers of the first Shang armies were peasants armed with only bronze or stone weapons led by chariot-riding aristocrats. Later, the Zhou dynasty (c. 1122–481 BC) introduced iron and bronze weaponry and the chariots became a reflection of the status of their owner.

War and religion

Conscription and Legalism

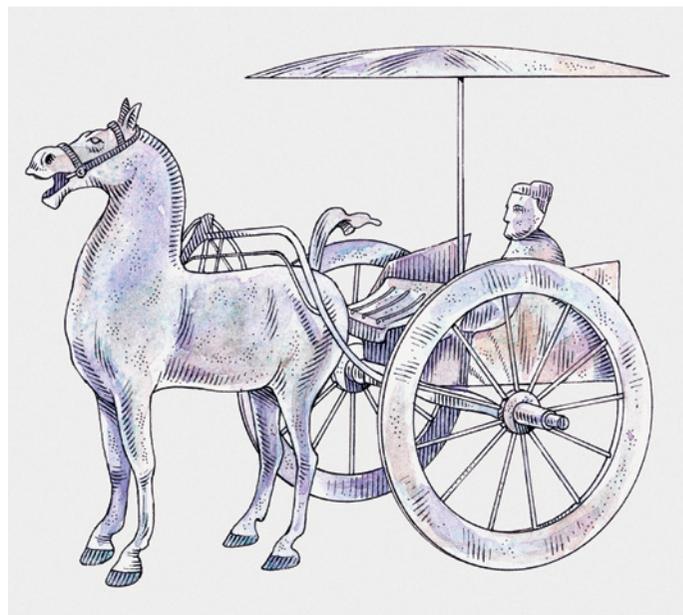
The foot soldiers or infantry were usually **conscripts** or peasant farmers who had been forced to fight by order of the king or emperor. Failure to do so would result in enslavement or execution. This fitted with the precepts (rules) of Legalism where punishment for offences needed to be severe to make sure other people did not commit the same offence.

The Mandate of Heaven

The Mandate of Heaven was believed to be given to the rightful ruler. When dynasties fell because they were defeated on the battlefield, it was believed this showed that the king or emperor had lost the Mandate of Heaven and was no longer fit to rule. This belief allowed the people to rebel against the emperor, but if they failed, the consequences were, again, severe, and in line with the precepts of Legalism.



6.5.1 Bronze spearhead from the Zhou dynasty, c. sixth century BC



6.5.2 An illustration of a Han horse and chariot

Two opposing belief systems

The other two major belief systems of ancient China had different attitudes to war:

- Daoism advocated living in harmony with nature, which conflicted with the realities of war when armies would advance across the landscape destroying farms and villages that stood in their way.
- Confucianism, on the other hand, taught obedience to the emperor, so it was perfectly compatible with loyal citizens following the emperor into battle and fighting for him.

The Art of War

Warfare was a constant state throughout the history of ancient China. As a result, war strategy and tactics became a topic that was discussed and explored thoroughly. Philosophers and military men regularly expressed their opinions on these topics. In about 400 BC, military strategist Sun Tzu wrote his famous treatise (formal piece of writing), *The Art of War*, which dealt with the theory and practice of warfare (see Source 6.5.4). Sun Tzu believed that war was a necessary evil. While he believed that war should be avoided whenever possible, he wrote that if a leader must engage in warfare, then the following key points should be considered:

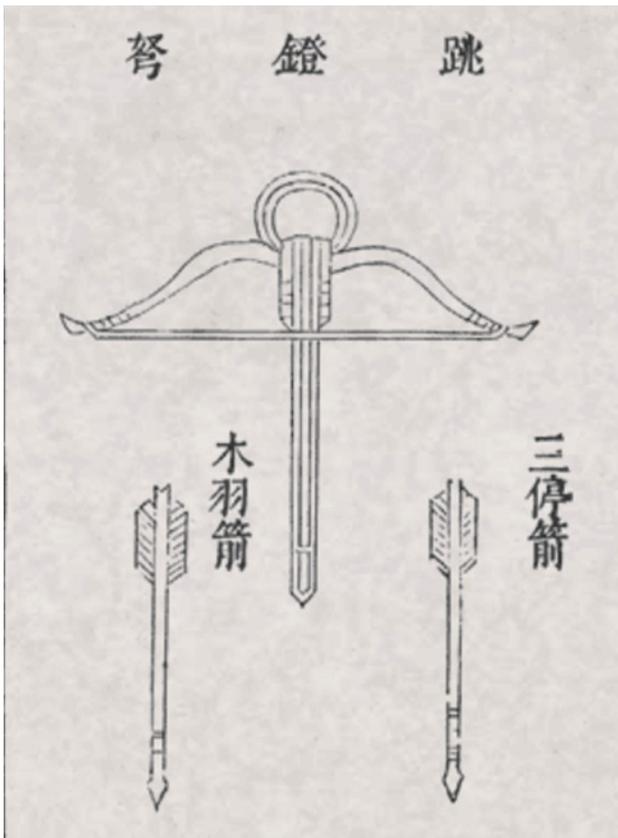
- the use of deception to gain victory
- avoiding battle on the enemy's terms
- the importance of military intelligence
- the impact of the army's morale on the outcome of conflict.

- 1 Generally in war the best policy is to take a state intact [not damaged]; to ruin it is inferior to this.
- 2 To capture the enemy's army is better than to destroy it; to take intact a battalion, a company or a five-man squad is better than to destroy them.
- 3 For to win one hundred victories in one hundred battles is not the same acme [highest point] of skill. To subdue the enemy without fighting is the acme of skill.

6.5.4 Extract from Sun Tzu's *The Art of War*

Did you know?

Historians are uncertain when the crossbow was invented in ancient China, but they believe it might have been in about 500 BC. The crossbow had many advantages over a normal bow. It required less skill and strength to fire, and it was also more powerful. The crossbow could fire a bolt over a distance of 800 metres. It took centuries for this technology to travel to other parts of the world. Europeans only began using the crossbow during the medieval period between 1200 and 1400 AD.



6.5.3 Illustration of a Chinese crossbow

Did you know?

The Art of War is still in print today. It is often applied to areas of life other than warfare, such as business, law and sports. People use the book's lessons to help them gain an advantage over their opponents. Soccer coach Luiz Felipe Scolari gave a copy to the Brazilian soccer team to help them win the World Cup in 2002.

Activities

Remembering and understanding

- 1 Why would peasants have been the most obvious choice for the infantry?
- 2 Why did the elite warriors decorate their chariots?
- 3 Explain why the discussion of military strategy and tactics became so important in ancient China.

Applying and analysing

- 4 Complete the following table to describe how warfare in ancient China was influenced by each belief.

Beliefs	Warfare
Daoism	
Legalism	
Mandate from Heaven	
Confucianism	

- 5 Examine Source 6.5.4.
 - a What is this source saying about conducting a war?
 - b Which of the major beliefs of the ancient Chinese does Source 6.5.4 appear to agree with? Explain your answer.

Evaluating and creating

- 6 With a partner, discuss the ways *The Art of War* is still relevant today. Synthesise three precepts (rules) that you would add to this treatise if you had the chance.

6.6 Death and funerary customs

Ancestor worship

Death and funerary customs in ancient China were dominated by ancestor worship. The ancient Chinese people believed that ancestors could influence the lives of their living relatives. Most houses had some form of altar at which food offerings were made. Customary rituals were held throughout the year to acknowledge or pay respects to deceased ancestors.

Funerals

Funeral services were usually held at temples or at offering halls. They were times when friends and relatives could come together and remember the person who had died.

Belief in the afterlife

Ancestor worship is closely linked with the ancient Chinese belief in an afterlife. The ancient Chinese people believed that after they died, they continued to do the things they had done when they were alive.

The dead were therefore buried with objects that they could take with them into the afterlife. This included things they could use such as clothing, jewellery, pottery, tools and weapons. The higher a person's social standing, the more elaborate these objects were. For instance, a jade burial suit, such as the one shown in Source 6.6.3, was something that would only be buried with a very wealthy person.

Tombs

In ancient China, burial tombs reflected a person's status in society. Wealthy people had large tombs. Poor people had burial tombs as well, but these were on a smaller scale and in a separate area of town to those of the elite.

Emperors were usually buried in elaborate tombs called **mausoleums**. Rulers would often plan and build their own mausoleum from the moment they came into power. These mausoleums were typically very large, consisting of various chambers above and under the ground. Underground chambers usually contained the coffins. The construction of mausoleums changed over time. Early wooden structures gradually evolved into structures made with bricks and rock.

Archaeologists have discovered various tombs from different dynastic periods. Each period shows different burial practices. Many of these discoveries involved the tombs of wealthy people.

Shang dynasty (c. 1766–1122 BC)

The tombs of the Shang dynasty show that wealthy people were buried with ritual vessels made of bronze. These vessels were the types that were used in ancestor worship. Historians have assumed that the Shang people believed that they would need to still worship their ancestors in the afterlife.



6.6.1 The Imperial Ancestral Temple in Beijing

Zhou dynasty (c. 1122–481 BC)

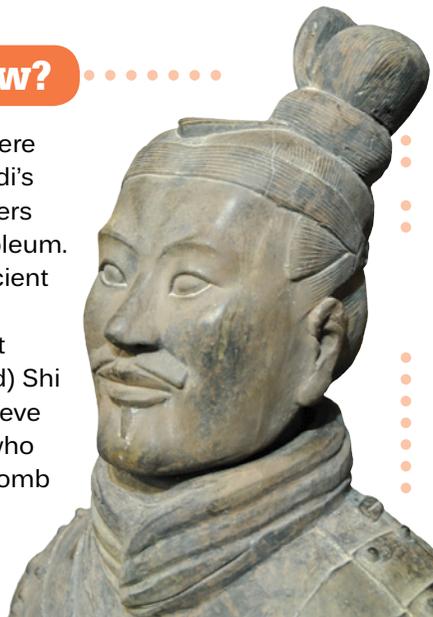
Under the early Zhou rulers, bodies were also buried with bronze goods. This was very similar to the earlier Shang burial customs. However, under the later Zhou rulers this changed as lacquer and jade objects were added to those made from bronze. The burial of the ritual vessels was also less frequent in the tombs from this period.

Qin dynasty (221–207 BC)

The Qin only ruled for 15 years, so their burial practices were hardly distinctive. Despite this, the tomb of the first Qin emperor, Shi Huangdi, is one of the most famous in the world. It was discovered by two farmers in 1974 and has since been made a World Heritage Site. Although the tomb itself has not been fully excavated, the finds around the tomb show the great wealth that was buried with Shi Huangdi. The most important of these finds are the thousands of terracotta warriors and horses that were buried underground with the emperor. These terracotta warriors are life-size replicas of his army, and were buried to guard Shi Huangdi's tomb (see Source 6.6.2).

Did you know?

Among those that were buried in Shi Huangdi's tomb were the workers who built the mausoleum. According to the ancient historian Sima Qian, the Qin emperor that succeeded (followed) Shi Huangdi did not believe that the craftsmen who had worked on the tomb should be able to reveal its secrets. As a consequence, he had them buried alive.



6.6.2 Terracotta statue, one of thousands, in the tomb of Shi Huangdi, Xian, China

Han dynasty (202 BC–220 AD)

Under the Han, the types of items that were buried with the wealthy became more elaborate. By the end of the Han period, there are tombs with replicas of buildings as well as other aspects of daily life. The items that were buried during this time still included jade and lacquer goods. Some of the bodies were even buried in suits made totally of jade (see Source 6.6.3).



6.6.3 Jade burial suit of princess Tou Wan, Western Han dynasty, late second century BC, from her tomb at Mancheng, Hebei province, China

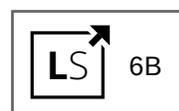
Activities

Remembering and understanding

- 1 What two belief systems governed death and burial customs in ancient China?
- 2 Why was it important to bury items that were used daily with the deceased person?

Applying and analysing

- 3 With a partner, compile a list of what an archaeologist might find inside the tomb of an ancient Chinese person (apart from a coffin).
- 4
 - a What types of tombs are usually found by archaeologists?
 - b How useful would tombs be to historians of ancient China? Explain your answer.



6.7 Contact and conflict

War and expansion

Ancient China was a self-contained nation. This means that because it was rich in natural resources, it could meet its own needs. Therefore, trade, one of the major reasons for nations seeking out other nations, was not important to the Chinese. Most contact between different peoples was internal, between the different states that made up ancient China. The main reason for such contact was territorial disputes, which led to war and expansion.

Xia and Shang dynasties (c. 2205–1122 BC)

Under the early dynasties, the area that we know today as China was much smaller. The Xia and Shang dynasties ruled only limited areas in the north of China. They had minimal contact with people outside the areas under their control.

For a long time, very little was known about the Xia and Shang dynasties. Only brief mentions of the dynasties were made in the ancient Chinese texts, the Five Classics and Sima Qian's *Historical Records*. Some historians doubted the existence of these two dynasties until Chinese archaeologists discovered an ancient Shang city at Anyang in the 1930s. Then, in 1959, the existence of the Xia dynasty was confirmed with the discovery of an even older city at Erlitou.

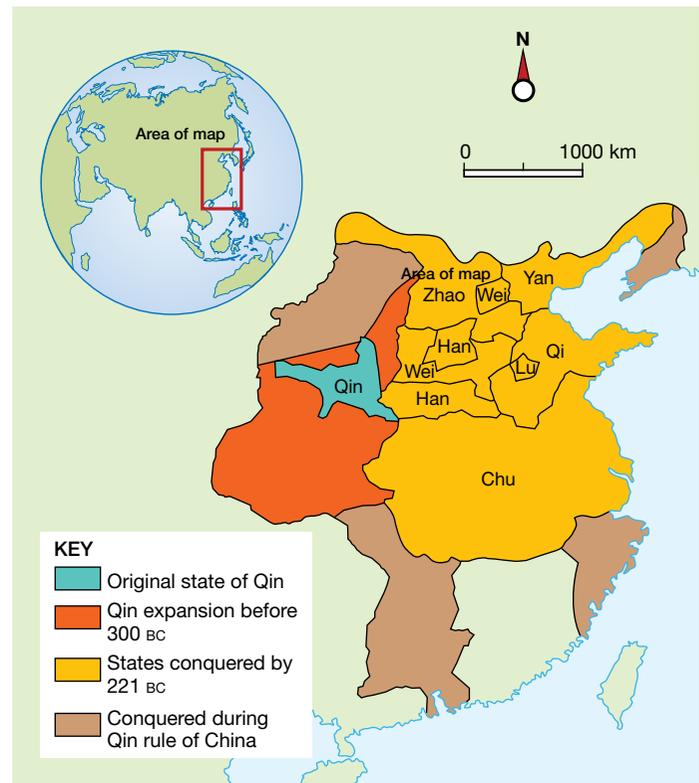
Zhou dynasty (c. 1122–481 BC)

Early Zhou rulers expanded their territory south of the area around the Yangzi River. This expansion resulted in the first major movement of people from the north to the south of China.

The Warring States period (c. 481–221 BC)

In the later Zhou period, the Qin started to move into the territory controlled by the Zhou. The Qin came from the north-west, while the Zhou came from further east. As the influence of the Qin began to grow, the Zhou moved further eastwards across China. When the Zhou dynasty collapsed, there was a lengthy period during which there was no clear ruler in China. This deadlock lasted for 250 years and it became known as the Warring States period.

During these unsettled times, there was very little contact with nations outside China. Many warlords at this time did their utmost (meaning that they tried everything they could) to keep out invaders by building walls to defend their territory. These walls were the beginnings of the Great Wall of China. At this stage it was a series of smaller walls rather than one large, single wall.



6.7.1 The different states that fought each other during the period of Warring States and the growth of the Qin Empire

Qin (221–207 BC)

In 256 BC, a new king of the Qin arose, King Zheng. He was determined to end the wars between the states. To do this, he needed to defeat the other states convincingly. He achieved this in 221 BC and named himself Shi Huangdi. Shi means 'first' and Huangdi translates as 'sovereign emperor'.

Shi Huangdi was a ruthless ruler, but he was able to expand his control into all the areas of China (see Source 6.7.1). He used the philosophy of Legalism to keep any opposition under control. After Shi Huangdi died, his successor only lasted 3 years before the Han dynasty took over.

The Great Wall of China

Shi Huangdi used the walls that had been constructed during the Warring States period as the basis for a public work project. He ordered that these walls be made into one long wall that would defend his new conquests against outsiders. Shi Huangdi made his new wall taller, wider and stronger with towers built at regular intervals. As a result, the Great Wall of China is now more than 5760 kilometres in length.



6.7.2 The Great Wall of China today

Han dynasty (202 BC–220 AD)

Under the Han, contact with outside peoples and countries occurred for the first time on a large scale. The Han period is often seen as the most glorious in ancient China. It was during this time that China expanded both in the north and in the west. Contact was also made with Europe and the Middle East along a newly created trading route, which became known as the Silk Road.

The great Han emperor Wu (141–87 BC) instructed the military to defeat the peoples threatening China from the north. After a determined campaign, the Han were successful in 119 BC. The defeat of these nomads reduced the threats from the north-west at that time. In later centuries, there were many more invasions from that region, including the Mongols in the thirteenth century AD.

In 109 BC, Emperor Wu expanded the Han influence into the area we now call North Korea. From Korea, the Han made contact with Japan, by crossing the Sea of Japan. This was one of China's first contacts outside the area of modern China.

By 102 BC, most of southern China was also under Han control. This resulted in many people who were not ethnically Han being deported from China. Their lands were given to Han people who moved into this part of the country.

Did you know?

- The Great Wall of China is sometimes called the longest cemetery on Earth. This is because over 1 million people died while it was constructed and they are buried within its walls.

The Silk Road begins

During the second century BC the ancient Chinese came into contact with many countries outside of China due to the development of the Silk Road. This major trade route allowed Chinese goods to be traded with the countries between China and the Mediterranean Sea, dominated by the Roman Empire at that time. Rich Romans enjoyed being able to purchase silks, pearls and porcelain products from China. China, however, did not want or need that much in return other than horses and gold. Under the Han, there was also a major expansion of China westwards, towards India. By the time the last of the Han emperors was overthrown, the land that we know as China was well established.

Activities

Remembering and understanding

- 1** Identify the main reason for the lack of contact between the ancient Chinese and other peoples outside China.
- 2** Explain how the different states within China came into contact.
- 3**
 - a** Which ruler was the first to unify China?
 - b** How did he do this?
 - c** How did his new name signify this?
- 4** List the places that encountered China during the Han period.

Applying and analysing

- 5** Devise a list of five to ten questions you would like to ask one of the Chinese archaeologists who discovered either the ancient city of Anyang or Erlitou.
- 6** Compare the ancient Chinese dynasties in terms of the length of time that each existed. Refer to the Timeline and information in this unit to help you with this task.

Evaluating and creating

- 7** Evaluate the importance of the building of the Great Wall of China to the rule of Shi Huangdi. (Hint: consider that walls keep people in as well as other people out.)

6.8 Consequences of contact

Changes over time

Ancient China was largely self-contained due to its geographical landscape. The ancient Chinese did not actively seek contact with others in the early years of their history. As a result, contact with other civilisations did not occur very often. Over time, as the different dynasties spread their influence over surrounding regions, the Chinese met other peoples in places such as Korea and Vietnam, as well as from the countries situated along the Silk Road. Some of this contact was peaceful, but at other times the contact was more warlike with an aim to conquer and expand.

Trade

Under the Han there was increasing contact with peoples across the known world. During this period, Roman ambassadors reached China. Historians know from Roman sources that there was a vigorous trade occurring between Rome and China at this time. Silk was being worn by wealthy Roman women during the first century AD (see Source 6.8.1), while first-century AD Roman glass has been found in China.

At the smallest reckoning, 100 million sesterces [ancient Roman coins] is the sum which every year India, the silk-growing country of northern China, and the Arabian peninsula take from our Empire. Such is the cost to us of our exquisites [luxury items] and our women.

6.8.1 Roman writer Pliny the Elder (23–79 AD) commenting on the silk trade, from his encyclopedia, *Naturalis Historia*, c. 79 AD

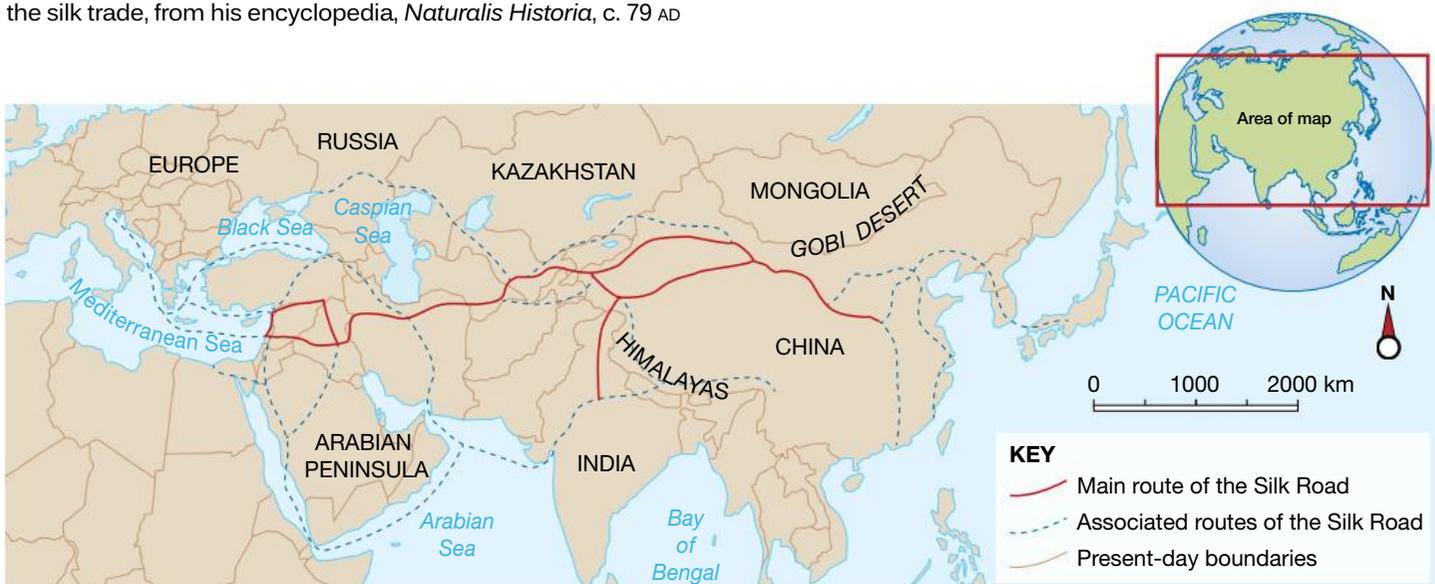
The Silk Road

Trade with far-flung empires led to the development of the Silk Road, a series of trade routes that linked the countries and empires of the Asian world with Europe (see Source 6.8.2). The Silk Road was a significant link for contact between the East and the West for many centuries. Activity along the trade route peaked during the thirteenth and fourteenth centuries AD under the Mongol rule of China. By the start of the fifteenth century, however, the Black Death in Europe and the collapse of the Mongol Empire in China led to its decline.

Culture and religion

Buddhism

Many historians believe that one major consequence of contact along the Silk Road was the arrival of Buddhism into China. Buddha (563–483 BC) was originally an Indian prince who became enlightened by ‘awakening’ to reality and teaching about his experiences. He lived about the same time as Confucius and Laozi (the founder of Daoism). Buddha taught that people can reach a state of nirvana, realise their full potential through increasing their good qualities, and live their lives in moral ways that do not harm others. This new teaching reached China via the Silk Road in the first century BC. Buddhism flourished (grew quickly) in ancient China, with later dynasties, such as the Tang dynasty (618–907 AD), adopting it as their formal religion.



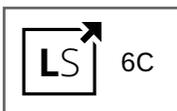
6.8.2 The Silk Road



6.8.3 Buddha figures at the Longmen Caves in Henan province, China

Spread of Chinese culture

The ancient Chinese had contact with other Asian nations such as Vietnam and Korea. Both peoples took on many of the practices and the culture of the Chinese. One example is the celebration of the Chinese New Year.



Later contact

Later, there was contact with other peoples, including interaction with the Eastern Roman or Byzantine Empire. This connection was maintained after the fall of the Western Roman Empire (c. 476 AD). According to Procopius (500–565 AD), a prominent Byzantine historian, the Byzantine emperor Justinian arranged for a number of silkworms to be smuggled into the Byzantine Empire in 552 AD to enable the setting up of their own silk industry. Nevertheless, the luxury goods produced by the Chinese, such as silk, were still highly prized by the people of Europe.

Activities

Remembering and understanding

- 1** State the reason why China did not have regular contact with other civilisations during its early history.
- 2** Identify three countries that had regular contact with ancient China during the different dynastic periods.
- 3** Name one example of the ancient Chinese having a peaceful influence on neighbouring countries.
- 4** Identify the new religion that reached China along the Silk Road.

Applying and analysing

- 5** Examine Source 6.8.1.
 - a** Was Pliny the Elder positive or negative about the silk trade?
 - b** Identify at least one piece of evidence from the source to support your answer.
- 6** Examine Source 6.8.2.
 - a** Using the scale shown on the map, calculate the distance along the main route of the Silk Road.
 - b** Identify at least three countries ancient China would have had contact with:
 - i** along the main route
 - ii** along associated routes.
 - c** Discuss with a partner what impact trade along the Silk Road would have had on ancient China and its trading partners. Use a T-chart to list the pros and cons of this interaction.

6.9 Significant individuals

Confucius

Confucius was born about 551 BC and died about 479 BC. This means that he lived during the Warring States period of Chinese history. This was a time of great discontent (unhappiness) and instability in ancient China. Confucius was a teacher and philosopher who saw the problems in his world and developed ways for people to live a better life. The religious philosophy based on the teachings of Confucius underpinned ancient Chinese society for the next 2500 years.

The *Analects*

The teachings of Confucius were compiled by his followers into a book called *Analects*. This book contains his discussion and thoughts on the philosophical questions that he pondered for the whole of his life. These questions focused on ideas such as how a person could live a good life and how to develop a good and stable society with good government.



6.9.1 A portrait of Confucius carved on a stone stele (pillar), Shaanxi Provincial Museum, Xi'an, Tang dynasty (618–906 AD)

The five virtues

Confucius's principles of good conduct were summed up by his five virtues. These are outlined below.

- integrity: do what you promise to do and fulfil your obligations to others
- humaneness (or altruism): do to others what you would have them do to you
- righteousness: do what is right and just
- etiquette (or propriety): show your respect by following customs and rituals
- knowledge: find out as much as you can about the world and avoid errors due to ignorance.

Contemporary views of Confucius

The *Analects* contains observations of how Confucius demonstrated his teachings in the way he lived his life.

Confucius, at home in his native village, was simple and unassuming in manner, as though he did not trust himself to speak. But when in the ancestral temple or at Court he speaks readily, though always choosing his words with due caution.

When at court conversing with the officers of a lower grade, he is friendly, though straightforward; when conversing with officers of a higher grade, he is restrained but precise. When the ruler is present he is wary, but not cramped.

When sending a messenger to enquire after someone in another country, he bows himself twice while seeing the messenger off.

6.9.2 Extracts from the *Analects*, book 10

A sage-king of old

By the end of the fourth century BC, Confucius was generally revered (or very well thought of and respected) by all. A later philosopher, Mencius, stated, 'Ever since man came into this world, there has never been one greater than Confucius.' Later in his writings, Mencius went on to claim that Confucius was 'one of the great sage-kings [of old] who, ... arises every five hundred years'. As stated earlier, Confucian principles came to underpin all Chinese society for more than 2500 years.

Qin Shi Huangdi

Qin Shi Huangdi was the first emperor of a unified China. He became King Zheng of the Qin as a young boy. He was able to lead the Qin to victory over the other Chinese states that had been at war with each other for many years. In 221 BC, Qin Shi Huangdi finally completed his aim and China became one nation.

As emperor, Qin Shi Huangdi was a ruthless leader. He used the principles of Legalism to impose his rule on his people. Legalism was based on the belief that for a society to achieve peace, its government needed a clear set of rules or laws and strict punishments for those who disobeyed. Qin Shi Huangdi introduced several reforms or changes to society to strengthen his authority and to enable him to rule his new empire more easily.

Standardisation

Before the Qin Empire, each state or region of ancient China spoke a different dialect (their own type of Chinese). Each state also differed in other aspects. For example, they used different written languages and currencies or money, they measured weights and distances in different ways, and their vehicles varied in size and roads were built to suit the width of the vehicles.

All these differences made it very difficult for a stable economy to develop across ancient China. This was because it was hard for merchants to trade easily with each other.

Qin Shi Huangdi introduced changes to standardise all these different systems (see Source 6.9.3).

6.9.3 Standardisation reforms of Qin Shi Huangdi

Language	changed the number of written characters to make one written language for all to use
Currency	introduced a single currency
Weights and measures	created a standard set of weights and measures that all must use
Transport	set a uniform axle length (distance between wheels) for carts to improve transport on all roads
Tax	introduced a consistent land tax system

The Code of Qin

Qin Shi Huangdi also introduced harsh laws under his new legal system known as the 'Code of Qin'. Again, the ideas of Legalism had a strong influence. These new laws were thorough and specified clear punishments for all sorts of crimes. Murderers were generally executed, sometimes by being tied to wagons and ripped apart. Those accused of crimes such as violence or stealing faced being mutilated as part of their punishment, including the amputation of both feet or the nose. They could also be sentenced to forced labour or flogging (being whipped). Some physical punishments could be avoided by paying fines.

Punishment of the scholars

Qin Shi Huangdi did not allow any criticism of his rule. From about 213 to 210 BC he set in place a policy of destroying all opposition by the scholars (educated people) of the empire. Books were burnt, and many scholars were executed (see Source 6.9.4). Supposedly, one extreme example was the act of burying alive 460 scholars who opposed Qin Shi Huangdi.



6.9.4 This painting shows Qin Shi Huangdi overseeing the burning of books and the punishment of scholars

Activities

Remembering and understanding

- 1 What types of questions were asked by Confucius in the *Analects*?
- 2 List the five virtues of Confucianism.

Applying and analysing

- 3 Explain how the writings of Mencius provide evidence of the way that Confucius was respected in ancient times.
- 4 Analyse how the concept of Legalism influenced the decisions that Emperor Qin Shi Huangdi made during the time he was leader of ancient China.

6.10 Legacy of ancient China

Chinese inventions

Although ancient China was geographically isolated for a very long time, its technologies and inventions eventually spread throughout the known world. This occurred along trade routes such as the Silk Road, leaving us with a rich legacy from the ancient Chinese past.

Silk

Historians believe that the ancient Chinese had developed the skill to make silk from the cocoon of silkworms as early as the Shang dynasty (1766–1122 BC). The silk threads are unravelled after soaking the silkworm cocoon in hot water. The threads are then woven together to make a soft, luxurious material that can be dyed bright colours. Silk was traded along the Silk Road into Persia and the Roman Empire. In these places it became a clear sign of wealth. The Chinese guarded the secret of making silk for centuries.



6.10.1 A painting showing women producing silk

Paper

The Chinese invented paper in the late first century to early second century AD. Earlier writing materials were bamboo, shells and wood. But these materials were often heavy and unwieldy. The ancient Chinese wanted a lighter, more flexible material to write on. The first paper was made from the cocoons of silkworms, but was quite expensive to make, so a cheaper material was sought. The ancient Chinese found hemp (a fibrous plant) to be an inexpensive, easy solution. Papermaking began with soaking the raw materials. These were then pounded together to make one material that was then flattened and left to dry.



6.10.2 This paper banknote has survived from 1374 AD, when it was used in China

Medicine

The ancient Chinese were very advanced in medicine compared to other civilisations of the time. The earliest known book of Chinese medical knowledge was compiled in about the first century BC. It was based on earlier medical treatises. From the time of the Zhou dynasty (1122–481 BC), the Chinese were aware of the importance of the food they ate and how diet affects the body. They used acupuncture to control pain and to heal ailments (sickness and injuries). The ancient Chinese doctors also favoured the use of herbs and herbal remedies for health.

The first compasses

The ancient Chinese developed the first compasses sometime during the fourth century BC. They were lodestone compasses consisting of a spoon made of lodestone (a stone with magnetic properties) and a bronze plate (see Source 6.10.3). The spoon pointed south, and the bronze plate was marked with symbols of Heaven, Earth and the eight main compass points. These compasses were used primarily for divination (foretelling the future) and other magical purposes.

Skills builder

Analysing cause and effect

To study how and why events happened in the past, it is useful to study cause and effect. Often, cause and effect will occur in chains of linked events that combine to produce economic, social and/or political change. Individuals, groups and movements can all play a role in shaping, promoting and resisting change.

One of the main skills historians need when analysing cause and effect is the ability to locate information relevant to what they are studying. This is called research. This project allows you to choose a topic, and to develop some research and presentation skills as you learn about the topic.

Students (in pairs or small groups) are to choose one of the following topics.

- The Great Wall of China
- Emperor Wu
- The Silk Road

- Three major philosophies of China: Confucianism, Daoism and Legalism
- Life in China under the Han dynasty
- Sun Tzu and *The Art of War*
- Confucius
- Qin Shi Huangdi.

In your research, you should complete the following tasks:

- 1 Identify the dates associated with the topic.
- 2 Locate at least three sources from ancient times that relate to the topic.
- 3 Identify links between the causes and effects relating to the events, people, ideas or movements associated with that topic.
- 4 Distinguish between the long term (trends) and short term (triggers) causes of events associated with your topic.
- 5 Write an evaluation of the importance of your topic to the ancient Chinese world.



6.10.3 An ancient Chinese lodestone compass

Other ancient Chinese inventions

The ancient Chinese developed many other significant inventions. Some of them are listed in the following table.

6.10.4 Early Chinese inventions

6th century BC	crop planting in rows to improve watering, weeding and harvesting
4th century BC	iron plough to create furrows for planting
2nd century BC	seed drill to plant seeds into the ground evenly and cover them with soil
1st century BC	deep drill to dig boreholes as deep as 1.5 kilometres into the ground to access natural gas
1st century AD	ship's rudder to improve steering of a ship

Activities

Remembering and understanding

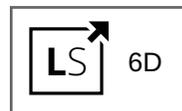
- 1 Why was silk such a popular luxury item?
- 2 List at least two ways in which the ancient Chinese were medically advanced.

Applying and analysing

- 3 With a partner, create a PMI table about the implications of the invention of paper.
- 4 Explain how a lodestone compass was designed. How was it used by the ancient Chinese people?

Evaluating and creating

- 5 Examine Source 6.10.4. Rank the inventions listed in order of importance, from most to least significant. Give reasons for your ranking by evaluating the long-term significance of each invention.





Ancient India

H1

Ancient Indian civilisation began in about 2600 BC in the valley of the Indus River. Ancient India was characterised by sophisticated thought, beautiful art, power and wealth. This ancient civilisation also had an incredibly diverse population and culture. From this culture developed the great Indian religions of Hinduism, Buddhism and Jainism. There were also significant advances in mathematics, astronomy and medicine.

OVERVIEW QUESTIONS

- H1A** What geographical features helped to shape the development of civilisation in ancient India?
- H1B** What was life like in ancient Indian villages and towns?
- H1C** Why were funerary rituals practised in ancient India?
- H1D** How did ancient India avoid being conquered by outside forces?

GLOSSARY

Aryans a group of peoples who began arriving in India via the Hindu Kush mountains in about 1400 BC. Most Indians trace their descent from these groups

atman the soul of the person in Hinduism

brahman the single source of all creation in Hinduism

brahmin the *varna* (class or caste) of priests in ancient Indian society

guru a wise teacher; for example, a sage (knowledgeable person) who teaches disciples (students)

moksha the freedom from being born again into the world; a person's release from the cycle of rebirth through his or her achievement of supreme wisdom

raja kings of ancient India, usually from the *Kshatriya varna*

rishi holy wise men who advised rajas (kings)

Shiva one of the main Hindu gods; the creator and destroyer of life

shreni the artisan or merchant guilds (organisations) that helped ancient Indian trade with China and Rome prosper

varna classes or castes of ancient Indian society

Vishnu one of the main Hindu gods; the divine saviour of humans



Before you begin

H1.0.1 One of the four gateways to the Great Stupa at Sanchi; the stupa itself (the dome in the background) was commissioned by the famous Indian ruler Ashoka in the third century BC

Timeline

Ancient India

Ancient India traces its origins back many millennia to the early settlements of the Indus Valley. Ancient Indian civilisation was shaped by the region's unique geography and was home to some of the world's major religions and philosophies. Ancient India had a rich and varied culture, and was advanced in many areas including art, maths and science.



The Hindu god of prophecy, Ganesha, has an elephant head and is associated with intellect, wisdom, the arts and sciences

4000 BC (BCE)

First settlements in the Indus Valley

1750 BC

Harappa declines

2600 BC

Great cities of the Indus Valley civilisation established

4000 BC

3000 BC

2000 BC

1000 BC

3000–1400 BC Indus Valley civilisation

2300 BC

Harappa flourishes

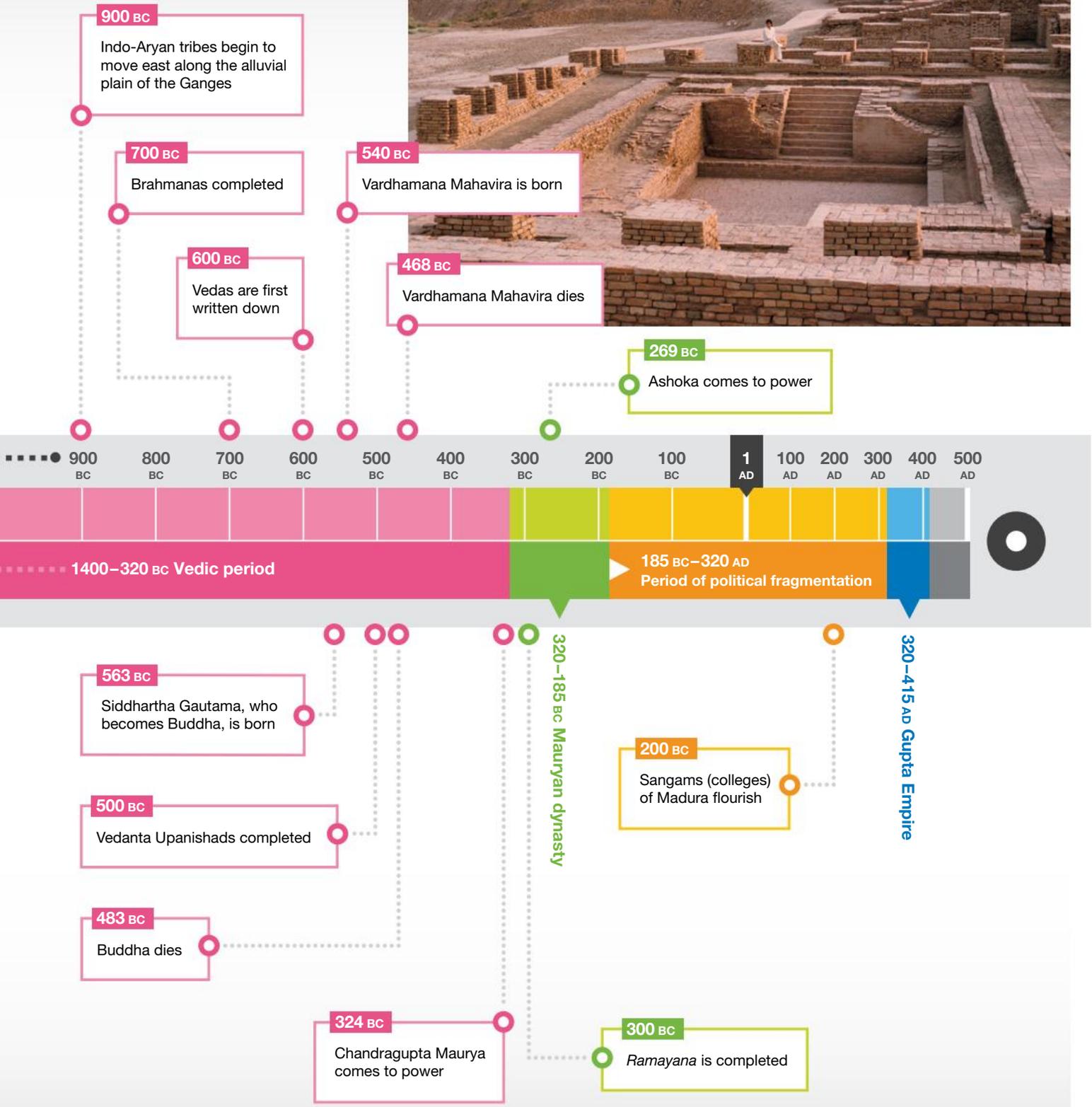
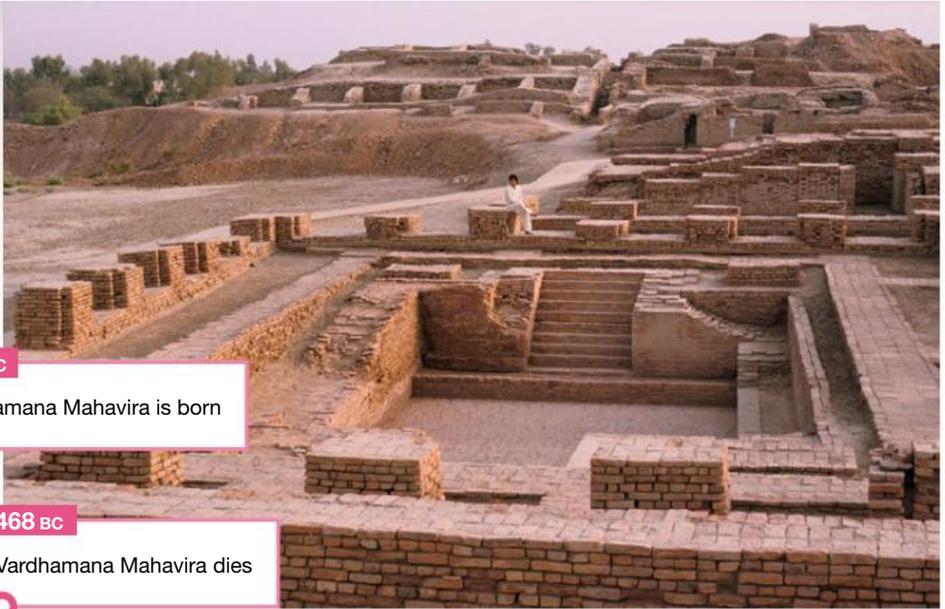
1400 BC

Aryans from the north-west begin to arrive over the Hindu Kush, bringing the Veda

A girl from the untouchable caste carrying granite blocks



A hypocaust was a type of central heating system used in ancient times; this one is in Mohenjo-Daro in southern India



H1.1 Geography of ancient India

Setting and natural features

Ancient India occupied territory that is now part of present-day India, Pakistan and Bangladesh (see Source H1.1.1). India's three major zones contain nearly every kind of topography, climate and landform (see Source H1.1.2).

Geography shaping history

India's unique geography influenced the development of the ancient Indian civilisation.

Earliest human traces

The earliest trace of human habitation in India can be seen in flakes of stone found in the Soan Valley in northern India. The men and women who produced these flakes to use as tools had migrated over the Hindu Kush or Himalayan Mountains into India. This occurred sometime between 100 000 and 60 000 BC.

H1.1.2 India's three major geographical zones

Northern India

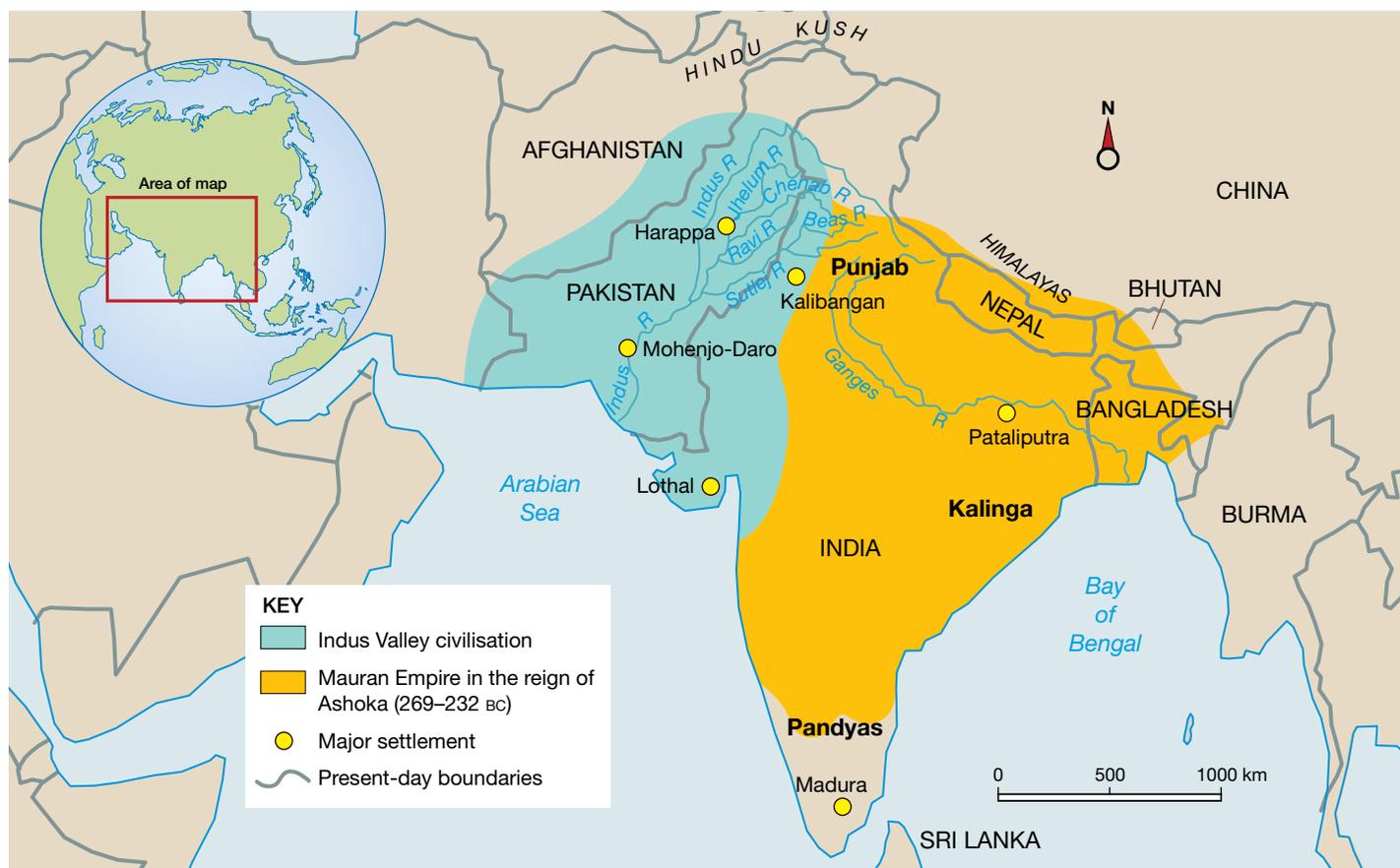
The mountains in the north provide protection from invaders and Arctic winds. The Himalayan ice and snow from this area provide water and silt for the alluvial plains (flooded area rich in clay, sand and/or silt deposits) further south.

Central India

The centre's giant alluvial plain, which is covered in nutrient-rich sediment, receives the seasonal monsoon rains. It is the home of the Indus River (after which India is named) and 'Mother Ganga', or the Ganges, India's most important river. The Ganges is worshipped as a goddess by Hindus.

Southern India

The large mountain mass in the south might originally have been part of East Africa. It forms a natural barrier between northern and southern India. Much of southern India experiences drought as the area is dependent on rain for water.



H1.1.1 Ancient India



H1.1.3 The Nilgiri Hills, part of the Western Ghats, a mountain range in south-west India

Indus Valley settlement and civilisation

During the fourth millennium BC, settlements further south, in the Indus Valley, had been established. The Indus Valley plain is very similar to the Nile Valley of ancient Egypt and the Tigris–Euphrates Valley of ancient Sumer. All three valleys provided good land for farming. Natural fertiliser came in the form of silt from the annual flooding of the Indus River.

Different crops were grown in different parts of the Indus Valley. The western plain was suitable for rice cultivation. On the eastern plain and in northern Punjab, wheat, barley and millet were grown. By 2600 BC, these early settlements had developed into the great cities of the Indus Valley civilisation (Harappa, Mohenjo-Daro, Kalibangan and Lothal) and they flourished for the next 900 years.

Iron and its impact

India's geography influenced the settlement of central and eastern India. In the tenth century BC, Indo-Aryan tribes began to move eastwards along the alluvial (flood) plain of the Ganges, which was a major river. As the area was made up of thick jungle, iron tools like axes and ploughs were needed to clear the jungle and plough the rich soil. This had not been possible beforehand as the Indo-Aryans did not know about iron before this time.

Did you know?

The settlements established in the Indus Valley during 4000 BC developed into the great city of Harappa, an area in the north-west of ancient India. Archaeological evidence suggests that Harappa declined, or changed for the worse, after about 1750 BC. Homes became smaller, and the quality of pottery and drainage systems deteriorated. At Mohenjo-Daro, homes were abandoned, and jewellery and precious objects were found hidden in elevated places; some skeletons were found trapped under rubble. An early theory was that Aryan invaders from the north overran the cities. Newer theories suggest plate movements in the Earth's crust caused major flooding and permanently altered the course of waterways including the Indus River. Unable to grow crops, people abandoned their homes.

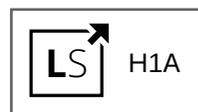
Activities

Remembering and understanding

- 1 Refer to the Timeline. How many years elapsed between the first evidence of humans in ancient India and the development of the great cities in the Indus Valley?
- 2 List the three present-day countries which were once part of ancient India.
- 3 Outline how the discovery of iron influenced the settlement of ancient India.

Applying and analysing

- 4 Distinguish between each of the three major Indian geographic zones by completing a Y-chart for each. In each section of your Y-chart, write the headings: 'Looks like', 'Feels like', 'Sounds like'.
- 5 Write a paragraph that discusses three ways that ancient Indian geography shaped the settlement and civilisation of the Indus Valley.



H1.2 Social organisation

Aryan migration

The main form of social organisation in ancient India developed from about 1400 BC. At this time, a group of peoples known as **Aryans** (meaning noble or high-born) began arriving in India via the Hindu Kush mountains to the north-west. They brought what is referred to as 'Vedic culture' with them, a culture from which Hinduism, Jainism and Buddhism later sprang.

The Aryans established small hereditary kingdoms and inhabited the 'Land of the Seven Rivers'. These rivers were the Jhelum, Chenab, Ravi, Beas, Sutlej, Indus and Sarasvati.



H1.2.1 An ancient battle scene, taken from the epic *Razmnameh* (one of the two great Vedic epics). It shows two great Aryan warriors, Arjuna and Bhishma, in their war chariots attacking one another.

Aryan political, social and economic life

The Aryans who crossed into India lived in tribal groupings called janas. Each tribe had a **raja** (king), **brahmins** (priests) and vish (commoners). The role of *brahmins* was particularly important because they were responsible for memorising Vedic hymns and performing sacrifices. Although each Aryan tribe was self-governing, they were united against non-Aryan 'dark' enemies called dasas.

The Aryans rode chariots harnessed to horses and used weapons such as the bronze axe and longbow. Chariot racing was the leading sport. They also loved music, wine and gambling.

Aryan families

Aryan families were patriarchal (controlled by the father). Sons were prized which means that they were highly valued by their parents. The sons helped to care for the herds of animals and could bring honour in battle; they were also the only ones who could carry out a father's funeral correctly. Daughters were not valued in Aryan society. This was mainly because when they married, their families would have to pay a dowry to the groom's family (usually in the form of money, jewellery, household goods and cattle).

Did you know?

- The horse sacrifice was an important ritual performed by rajas in this period.
- A great white stallion was allowed to wander freely for a year. A troop of royal horsemen followed the horse and claimed any land looked at or trodden on by the horse. The horse was then driven home. Rituals were performed and the raja's wives were involved in the ceremonies. The animal was then killed and quartered (cut into pieces).
- This ritual was done to increase a raja's realm (meaning the area under his control or influence) and to prove his prowess (skill).

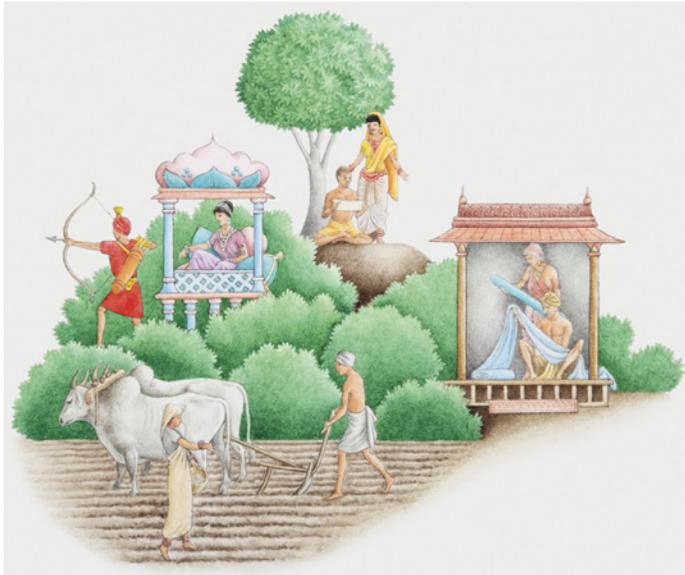
A class system

Over the next 400 years, Aryans became Indo-Aryans. They were no longer just nomadic herders (people who moved around with their animals), but also farmers, who settled and lived in one place. Their economy had changed as well. The social structure also became more complex as they conquered new peoples.

The new system saw rajas rule with the assistance of *kshatriyas* (warriors) and household elders. Rajas were also expected to seek advice from *rishis* or sages (holy wise men). Everyone in Indo-Aryan society also became members of one of four *varnas* (classes), sometimes called 'castes'. Each *varna* was ranked, and associated with a colour and a part of the male body (see Sources H1.2.2 and H1.2.3).

H1.2.2 The four varnas

Varna	Name	Colour	Part of body
First	Brahmins (priests)	white	head
Second	Kshatriyas (warriors and rulers)	red	arms
Third	Vaishyas (merchants)	brown	thighs
Fourth	Sudras (farmers, craftsmen and labourers)	black	feet



H1.2.3 Illustration of ancient Indian caste system showing Brahmins, Kshatriyas, Vaishyas and Sudras

Sudras

The lowest of the four varnas, Sudras, were not permitted to hear or study the Vedas, which were sacred religious texts. In fact, later Vedic legal texts prescribe (suggest) pouring molten lead into the ears of any sudra caught listening to the Vedas!

Sudras were involved in manual labour. This included occupations like carpenters, wheelwrights (person who makes or repairs wooden wheels), blacksmiths, weavers, spinners, farmers and herders. Most historians believe the sudras were the pre-Aryan occupants of the land. The colour associated with their *varna* (black) may refer to their darker skin tone.

The untouchables

As more peoples were subjected to Indo-Aryan rule, an even lower *varna* than sudras was created. This was the lowest of all the classes. This group was known as 'fifths' or 'untouchables'. The untouchables could only work as butchers, tanners, latrine (toilet) diggers and the like. Such occupations were considered spiritually polluting.

Jati

All Indo-Aryans were also part of a birth group called a *jati*, which means 'thus born'. *Jati* may refer to the community, occupation or tribe a person is born into.

Activities

Remembering and understanding

- 1 Write a paragraph explaining the difference between *varna* and *jati*.
- 2 Draw a simple cartoon strip or storyboard that illustrates the horse sacrifice.
- 3 Explain why daughters were not valued in Aryan society.

Applying and analysing

- 4 Draw a graphic representation of the early Aryan social structure. Next to it, draw a graphic representation of the later Indo-Aryan social structure. Annotate the representations to show key similarities and differences.
- 5 Using a PMI table (a three-column opinion table showing the **Pluses**, **Minuses** and **Interesting** aspects of the topic), analyse the Indo-Aryan class system. Consider views and values of the time, and views and values today.
- 6 Examine Source H1.2.1. How reliable is this as a historical source about the Aryan period? Explain your response.
- 7 Refer to the Timeline. Identify evidence involving the movement of peoples throughout ancient Indian history. What link is there between this and the development of Indian culture?

H1.3 Religion

The Vedas

There is very little archaeological evidence for the earliest period of ancient Indian history. Historians must rely on a large body of religious texts written in Sanskrit called the Vedas. It was not until about 600 BC that the Vedas were written down. Before then, they were transmitted (meaning passed on) orally by word of mouth. The great Indian religions of Hinduism, Buddhism and Jainism all have their origins in the Vedas.

The Rig Veda

The oldest Veda is the *Rig Veda*. It consists of 1017 Sanskrit poems addressed to various Aryan gods. Historians usually group the *Rig Veda* with three other ancient collections of poems: the *Sama Veda*, the *Yajur Veda* and the *Atharva Veda*. Commentaries about the Vedas were produced between 1000 and 700 BC. These commentaries are like written discussions and are called the Brahmanas.

Gods

Ancient Indians worshipped many gods. Thirty-three are mentioned in the *Rig Veda*. In the early period of ancient Indian history, the most powerful gods were Indra, Varuna, Agni and Soma. In the later period of ancient Indian history, the most powerful gods were the Hindu gods **Vishnu** and **Shiva**.

Worship

Ordinary religious worship occurred in the home. Sacrifices were typically of soma (a juice from a plant), ghee (clarified butter) or some other treat. Such offerings were used to secure the favour of the gods or to preserve dharma (universal order).

Demons

Ancient Indians believed that demons were responsible for all the negative aspects of society, including floods, droughts and famine. Demons could be seen in prowling tigers, mad elephants and mosquitoes. This obsession with demons made *brahmins* (or priests) very important and powerful because it was believed that they offered protection from demons.

He who has 'spread out the earth, as a butcher does the hide, by way of a carpet for the sun ... extended the air above the trees ... put strength in horses, milk in cows, willpower in hearts, fire in waters, the sun in heaven, and soma upon the mountain'.

H1.3.1 The *Rig Veda* on Varuna, from S. Wolpert, *A New History of India*, Oxford University Press, New York, 2004



H1.3.2 Agni, god of fire. In this sculpture, Agni is shown with two heads and four hands; he sits on a ram. Agni's two heads symbolise his two sides: destructive and generous. Agni also has seven tongues that he uses to lick ghee.

The Upanishad sages

By about 700 BC, sages began to question the power and authority of the *brahmins*. They were unhappy about resources being wasted in elaborate rituals. They observed that rich men and rajas died just like poor men, so what was the benefit of frequent sacrifices? These sages began to preach (teach) to disciples in forest seminars. They were **gurus**, wise teachers that shared their knowledge. The gurus' ideas were written down and formed the Vedanta Upanishads, of which 108 have survived.

Key ideas

Moksha

These gurus did not reject the *Rig Veda* or the Brahmanas, but they did propose a different way (or life-path) to reach **moksha** (release or freedom from repeatedly being born again into the world). The key to achieving *moksha* was attaining freedom from desire because this is what forced a person to be reborn.

Atman

For the Upanishad mystics, the secret of immortality (that is, eternal life) was understanding the reality of *atman* (the individual soul). For them, *atman* was the same as *brahman*, the single source of all creation.

Other philosophical ideas in the Upanishads included:

- *samsara*, which is an awareness of the endless cycle of existence. This includes birth, death, rebirth, death and so on, which occurs as long as one has not achieved *moksha*
- *karma*, which is an awareness of cause and effect, and that all actions have repercussions or consequences; we are a product of all our past actions.

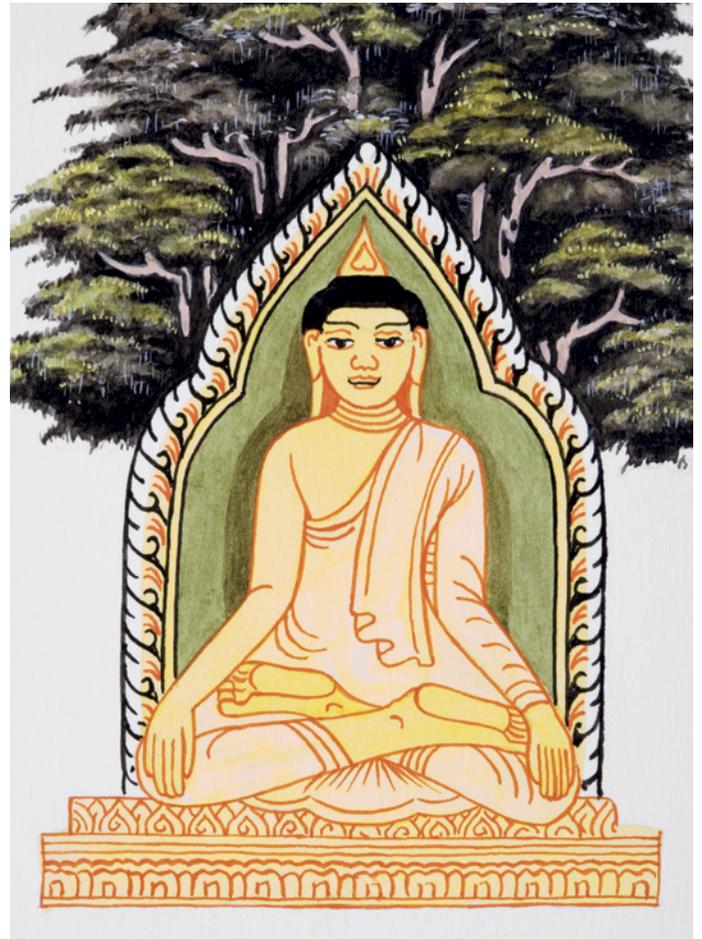
Buddhism, Jainism and Hinduism have their origins in the philosophical ideas contained in the Vedas, and so it could be said that these religions have drawn insights and inspiration from the Brahmanas and Upanishads.



H1.3.3 Aum (or om). The symbol sacred to Hindus, Buddhists and Jains. Aum comprises of three sounds and is used as a meditation tool.

Buddhism

Buddhism was founded in India during the time of the Vedanta Upanishads. Buddhism is named after its founder, Buddha. Before achieving enlightenment, Buddha was known as Siddhartha Gautama.



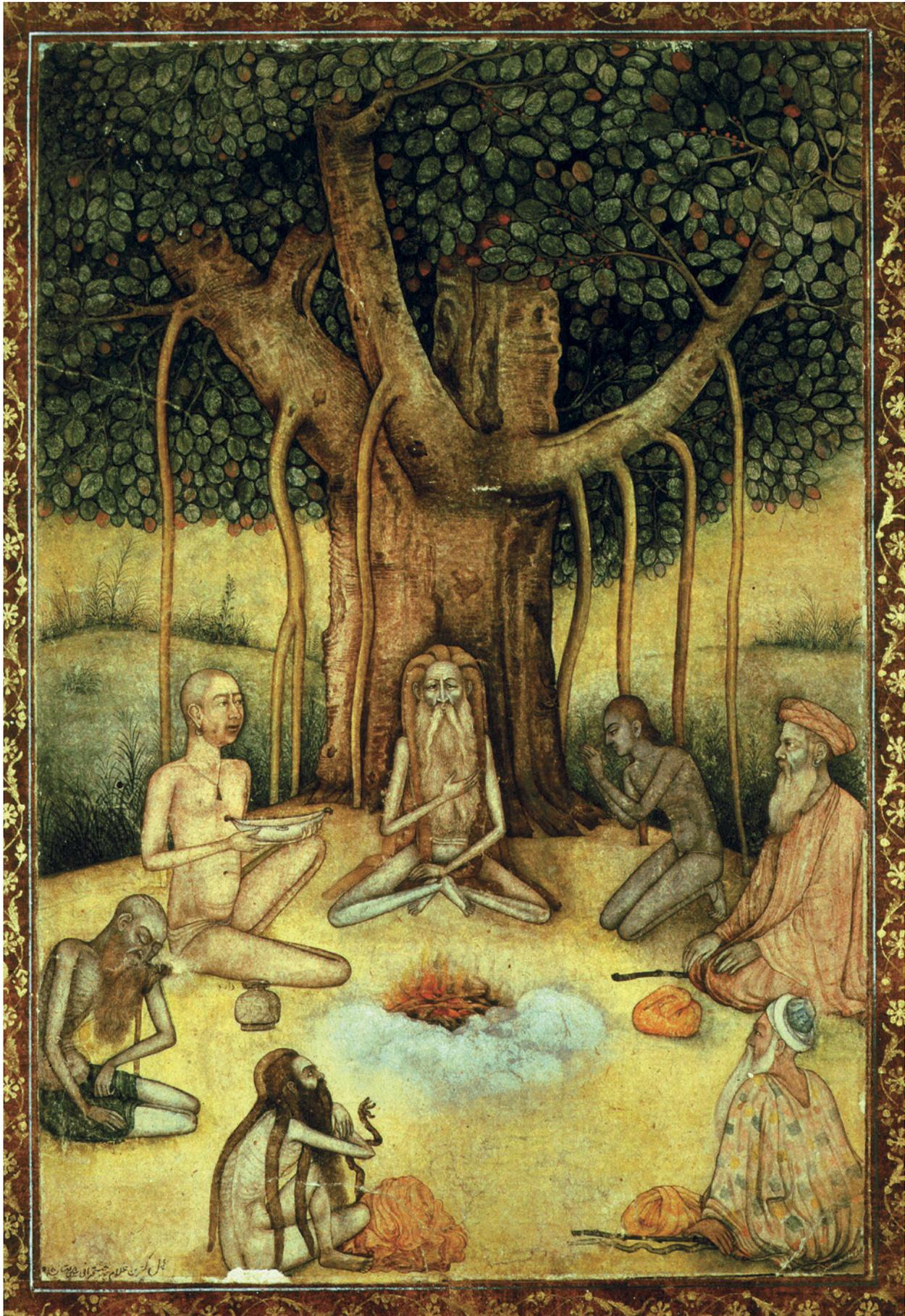
H1.3.4 Illustration of Buddha seated on a shrine

Siddhartha Gautama was born into a life of luxury and ease in 563 BC as the son of a northern Indo-Aryan king. At the age of thirty, he abandoned his family and wealth to become a wandering hermit in the woods. While sitting under a pipal (bodhi) tree, Siddhartha Gautama achieved nirvana and enlightenment.

The Four Noble Truths

Buddha's first teaching was the Four Noble Truths, which are outlined below.

- 1 *The truth of suffering* (there is suffering in this world and it is inevitable).
- 2 *The truth of the origin of suffering* (there is a cause of suffering).
- 3 *The truth of the cessation of suffering* (the cause of suffering, when understood, can be cured).
- 4 *The truth of the path leading to the cessation of suffering* (there is the noble eightfold path to eliminate suffering: right view, right intention, right speech, right conduct, right livelihood, right effort, right mindfulness and right meditation).



H1.3.5 A group of ascetics sitting under a banyan tree. This painting dates from 1630 AD.

Buddha's forest *sangha*

Buddha spent 45 years teaching disciples in his forest *sangha* (monastic order). In his lifetime, only monks could join the order. This was because Buddha was concerned about the negative influence of nuns on monks. Monks had to commit to chastity, poverty and nonviolence. This included abandoning all family ties and any prospect of marriage and children. This lifestyle also included begging for food each day. The monks' heads were shaved, and they wore saffron robes and went barefoot.

Buddha's death

Buddha died, aged eighty, in about 483 BC. In his final message to his disciples he declared, 'You must be your own lamps, be your own refuges. Take refuge in nothing outside yourselves. Hold firm to the truth. Whoever among my monks does this will reach the summit.'

Jainism

Jainism was founded by Vardhamana Mahavira (c. 599–527 BC). Like Siddhartha Gautama, Mahavira was the kshatriya son of a king who abandoned his privileged life at the age of thirty.

Mahavira spent the next 10 years with a sect (group) of ascetics. Ascetics are religious people who practise austerity or self-denial. This particular group practised nudity (not wearing clothes). The group labelled Mahavira *jina* (conqueror) because of his amazing self-control. Mahavira advocated the religious practice of voluntarily fasting to death by gradually decreasing intake of food and liquids. He did this practice himself and lessened his intake of food and drink over 13 years until he died.

Jains (followers of *jina*) accept two core doctrines or beliefs:

- *All of nature is alive*. This includes rocks, earthworms, men and gods, all of whom have some form of soul (*jiva*).
- *Ahimsa (nonviolence)*. This is a total prohibition on taking life. To ensure that nothing was harmed, Jains wore face masks (so they would not accidentally swallow a fly) and gently swept the ground in front of them as they walked (so they would not accidentally step on an ant).

Hinduism

While Buddhism and Jainism were founded by key individuals, Hinduism developed in a different way. Hinduism produced great epic poems like the *Mahabharata* and *Ramayana*. These texts further shaped ancient Indian thought about worship, duty, suffering, death, law and justice. By the second century AD, Hinduism had developed into a form we would recognise today, with personal devotion to the Hindu gods Vishnu and Shiva.

Activities

Remembering and understanding

- 1 Identify the most powerful gods in the early period of ancient Indian history. Relate the key characteristics, habits or areas of influence of two of them.
- 2 In a paragraph, discuss the ancient Indian attitude to demons, including why they might have been associated with floods, droughts, famine, tigers, mad elephants and mosquitoes.
- 3 List the main philosophical ideas associated with the Upanishad sages. Include one key fact about each idea.

Applying and analysing

- 4 Write two modern examples of what Buddha might have meant by right view, right intention, right speech, right conduct, right livelihood, right effort, right mindfulness and right meditation.
- 5 Create a mind map that presents your understandings, thoughts, opinions and questions about Vardhamana Mahavira and Jainism. Use sketches, colours, symbols and short labels to illustrate your ideas.

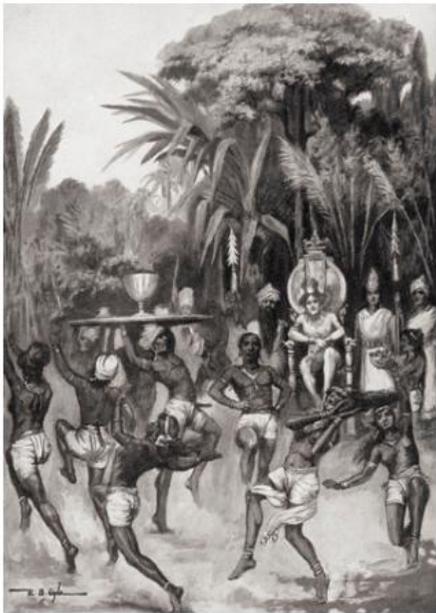
Evaluating and creating

- 6 Ancient Indian religion changed over time. Create a timeline that illustrates this, noting key events and ideas as they developed. Add a paragraph below your timeline that summarises the changes and provide at least two reasons for them.

H1.4 Law

Ashoka and the law

Historians have a clear insight into ancient Indian law due to the series of edicts (pronouncements) of Ashoka, who ruled most of India from 269 to 232 BC. Ashoka was the grandson of the great Indian king, Chandragupta Maurya, who ruled from 324 to 301 BC.



H1.4.1 An etching depicting an envoy of Emperor Ashoka, who had been sent to declare peace during the Kalinga War, following the emperor's decision to follow Buddha's law of non-violence

Where did Ashoka's philosophy come from?

The first 8 years of Ashoka's reign were relatively unremarkable. Like his father, Ashoka worked hard to consolidate and expand Mauryan power. In his ninth year as ruler, however, Ashoka ordered his armies to invade Kalinga, a kingdom south of Magadha. Kalinga was only able to be subdued (or controlled) after a bloody war. In fact, the war was so bloody that Ashoka experienced deep remorse, meaning that he felt bad about what had happened. On the battlefield Ashoka resolved (decided) to follow Buddha's law of nonviolence.

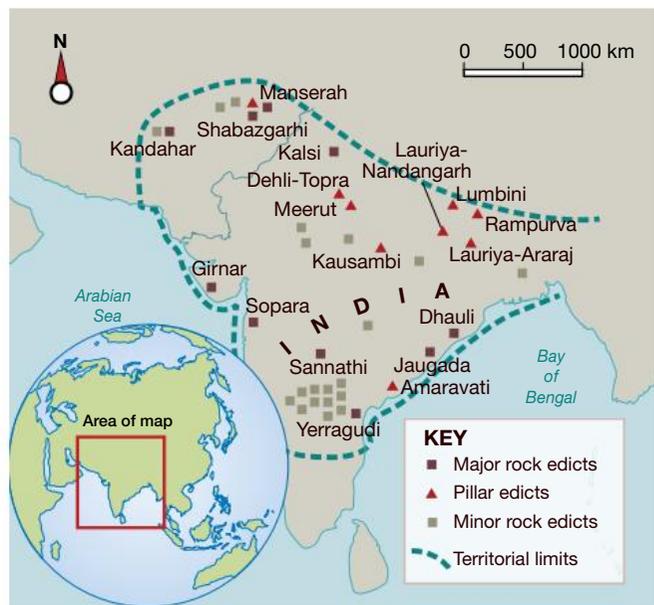
The pillar edicts

Ashoka had edicts carved into great rocks and sandstone pillars. The edicts covered many aspects of ancient Indian life and law (see Source H1.4.2). They were first translated by James Prinsep, a man working in the British Mint in Calcutta, in 1837 AD. More than 5000 words were carved into the eighteen rocks and thirty pillars that have survived (see Source H1.4.3).

Both this world and the other are hard to reach, except by great love of the law, great self-examination, great obedience, great respect, great energy ... this is my rule: government by the law, administration according to the law, gratification of my subjects under the law, and protection through the law.

H1.4.2 One of Ashoka's edicts, from S. Wolpert, *A New History of India*, Oxford University Press, New York, 2004

Other advice from the pillar edicts included 'listen to mother and father', 'practise liberality [kindness] to friends, relations, *brahmins* and ascetics', and 'abstain from the slaughter of living creatures'.



H1.4.3 The location of the surviving edicts of Ashoka

Prisoners

The following edict on 'pillar edict four' details Ashoka's ruling about those people in prison.

It is my desire that there should be uniformity in law and uniformity in sentencing. I even go this far, to grant a three-day stay for those in prison who have been tried and sentenced to death. During this time their relatives can make appeals to have the prisoners' lives spared. If there is none to appeal on their behalf, the prisoners can give gifts in order to make merit for the next world, or observe fasts.

H1.4.4 Ashoka's pillar edict four, from C. Allen, *Ashoka: The Search for India's Lost Emperor*, Hachette Digital, London

The wheel of law

In the view of many historians, as well as ordinary Indians today, Ashoka was the first true Indian emperor and *chakravartin* ('wheel-turning king', which is a king who turns the wheel or law of dharma).

Ashoka's most famous pillar edict is called the 'Four Lions of Sarnath' (see Source H1.4.5). On the pillar, the lions support a stone wheel, which is the wheel of law. This wheel is known commonly as 'Ashoka's wheel'.



H1.4.5 The Four Lions of Sarnath pillar; below the lions a wheel is carved into the stone, representing the wheel of law

Legacy

The legacy of Ashoka and his philosophy can be seen in modern India by examining the Indian flag (see Source H1.4.6). The central emblem on the flag is the Wheel of Ashoka, which symbolises Ashoka's philosophy that 'truth must guide conduct'.



H1.4.6 Indian flag with the Wheel of Ashoka in the centre

Activities

Remembering and understanding

- How many of Ashoka's edicts survived?
 - Who enabled them to be understood?
 - When was this?
- According to the pillar edicts, who or what are protected under Ashoka's law? Use dot points in your answer.

Applying and analysing

- Explain how Source H1.4.5 shows the importance of Ashoka's wheel of law in modern Indian culture.

Evaluating and creating

- Using Ashoka's edicts as a guide, write four pillar edicts that you would like placed around your school.
 - Explain the reason for each of your four pillar edicts.

H1.5 Everyday life in southern India

Southern India had remained isolated from most of the political developments in India's north. This was due to a large mountain barrier that effectively blocked communication between the north and south. As a result, the Tamil kingdoms of southern India developed cultures that were unique in several ways.

Madura

The Pandyas were one of the southern Indian kingdoms. They had their capital at Madura. Several *sangams* (colleges) flourished at Madura from the second century AD.

Up to 500 poets at a time are said to have studied at Madura's colleges. Two thousand of their poems have been preserved and collected into nine books. These poems tell us a lot about life in southern India. For instance, Tamils were divided into five castes based on where people had been born and where they lived. There were:

- hill people
- plains people
- forest folk
- desert folk
- coastal folk.

Each of these five castes was subdivided into occupational groupings. So, for instance, coastal folk could be pearl divers, fisherfolk or boatmakers.

Tamil families were matriarchal (which means they were ruled by the mother) and matrilineal (descent traced through the female line). This was very different to most of ancient India.

Foreign trade

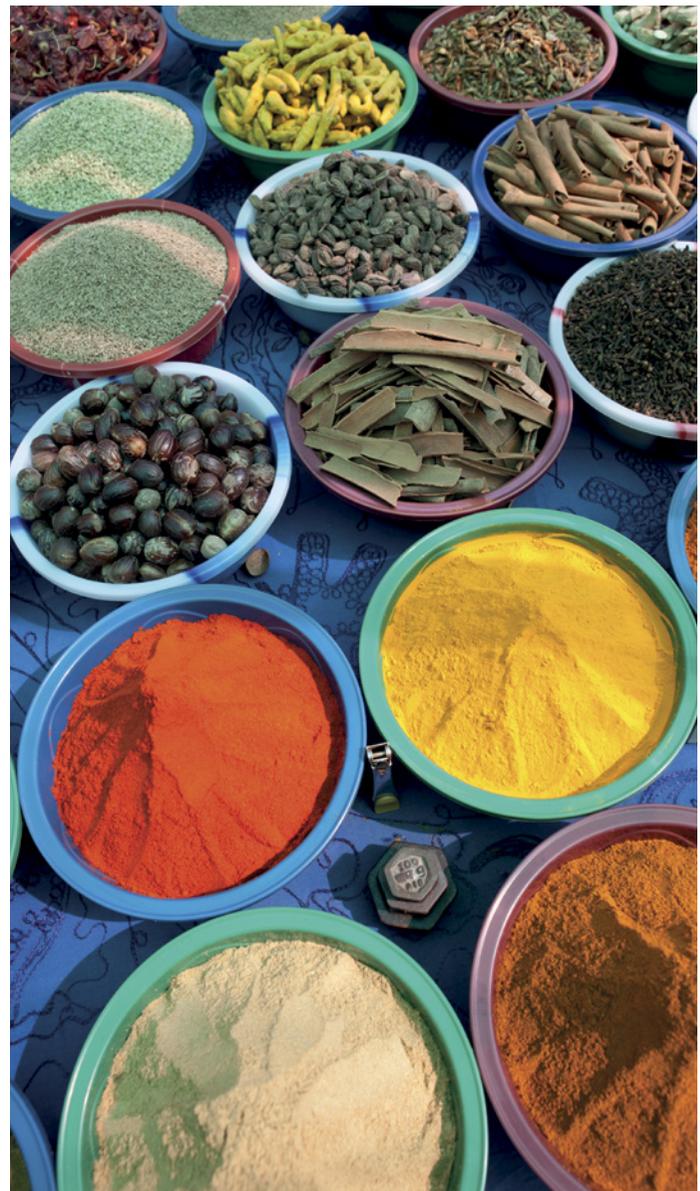
Hundreds of Roman coins have been found by archaeologists in southern Indian ports. This is evidence of a strong system of trade. From these ports, Indians exported ivory, onyx, cotton goods, silks, pepper and other spices, and precious stones.

Southern India was famed for its pearls and precious jewels. The Romans paid for these goods in copper, tin, antimony (a type of metal) and wine.

By this period in ancient Indian history, trade routes were crisscrossing India. These routes were regularly traversed by caravans of camels, oxen and donkeys.

The *shreni*

Shreni were the artisan or merchant guilds. These organisations prospered greatly from trade between India, China and Rome. *Shreni* had responsibility for maintaining public order, as this was good for business. They also established and enforced legal regulations governing the commercial conduct (the business activities) of guild members.



H1.5.1 Some of the spices still plentiful in India

The growth in Indian commerce saw an increase in the number of Indian bankers and financiers. Interest rates, which refer to the amount paid for borrowing money, were high. They were between 15 and 240 per cent. This was because the risks of trade and travel over long distances were also high.

Currency

Coin-based trade expanded at this time. Gold and silver coins were used. Copper coins and cowry shells were also used as currency. Trading activity with coins took place in the cities, while village and rural economies continued to engage in non-monetary transactions such as barter.



H1.5.2 Obverse (main side) of a Mauryan silver coin from the third century BC punchmarked with five symbols: sun, chakra (wheel), bull, dog on hill and elephant, The British Museum

The four transitions

Hindu legal texts wrote of the four ‘transitions’ or stages of every man’s life (see Source H1.5.3). These stages were only available to the first three *varnas*.

H1.5.3 The four transitions

Stage	Description
1 Celibate student	<ul style="list-style-type: none"> is invested with the sacred thread (6 to 12 years old) leaves parents and home to live with a guru learns the Vedas and also phonetics, grammar, prosody (poetic form), astrology and etymology (the origin of words)
2 Householder	<ul style="list-style-type: none"> returns home and is ritually bathed has a duty to start a family and enjoy life, including sexual enjoyment moves to the next stage when a grandson is born, ensuring the bloodline continues
3 Forest dweller	<ul style="list-style-type: none"> dresses and lives as a hermit leaves home and all possessions, but his wife is permitted to accompany him if she wants to
4 Wandering ascetic (sannyasin)	<ul style="list-style-type: none"> abandons his wife must be homeless, bondless and isolated must sever all links in preparation for death has the potential to reach <i>moksha</i> at this stage

Women

Ancient Indian women were expected to conform to the ‘ideal wife’ presented in the epic poem *Ramayana*. This poem had been written in about the fourth century BC. According to the *Ramayana*, it is Sita’s duty as a wife to follow her husband, Rama, into his forest exile (see Source H1.5.4).

For the faithful woman follows where her wedded lord may lead,
 In the banishment of Rama, Sita's exile is decreed,
 Sire nor son nor loving brother rules the wedded woman's state,
 With her lord she falls or rises, with her consort courts her fate,
 If the righteous son of Raghu wends to forests dark and drear,
 Sita steps before her husband wild and thorny path to clear!

H1.5.4 Extract from the *Ramayana* describing a wife's duty to her husband, from R.C. Dutt, *The Ramayana and the Mahabharata: Condensed into English Verse*, J.M. Dent, London, 1917



H1.5.5 An illustration of an Indian woman carrying a basket on her head near mud huts with thatched roofs, c. 322 BC



H1.5.6 A modern representation of Vishnu. Vishnu is the colour of the sky (blue) and has four arms. He is commonly shown holding a conch (large seashell), mace (decorated staff), wheel or lotus. Vishnu is mentioned ninety-six times in the *Rig Veda*. Gouache and gold leaf on paper, mid nineteenth century AD.

Vishnu and Shiva

Personal devotion to either Vishnu or Shiva (two of the main Hindu gods) was common at this time. The following table (Source H1.5.8) outlines the key roles and characteristics of these deities (gods).



H1.5.7 Shiva

H1.5.8 Key roles and characteristics of Vishnu and Shiva

Deity	Role	Key facts
Vishnu	the divine saviour of humans	<p>Has ten avatars (manifestations). He always holds:</p> <ul style="list-style-type: none"> • a lotus flower • mace • discus • conch shell. <p>He has four arms and is usually shown wearing:</p> <ul style="list-style-type: none"> • necklaces • armlets • bracelets • headdress • decorated belt.
Shiva (known as Lord Shiva)	<ul style="list-style-type: none"> • the creator and destroyer of life • the lord of beasts • the king of dance 	<p>Is often accompanied by a Hindu goddess: Parvati, Sati, Kali or Durga.</p> <p>Is usually shown with these features:</p> <ul style="list-style-type: none"> • third eye • blue throat • crescent moon • matted hair • ashes • tiger skin • serpent • trident • drum • bull. <p>In Hindu myth, the fast-moving waters of the Ganges River were calmed when Shiva agreed to run the waters through his long, matted hair.</p>

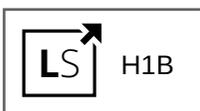
Activities

Remembering and understanding

- 1 List four key facts about the contact and trade between ancient Indians and ancient Romans in southern India.
- 2 Who were the *shreni*? Discuss their importance to the ancient Indian economies of the south.
- 3 Copy the images of Vishnu and Shiva in Sources H1.5.6 and H1.5.7, or digitally download images of these two gods. Annotate the pictures with the key information from the table in Source H1.5.8.

Applying and analysing

- 4 Based on the information in this unit, what seems to be unique about life in southern India? List three things and explain each.
- 5 Work in a small group to write and perform a play of four scenes dramatising the 'four transitions' of a man's life.
- 6 Re-read Source H1.5.4 and describe in your own words the attributes of the 'ideal wife' in ancient Indian scripture.



H1.6 Death and funerary customs

Death

Ancient Indian attitudes to death were heavily influenced by the Vedanta Upanishads and a sacred text called the *Bhagavad-Gita*.

The *Bhagavad-Gita*

The *Bhagavad-Gita* is one of the 'books within a book' of the great Hindu epic the *Mahabharata*. Hindus consider it a sacred scripture. It records a conversation between the warrior Arjuna and Krishna, an avatar of the Hindu god Vishnu. This conversation is about theological (religious) and philosophical ideas. One of these ideas was about how a person deals with the idea of death and dying (see Source H1.6.1).

Did you know?

- Archaeologists have uncovered three double graves in the Indus Valley civilisation city of Lothal,
- each with male and female skeletons. Some
- archaeologists have suggested this may be the first evidence of *sati*, a former Hindu practice where a woman was forced to give up her own life when her husband died.

The wise mourn neither for the living nor for the dead. As the embodied one has, in the present body, infancy, youth and age, even so does he receive another body ...

Contacts of the senses with their objects bring cold and heat, pleasure and pain; they come and go and are transient ...

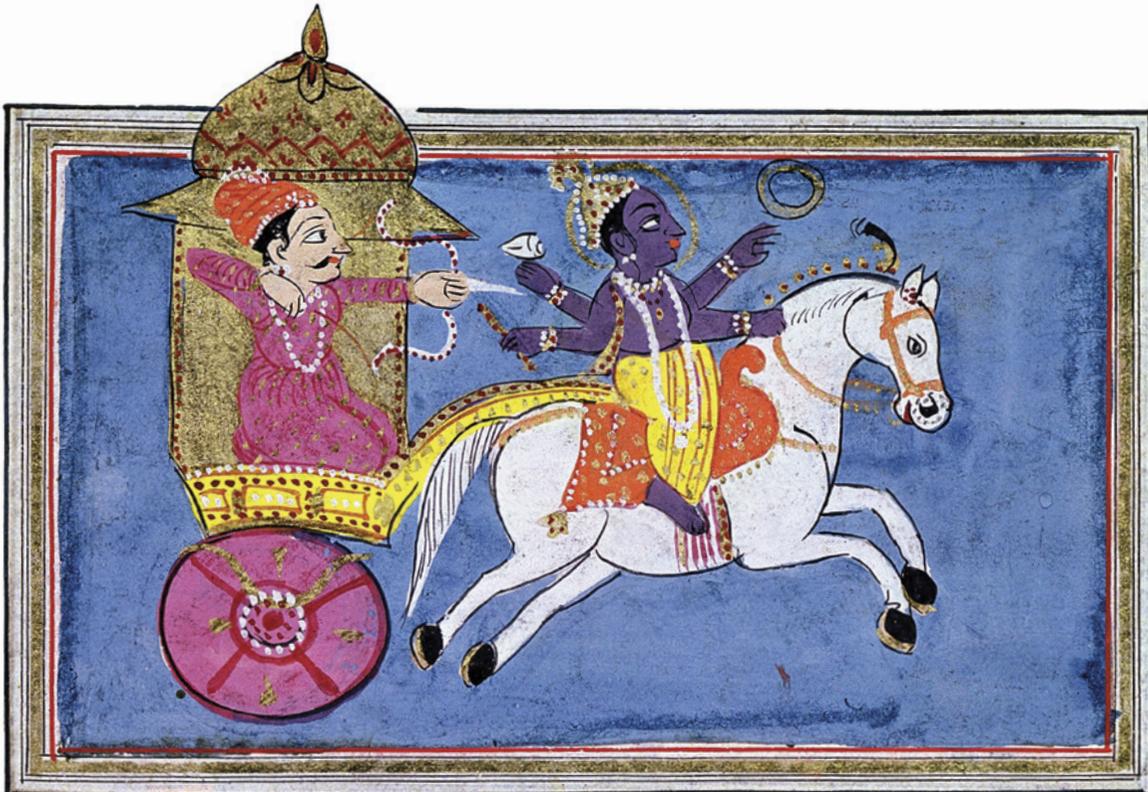
The wise man who is not disturbed by these, who is unmoved by pleasure and pain, he is fitted for immortality.

Atman [the soul] is never born nor ever dies, nor having been will ever not be any more; unborn, eternal, everlasting, ancient, [*atman*] is not slain when the body is slain ...

Thou shouldst not grieve.

For certain is the death of the born, and certain is the birth of the dead; therefore, what is unavoidable thou shouldst not regret.

H1.6.1 Mahatma Gandhi's translation of lines 11 to 27 of the *Bhagavad-Gita*. Here, Krishna talks to Arjuna about pleasure, pain and death of the human body. He says a person should not be worried about death, for only the soul lasts forever.



H1.6.2 A seventeenth-century AD depiction of Krishna steering Arjuna's chariot

Funeral rituals and rites

Different forms of funeral customs have been recorded in ancient India. For example, bodies were:

- exposed to the elements
- left out in the open to be eaten by birds, most often vultures
- buried in the ground, rivers, caves or urns
- cremated (burnt to ashes).

Cremation

As Hinduism became more popular and influential, cremation became customary (traditional). In ancient India, a deceased person's body was quickly cremated. This was partly due to the Hindu belief that a person's soul was not considered to be part of their mortal body, as described in Source H1.6.1. Cremation was also used to avoid the quick decomposition of dead bodies in a hot and wet climate. Contact with dead bodies was considered to be spiritually polluting, and so was avoided.

Cremation practices

Cremation practices varied from place to place in ancient India, as they do today. There were also different rituals and rites depending on the age, caste, *jati* and status of the deceased.

The first stage of a Hindu funeral and cremation involves preparation of the body. This is carried out by members of the dead person's family.

- 1 The body is arranged so that the feet point south, the 'direction of the dead'.
- 2 The body is bathed in purified water, dressed in new clothes (generally white) and placed on a stretcher.
- 3 Sacred ash (associated with Shiva) or sandalwood paste (associated with Vishnu) is applied to the forehead.
- 4 Drops of water from the Ganges are placed in the mouth.
- 5 Tulsi leaves (a type of basil that is considered sacred) are placed on the right side of the body.
- 6 The body is perfumed and almost completely covered in flowers.
- 7 The body is carried to the cremation ground by close male relatives.

Cremation grounds were traditionally located near or on the banks of a river. Bodies were burnt on pyres of sandalwood. The ashes were then collected and thrown into sacred rivers like the Ganges (see Source H1.6.3).



H1.6.3 The body of an elderly woman is cremated on the banks of the Ganges River. The priest, on the right, is sprinkling incense on the pyre.

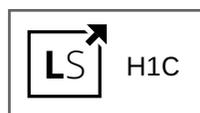
Activities

Remembering and understanding

- 1 **a** Refer to the chapter glossary. What is *atman*?
- 1 **b** Why does it not die when the body dies?
- 2 List the reasons that Hindu cremations were carried out quickly.

Applying and analysing

- 3 Use a T-chart to compare your own views about the death of the human body with those expressed by Krishna in the *Bhagavad-Gita* (Source H1.6.1).
- 4 Create a storyboard that illustrates the main steps taken to prepare the body of a Hindu for cremation. Under it, write a paragraph explaining the significance of some of the steps; for example, the orientation of the body, or the addition of ash or sandalwood paste.



H1.7 Warfare

Internal warfare

Ancient India was never successfully conquered (taken over) by a foreign invader. There were, however, repeated invasions from the west, including Alexander the Great. Warfare in ancient India most commonly occurred between its own tribes, ethnicities, kingdoms and dynasties. A range of weapons and formations were employed, many of which were unique to ancient India.

Weapons

Weapons of the infantryman

Ancient Indian soldiers were armed with a variety of weapons. In long-range combat (when enemy soldiers were far away) bamboo longbows were commonly used, as were slings and javelins. For hand-to-hand combat, which was fought at closer distances, swords, axes and spears were used.

Chariots

The Indo-Aryans were the descendants of peoples who invented the chariot. The ancient Indian chariot was different from chariots found in ancient Egypt at the time. Egyptian chariots were sleek and fast, and had two wheels. Indian chariots had four wheels. These supported a large firing platform that could be up to 2 metres off the ground. Four-wheeled chariots were expensive to build and maintain, but provided a clear military advantage in battle.

Indian chariots needed four to six horses to pull them, and charged straight into enemy lines. They did this to crush as many enemy soldiers as possible under the hooves of the horses and the wheels of the chariots. The platforms supported men armed with bamboo longbows and spears.

Archers mounted on the chariots could shoot arrows at enemy soldiers below them, while men armed with spears prevented enemies from climbing on board. Ancient Indian chariots were later fitted with scythes (long, curved single-edged blades) on their wheels. As the chariots moved, the scythes dismembered (or cut into pieces) enemy soldiers who stood in their path.



H1.7.1 A painting of an Indian battle scene, c. 1625–1650 AD, Brooklyn Museum, New York

War elephants

Ancient Indians were the first and the last peoples to use war elephants (see Source H1.7.1). Over time, the elephants became heavily armoured and their trunks were fitted with sword-like blades. These would slash enemy soldiers as the elephants' trunks moved from side to side. Some war elephants had small forts built on their backs that held soldiers armed with bamboo longbows, spears and javelins.



H1.7.2 A carving of a Mauryan warrior carrying a *bhuj*, which is a cross between a sword and an axe, Indian Museum, Calcutta

Did you know?

- Other weapons used in ancient India are described in ancient texts. One is the *pasha*, which is a giant noose made from rope. Large iron balls hung off the noose. The weight of the iron helped to tighten the noose and strangle the enemy. Another was the *sudarshana chakra*. It was a spinning, disk-like weapon with 108 serrated edges.

Battle formations

Ancient Indian armies used many battle formations. They tended to be named after plants, animals or objects; for example, the Wheel, the Needle, the Fish, the Lotus and the Eagle.

- In the Lotus formation, archers were organised in a group located in the centre of the formation. The infantry and cavalry were arranged in 'petals' around the archers to protect them.
- In the Eagle formation, the strongest and most experienced troops and elephants formed a 'beak' and 'head' at the top of the formation. Two 'wings' made up of chariots, cavalry and fast-running infantry would sweep out on both sides, with the eagle's 'body' made up of reserves.

Activities

Remembering and understanding

- 1 Name the six weapons of the ancient Indian infantryman.
- 2 Sketch a diagram of the Lotus or Eagle battle formation, labelling key parts.

Applying and analysing

- 3 Draw a Venn diagram to compare and contrast the key features, and advantages and disadvantages of chariots and war elephants as weapons of war.
- 4 Examine Sources H1.7.1 and H1.7.2.
 - a List the aspects of warfare discussed in this unit and shown in these sources.
 - b Note at least four key similarities and differences in how each source represents war.

Evaluating and creating

- 5 Research the other ancient Indian military formations that were outlined in this unit: the Wheel, the Needle and the Fish. Evaluate the advantages and disadvantages of these formations. Decide whether any of these could be used in modern warfare.

H1.8 Contact and conflict

Contact with other peoples

For a long time, ancient India was seen as a mysterious and wondrous civilisation by the ancient civilisations to India's west. From a European perspective, India was at the edge of the 'known world' so it was difficult to find out much about it. Also, it had a unique geography, distinctive animals and cultures, and exotic goods for trade.

Herodotus on India

Herodotus of Halicarnassus was a Greek who lived in the fifth century BC. He is most famous for writing *The Histories*. Though *The Histories* deals mainly with the Persian Wars, ancient India is discussed in four of its nine books. In one famous but inaccurate example, Herodotus explains how ancient Indians obtained most of their gold.

In this sandy desert are ants, not as big as dogs but bigger than foxes ... These ants live underground, digging out the sand in the same way as the ants in Greece, to which they are very similar in shape, and the sand which they carry from the holes is full of gold. It is for this sand that the Indians set forth into the desert ... When the Indians come to the place with their sacks, they fill these with the sand and drive back [with their camels] as fast as possible; for the ants at once scent them out ... and give chase.

H1.8.1 Extract from Herodotus, *The Histories*, Book III

Contact

The spread of Buddhism

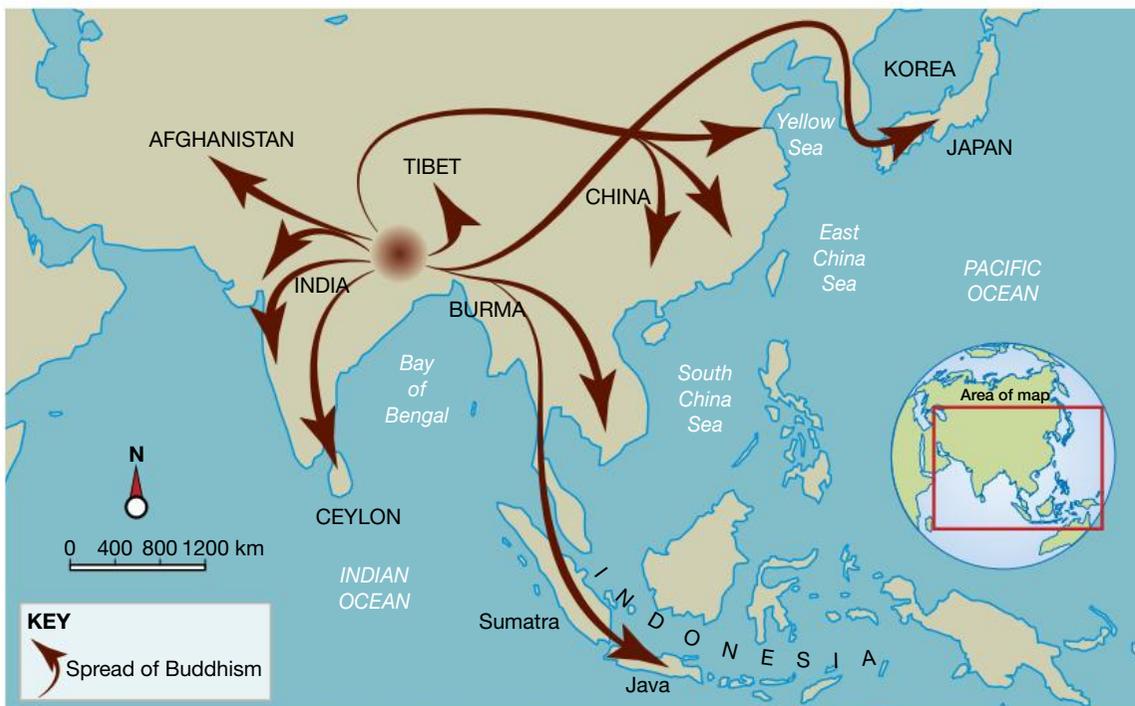
In the 1000 years after the death of Buddha, Buddhism spread within India. It also spread along the trade routes of the Silk Road to many countries in northern, central and south-east Asia, as shown in Source H1.8.2. Buddhism is now the fourth-largest religion in the world.

Trade with ancient Rome

Ancient India had an extensive trade network with other countries. An archaeological dig at Berenike, Egypt, has discovered evidence of a large trading system between ancient India and ancient Rome. During the course of the dig, archaeologists found the following items, all of which could only have come from ancient India:

- eight kilograms of black pepper, which was only cultivated in southern India
- Indian batik cloth and other printed textiles
- ceramics.

This has led archaeologists Willeke Wendrich and Steven Sidebotham to hypothesise (present a theory) that long before the Silk Road, there existed a Spice Route between ancient India and ancient Rome. This Spice Route was most likely abandoned sometime after 300 AD, possibly due to war or a plague epidemic.



H1.8.2 The spread of Buddhism within India and along the trade routes of the Silk Road

Alexander the Great

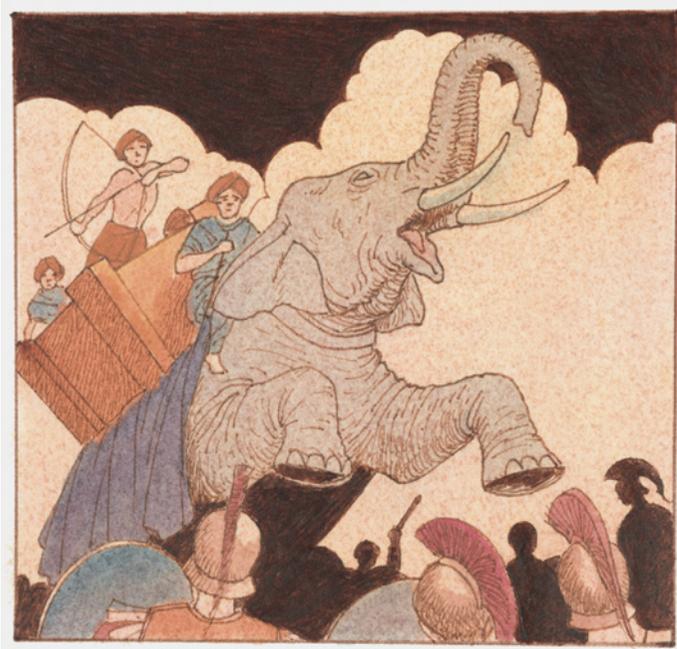
The most famous attempt to conquer ancient India was made by Alexander the Great. He came to India after conquering Egypt and Persia. He was focused on occupying all the known lands from Macedonia (his birth place) to what he called the Great Outer Sea, which he thought was to the east of India.

Alexander and his forces crossed the Indus River in 326 BC, but were soon halted. A huge number of war elephants, archers, infantry and chariots were led by an Indian raja called Porus.

The Battle of the Hydaspes

The battle between the two armies is known as the Battle of the Hydaspes (another name for the Jhelum River). Their armies were evenly matched. Alexander successfully used phalanxes (soldiers attacking in close formation, protected by spears and overlapping shields), while Porus's war elephants, whose trunks were reinforced with bronze, frightened Alexander's troops.

Eventually, Alexander won, but he was so impressed with Porus's bravery that he made him a satrap (governor).



H1.8.3 Illustration of one of Alexander the Great's battles in India as his army was frightened by the Indian war elephants

Alexander's farewell

Alexander did not stay in India for long because his army revolted when he proposed crossing the Ganges River. His troops did not want to take on another well-equipped and well-trained Indian army. They were also exhausted after so many years of campaigning. Alexander therefore advanced no further into India.



H1.8.4 A coin struck during the reign of Ptolemy I Soter (c. 367–283 BC), one of Alexander's successors. It shows Alexander wearing an elephant scalp, a symbol of his time in ancient India.

Activities

Remembering and understanding

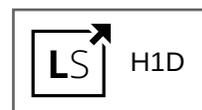
- 1 Re-examine Herodotus's explanation of how ancient Indians found most of their gold.
 - a Use a storyboard to illustrate the key steps, according to Herodotus.
 - b Suggest two reasons as to why Herodotus's account is inaccurate.
- 2 List two of the major consequences of ancient India's contact with other cultures.

Applying and analysing

- 3 Imagine you are a soldier in either Alexander's or Porus's army at the end of the Battle of the Hydaspes. Use a Y-chart to explore what the battle might have looked like, sounded like and felt like.

Evaluating and creating

- 4 With the benefit of historical hindsight, re-evaluate Alexander's decision not to continue his campaign in India. Do you think the right decision was made? Can you find examples of other leaders who pushed their military campaigns too far?



H1.9 Significant individuals

Chandragupta Maurya

The first truly Indian empire was established in Magadha. This occurred during the reign of Chandragupta Maurya (324–301 BC) and is shown in Source H1.9.1.

There are different accounts of Chandragupta's background. One source suggests his father was a herdsman. Another account says that his mother was a royal concubine (a woman who lives with an important man without being married to him). His family name is likely to be connected to the Sanskrit word for peacock, which is *mayura*.

Much of what historians know about this period of ancient Indian history is due to Megasthenes (c. 350–290 BC), a Greek explorer, who became the Greek ambassador to Chandragupta's court. His book *Indica* is quite a detailed source of his time spent in India. It also provides snippets of information. For example, it makes a reference to 'an elite guard of Greek women who guarded the bedchamber of Chandragupta'.

The Maurya bureaucracy

Chandragupta's bureaucracy, or administrative system, was very large. Sources suggest that it comprised 1 million civil bureaucrats, soldiers and spies. It was so expensive to run that Chandragupta needed to impose heavy taxes. For example, he collected 25 to 50 per cent of the value of all crops raised. He also taxed trade, gold and herds. The state owned and operated all mines, shipbuilding and armament (weapons) works, as well as centres of spinning and weaving.

The Maurya army

Chandragupta divided his empire into districts. Each of these was supervised by close relatives or trusted generals. The army was divided into four major corps:

- infantry (600 000 men)
- army (300 000 men)
- chariots (8000)
- elephants (9000).

These estimates are taken from historical sources that may be exaggerated.

Pataliputra

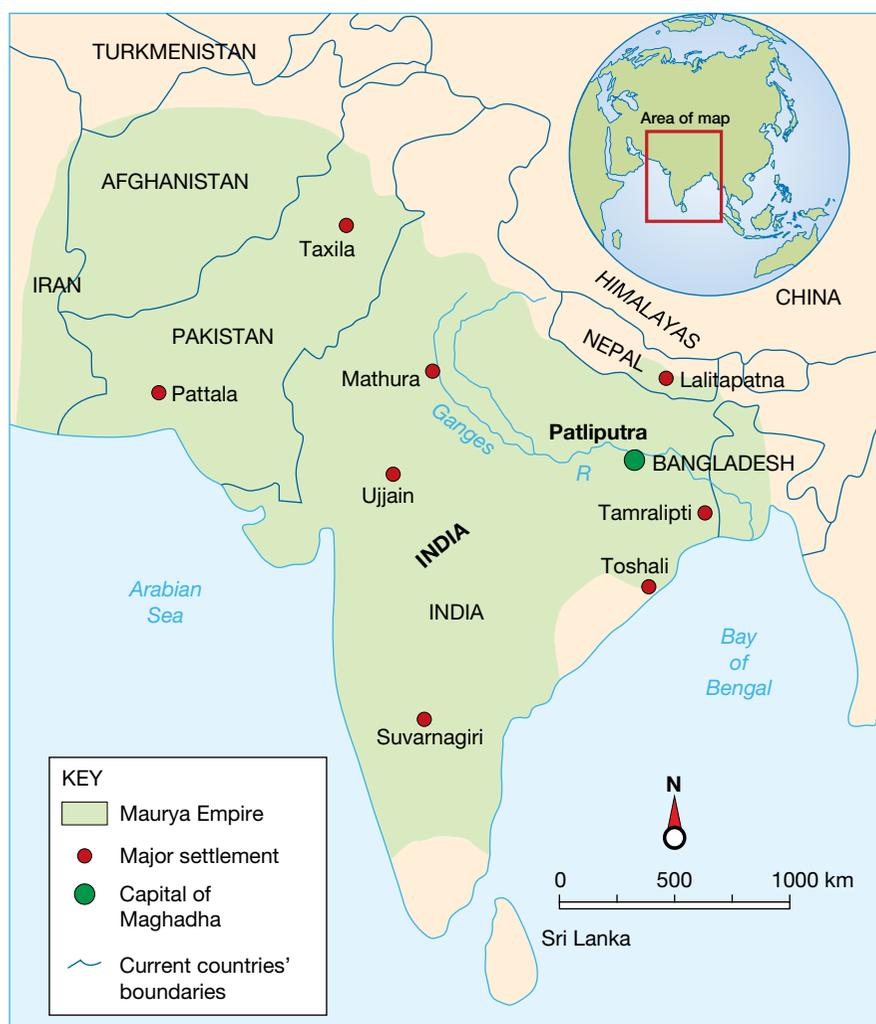
The Maurya capital was Pataliputra (present-day Patna). The city was:

- thirteen kilometres long and 2.5 kilometres wide
- surrounded by timber walls with 570 towers
- surrounded by a moat 275 metres wide and 9 metres deep.

Administration

According to Megasthenes's writings, Pataliputra was administered by six boards that were each made up of five men. These boards managed:

- the industrial arts
- trade and commerce
- tax collection
- foreigners
- vital statistics
- maintenance of public places including markets and temples.



H1.9.1 Chandragupta Maurya Empire (300 BC)

Earning a living

Megasthenes also described seven classes of people in Mauryan India. In order of importance, from highest to lowest, they were: royal councillors, *brahmins*, agriculturalists, herdsmen, soldiers, spies and artisans.

Other historical sources tell us how much people in different occupations earned. Examples of annual earnings in Mauryan India included:

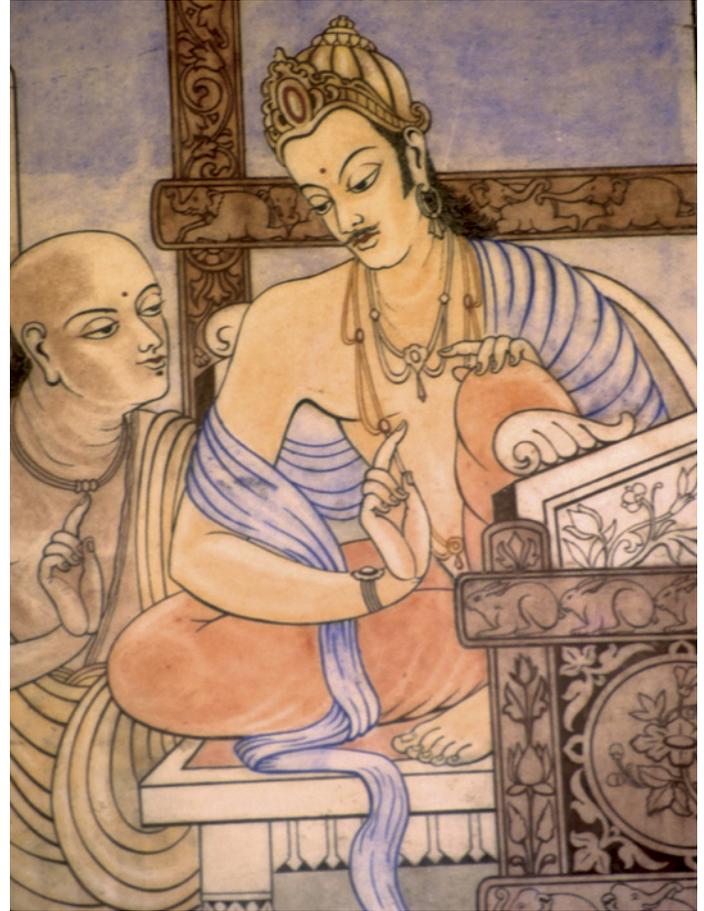
- 48 000 panas for royal councillors
- 1000 panas for engineers
- 500 panas for soldiers and spies
- 120 panas for carpenters and other craftsmen
- 60 panas for unskilled labourers.

(One pana was the equivalent of 3.5 grams of silver. The sixty panas paid to an unskilled labourer would barely feed and clothe a family.)

Final years

In 301 BC, Chandragupta abandoned his throne to become a Jain monk. Then he fasted until he died. He was succeeded by his eldest son, Bindusara, of whom little is known.

Chandragupta's grandson Ashoka (meaning 'sorrowless') came to power in 269 BC. Ashoka is regarded by many historians as the first true emperor of India.



H1.9.2 A representation of Chandragupta Maurya with his advisor Kautilya



H1.9.3 The Great Stupa at Sanchi was built by Chandragupta's grandson, Ashoka, at Pataliputra in the third century BC

Kautilya and the Arthashastra

Most historians believe much of Chandragupta's success was due to his talented prime minister, Kautilya. Kautilya is credited with writing the *Arthashastra*, the 'Science of Material Gain'. The *Arthashastra* is full of advice on statecraft (how to run a state) including:

- the recommended education and training of a raja (king)
- how a raja should behave at court
- the importance of using spies
- how to conduct foreign policy (which included attacking the most powerful of your enemies).

Only if a king is himself energetically active, do his officers follow him energetically. If he is sluggish, they too remain sluggish ... He is thereby easily overpowered by his enemies. Therefore, he should ever dedicate himself energetically to activity.

H1.9.4 The *Arthashastra* on the king's responsibility to be active

The *Arthashastra* gives very practical advice on how to rule. It was not based on the Vedas, the Brahmanas, the Vedanta Upanishads, the *Bhagavad-Gita* or Buddhism for guidance or inspiration. Instead, it focuses on what works, irrespective of whether it is morally right or wrong.

Historians believe that the *Arthashastra* in its present form cannot have been written by Kautilya alone. This is because different parts show differences in style and language. The evidence points to a 'layered' text. This means that some

H1.9.5 The *Arthashastra* on the raja's daily duties

Part	Day	Night
One	listen to reports about law and order and finances (income and spending)	meet officers of the secret service
Two	work on matters relating to ordinary people in the cities and countryside	take a bath, eat and study
Three	take a bath, eat and study	at the sounding of the trumpets, enter the bed chamber and sleep
Four	receive gold and meet with heads of the six boards	sleep
Five	read letters from your ministers, and write back; hear secret reports from spies	sleep
Six	have free time or listen to the advice of your ministers	at the sounding of the trumpets, wake up; ponder the sciences and urgent duties for the day
Seven	inspect the military (infantry, cavalry, chariots, elephants)	hold consultations; give orders to the officers of the secret service
Eight	with the head of the military, make plans for conquering other peoples; offer evening prayers	with <i>brahmins</i> and gurus by your side, receive blessings; meet with your doctor, the kitchen supervisor and astrologer

parts were probably authored by Kautilya, while other parts were produced much later, but were probably based on what Kautilya had written.

Duties of a raja

The *Arthashastra* outlines the raja's duties in great detail. To rule successfully a raja needed to divide every day into eight parts and every night into eight parts as outlined in the table below (see Source H1.9.5).

Protection and prosperity

The *Arthashastra* urges the raja to benefit and protect all his citizens. This is because Kautilya believed that a kingdom could not prosper without protection for the weak.

Lands may be confiscated from those who do not cultivate them and given to others ... If cultivators pay their taxes easily, they may be favourably supplied with grains, cattle, and money.

The raja shall provide the orphans, the aged, the infirm, the afflicted, and the helpless with maintenance. He shall also provide subsistence to helpless women when they are carrying [a baby] and also to the children they give birth to.

Violation [of the chastity] of nurses, female cooks, or female servants of the class of joint cultivators or of any other description shall at once earn their liberty for them.

H1.9.6 The *Arthashastra* on aspects of society

Skills builder

Identifying continuity and change

Making sense of the past involves being able to determine significant moments of change as well as periods of time when things largely remained the same (continuity).

Understanding the significance of people, events, groups and ideas from the past is an essential skill in being able to interpret periods of continuity and change. For example, ancient India had many great leaders, but who was the greatest? Which leader brought about the greatest degree of positive change? Which events during their time proved to be the turning points of change?

In a group of four, prepare for a panel debate on the topic 'The greatest leader in the history of India'.

- Each member of the panel will argue on behalf of one of the following four ancient leaders: Buddha, Mahavira, Chandragupta Maurya and Ashoka.
- Group members should begin by reviewing the information in this chapter; further research will also be required.
- Group members should consider both the achievements of these leaders, and their legacy in India up to and including the present. In what way did each leader promote continuity and/or change? Was this for better or worse in relation to everyday life for people in ancient India?

Activities

Remembering and understanding

- 1 How was Chandragupta Maurya able to afford such a large bureaucracy?
- 2 Who was Kautilya and why was he important to the reign of Chandragupta?
- 3 In Source H1.9.4, Kautilya advised Chandragupta Maurya to be active. Identify all the causes and effects that Kautilya wants Chandragupta to avoid. Draw a flow chart to illustrate this.

Applying and analysing

- 4 With a partner discuss the reasons as to why Megasthenes's *Indica* might not always be a reliable source of information on life in Chandragupta's empire.
- 5 Using the information from 'Earning a living' to help you, write two statements to describe life in Mauryan India.
- 6 Source H1.9.5 provides a detailed view into the daily life of a raja. Would a raja following Kautilya's advice be acting for his own good or the good of his people? Explain your reasoning.

Evaluating and creating

- 7 Consider Kautilya's view of peasants, labourers and women as shown in Source H1.9.6. Assess the importance of these groups in Mauryan India, from Kautilya's perspective.

H1.10 Legacy of ancient India

Indian scholarship

Towards the end of ancient Indian history (from 190 BC), international trade increased. The increase in trade meant that the exchange of ideas in mathematics, astronomy and medicine also became larger.

Mathematics

The ingenious method of expressing every possible number using a set of ten symbols (each symbol having a place value and an absolute value) emerged in India. The idea seems so simple nowadays that its significance and profound importance is no longer appreciated. Its simplicity lies in the way it facilitated calculation and placed arithmetic foremost amongst useful inventions. The importance of this invention is more readily appreciated when one considers that it was beyond the two greatest men of Antiquity, Archimedes and Apollonius.

H1.10.1 Pierre-Simon, Marquis de Laplace (1749–1827 AD), French mathematician, astronomer and physicist, writing on ancient Indian mathematics

Between about 400 AD and 1200 AD, Indian mathematics emerged as an academic discipline. Indian mathematicians made early contributions to the study of the decimal number system, zero, negative numbers, arithmetic and algebra. They also further developed the work of earlier Greek scholars by developing sine and cosine (part of trigonometry). Indian knowledge was later transmitted to the Middle East, China and Europe.

Astronomy

Astronomy (or the study of the heavens) was an important science in ancient India. The Vedas contain references to astronomical events and to calculations made by astronomers. Early Indian astronomers were able to calculate when and how often eclipses would occur. They also developed the use of geometry and trigonometry in astronomical calculations. This allowed them to work on calculating the circumference of the Earth. Indian astronomers also began to think about the idea of gravity. They recognised that the Sun was a star and knew a lot about the solar system.

1	2	3
—	=	≡
4	5	6
𑀫	𑀬	𑀭
7	8	9
𑀮	𑀯	𑀰

H1.10.2 These early Indian numerals, from the first century AD, eventually evolved into the numbers 1 to 9 that are in common use today

Medicine

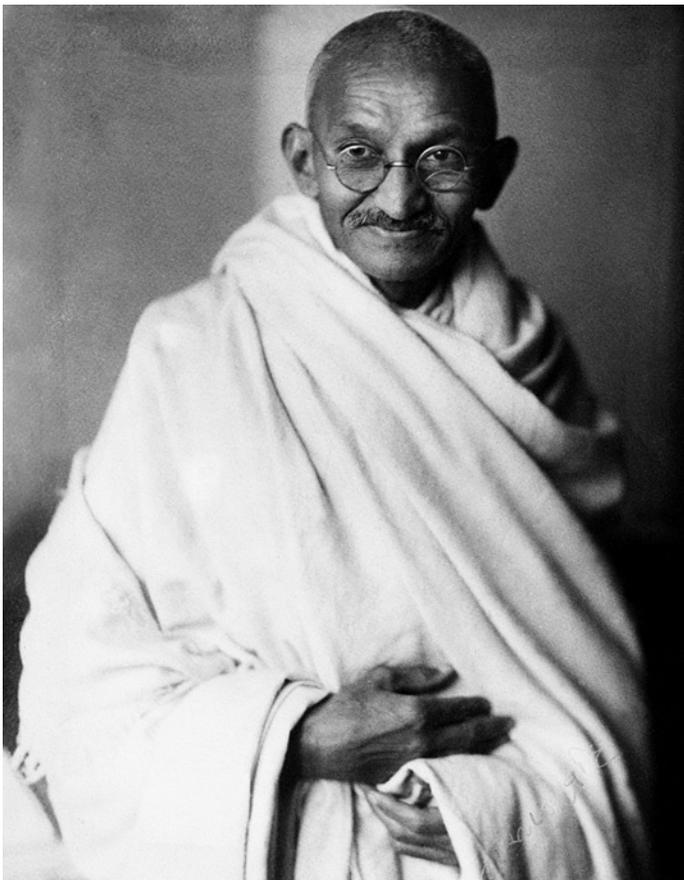
Ancient Indians made significant advances in medicine. There are records of surgical procedures as early as 800 BC. Surgeons in ancient India worked in the areas of dental surgery, removal of cataracts, and even some plastic surgery, such as rhinoplasty ('nose jobs'). Ancient Indian doctors practised holistic Ayurvedic medicine, which means they looked at the body as a whole. A famous medical text of the time is the *Charaka Samhita*, which was part of the science of longevity (long life). It was written as poetry to make it easier for medical students to memorise. The text covers general health issues such as diet, hygiene and lifestyle. It also deals with the causes, diagnosis and treatment of diseases. It displays knowledge of human anatomy. Ayurvedic medicine is still practised in India today. It is also popular in the West as an alternative to Western medicine.

Religion and thought

Two of the world's great religions arose out of ancient India: Hinduism and Buddhism. Each has millions of believers worldwide and both religions have influenced the Western world. This influence has been felt in areas such as philosophy, politics, music, and even the popular practice of yoga for good health.



H1.10.3 The Hindu Ganga Aarti ceremony at Dashashwamedh Ghat in 2015. Hinduism continues to be the dominant religion in India and is practised throughout the world today.



H1.10.4 Mahatma Gandhi, c. 1940 AD

Mahatma Gandhi

The great Indian leader for independence from Great Britain of the 1930s and 1940s was Mohandas Karamchand Gandhi (1869–1948 AD). He is better known as Mahatma Gandhi. Gandhi based his principles of nonviolent protest on his Hindu beliefs. He was also influenced by Jainism as a young man. His pacifist (peaceful, nonviolent) movement was very successful and has continued to inspire others around the world. The peaceful sit-ins of the civil rights movement in the United States of America in the 1950s and 1960s are one example.

Activities

Remembering and understanding

- 1 Sketch a simple concept map that shows the development of mathematical ideas that originated in ancient India.
- 2 What influenced the principles of Mahatma Gandhi? Who did he, in turn, influence?

Applying and analysing

- 3 Write a short newspaper article or podcast script that describes and interprets the legacy of ancient India.
- 4 Debate with a partner: 'The legacy of ancient Indian scholarship is more important than its contribution to religion and thought.'



Geography toolkit

7

Geographers use many different tools and skills to investigate the world in which we live. Maps are among the most important of these tools.

A map is a representation of the whole, or a part, of the Earth's surface. Increasingly, maps are stored in electronic form and can be read on computers, mobile phone screens and in-car navigation systems. People who make maps are called cartographers.

In this chapter we reflect on the nature of geography and the elements that make up the biophysical, managed and constructed environments. We also learn how to use maps.

OVERVIEW QUESTIONS

- 7A** What is geography?
- 7B** What are the distinguishing features of the biophysical, managed and constructed environments?
- 7C** What types of maps, photographs and satellite images are used by geographers and what are the conventions used in their construction?
- 7D** What are the key skills involved in the interpretation of maps?

7.0.1 Satellite images, like this one of Susitna Glacier in Alaska, are one of the tools used by geographers to investigate the world

GLOSSARY

biophysical environment environments that are dominated by natural features such as landforms and vegetation; this includes the Earth's soil, water, air, sunlight and all living things

BOLTSS the essentials of a map: **B**order, **O**rientation, **L**egend, **T**itle, **S**cale, **S**ource

constructed environments human-altered landscapes, including the features normally associated with settlements, industries and agriculture

contour lines lines on a map that join places of equal height 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 changed or created by people

geography a structured way of exploring, analysing and understanding the characteristics of the places that make up our world

human geography looks at people and how, individually or in groups or communities, they interact with the environment

location the position of a feature or place on the Earth's surface

managed environments human-changed landscapes dominated by the natural environment; this includes crop and grazing lands, plantations and planted forests

physical geography looks at how the Earth was formed and how it continues to change; includes the study of the atmosphere, hydrosphere, lithosphere and biosphere (the four parts of the biophysical environment)

scale the relationship between the distance linking two points on a map and the actual distance on the Earth's surface

thematic maps maps designed to illustrate a particular theme; for example, annual rainfall or the location of oil resources

topographic maps detailed, large-scale maps illustrating selected features of the physical environment

topography the shape of the land

7.1 What is geography?

Geography explained

Geography is the study of the characteristics of the places that make up our world. Geography is concerned with the processes that shape the Earth's surface and the ways in which people interact with environments (our total surroundings). It seeks to explain the character of places and the distribution (spread) of people, features and events on or near the Earth's surface.



7.1.1 The Mornington Peninsula is an example of how people interact with the environment

Dimensions in geography

There are three dimensions in geography: place, space and environment. All three dimensions interact, as shown in Figure 7.1.2.

● Place

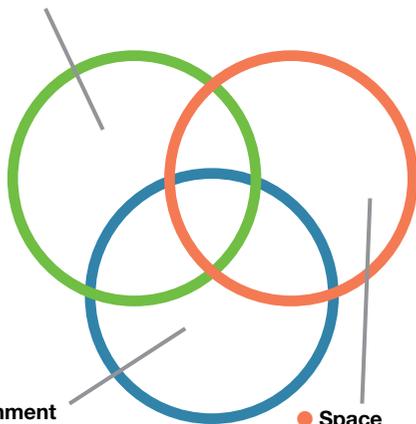
Geographers are interested in the uniqueness of places (their special character and identity) as well as the similarities between them.

● Environment

Geographers are interested in the processes that form and change environments. They also study the relationships between the biophysical environment and human activities, and the processes that shape managed and constructed environments.

● Space

Geographers are interested in knowing where things are located on the surface of the Earth, why they are there, the patterns and distributions created, how and why they are changing, and the implications for people.



7.1.2 The three dimensions of geography, place, space and environment, all interact with each other

Defining environment

The term **environment** refers to our living and non-living surroundings. We usually refer to environments as being either natural, managed or constructed. We use the term **biophysical environment** to identify an environment dominated by natural features such as landforms and vegetation. Examples include waterfalls and mountains. It is important to note, however, that there are no longer any purely natural environments. This is because all environments have been changed or altered by human activities. For this reason, we refer to the biophysical environment rather than the natural environment.

Managed environments are those where elements of the natural environment are manipulated for the benefit of humans. Examples include farmland and planted forests.

Those elements of an environment that have been created or altered by people are called **constructed environments**. They include cities and parks.

By studying geography, we learn about:

- our changing world
- our place in the world
- the big issues facing humanity
- the impacts that our actions have on the world.

By studying geography, we can:

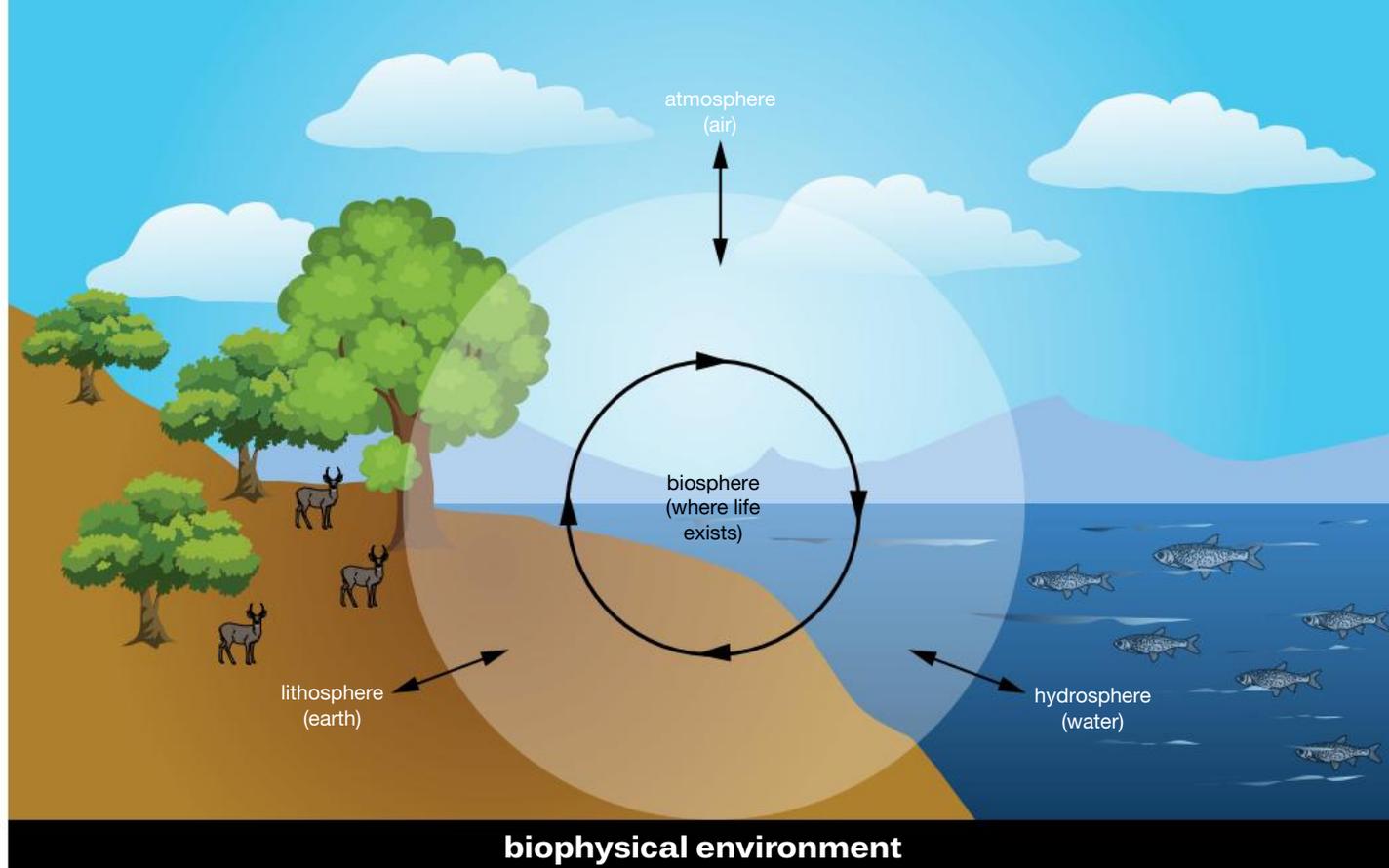
- lead more enriched lives
- become effective guardians of our future world
- think spatially
- develop a range of skills demanded by employers.

Physical and human geography

Geography has traditionally been divided into two areas: physical geography and human geography.

Human geography looks at people and how, individually or in groups or communities, they interact with the environment. It includes:

- the study of urban, industrial and rural land uses
- the development of countries
- population and population movements
- how economic changes affect people
- issues such as global terrorism, human rights, global inequality, child labour and social justice.



7.1.3 The atmosphere, hydrosphere, lithosphere and biosphere are the four parts of the biophysical environment

Physical geography looks at how the Earth was formed and how it continues to change. It includes the study of the atmosphere, hydrosphere, lithosphere and biosphere, which are the four parts of the biophysical environment (see Figure 7.1.3).

Studying geography

Studying geography will help you:

- make sense of a complex and changing world
- see yourself as part of a wider community
- understand how your actions can impact upon the environment
- become an active and informed citizen.

Activities

Remembering and understanding

- 1 Define geography.
- 2 Explain why biophysical environment is used in preference to natural environment.

Applying and analysing

- 3 Distinguish between the biophysical, managed and constructed environments.

Evaluating and creating

- 4 Collect two images of each of the biophysical, managed and constructed environments, and present them as an annotated collage.
- 5 Creating and interpreting diagrams is a very important geographic skill.
 - a Create a Venn diagram consisting of two intersecting circles. Label one circle with the

heading 'Physical geography' and the other circle with the heading 'Human geography'.

- b Place each of the following topics in the correct circle. You may find that some topics fit into more than one category.
 - volcanic activity
 - land use changes in cities
 - whale migrations
 - land use change over time
 - the distribution of HIV/AIDS
 - how to draw maps
 - plants and animals in rainforests
 - a hailstorm
 - life on the ocean floor
 - agricultural land use in Bali
 - how rivers shape the land
 - changing job opportunities

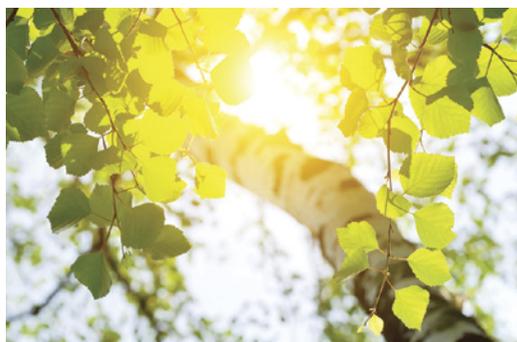
7.2 Key concept: Environments

Defining environment

In geography, the word 'environment' is used to describe our total surroundings. The environment includes the living and non-living features of the Earth's surface and its atmosphere. This includes features that have been altered or created by people. Geographers divide environments into three kinds: biophysical environments, managed environments and constructed (or built) environments.

Biophysical

Biophysical environments are those dominated by natural features such as landforms and vegetation. The natural environment includes the Earth's soil, water, air, sunlight and all living things. These are often referred to as the elements of the biophysical environment (see Figure 7.2.1). It is important to note that there are no truly natural environments. All environments have, to some extent, been changed by the activities of people.



Solar energy: the energy (light and heat) produced by the sun. All life on Earth depends on solar energy.



Atmosphere: the combination of gases surrounding the planet. Geographers are particularly interested in weather and climate. They investigate:

- how climate affects people, plants and animals
- how the activities of people affect climate.



Biosphere: the surface zone of the Earth, in which all life exists. Geographers are particularly interested in how living things interact with each other and with the non-living parts of the environment.

Elements of the biophysical environment



Lithosphere: the Earth's solid outer shell. Geographers study the processes shaping the Earth's crust, and how these processes affect people.



Hydrosphere: the Earth's store of water and how it circulates. Geographers are interested in how people try to control and manage water resources to meet their needs.

7.2.1 All of these elements are part of the biophysical environment

Managed

The managed environment includes human-altered landscapes that are dominated by elements of the natural environment. Examples are land used for crops and grazing animals (see Figure 7.2.2), as well as plantations (large-scale farms) and planted forests.

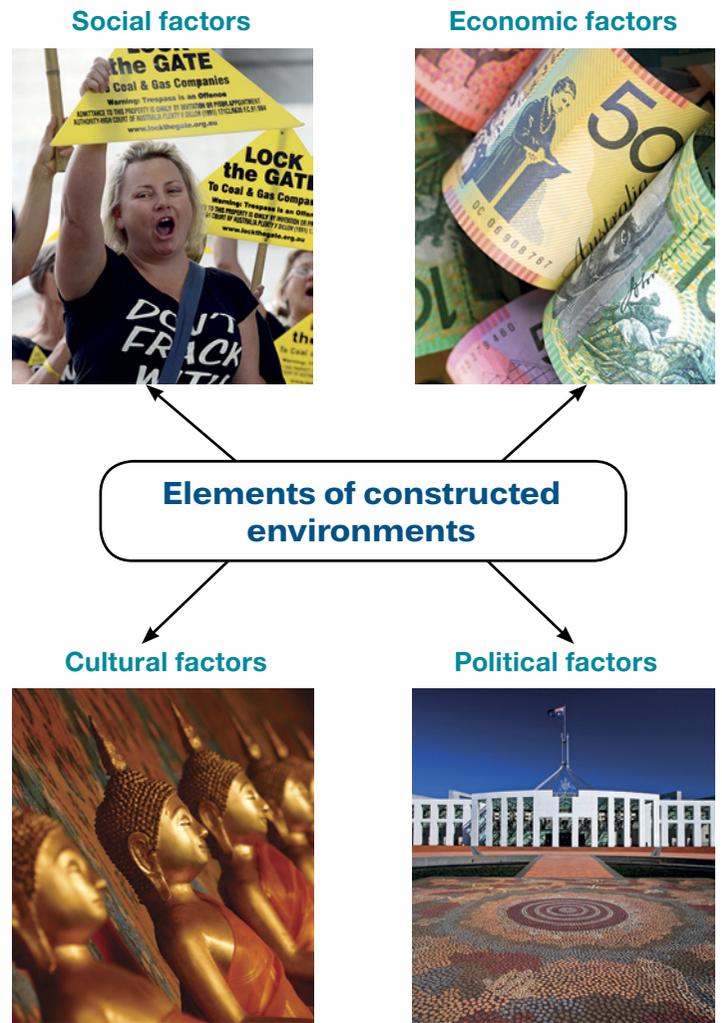
Constructed

The constructed (or built) environment is best defined as one dominated by features that have been created by people. These include all the features normally associated with settlements, industries and agriculture. Features of the built environment include buildings and transport infrastructure (for example, roads, railways and airports). The managed and constructed environments are a product of the social, cultural, economic and political systems created by humans (see Figure 7.2.3).



7.2.2 Terraced rice paddies are an example of a managed environment

It is important to note that the biophysical, managed and constructed environments always interact with each other. The biophysical environment is affected by the activities of people, and the managed and constructed environments are affected by events within the biophysical environment.



7.2.3 All of these elements shape constructed environments

Activities

Remembering and understanding

- 1 Define the following terms: environment, biophysical environment, managed environment and constructed environment.
- 2 List the elements shaping the constructed environment.
- 3 Name the elements of the biophysical environment and explain what each one is.

Applying and analysing

- 4 Identify as many features of the biophysical environment as you can think of.

- 5 Demonstrate how you interact with the biophysical environment, the managed environment and the constructed environment in an average day.

Evaluating and creating

- 6 Write a paragraph describing how your local area might have looked before people settled there. Write a second paragraph describing how people have transformed or changed the area.

7.3 Types of maps

Using maps

Geographers use many different types of maps.

Topographic maps are large-scale maps of certain features in the physical environment. They are particularly useful. Geographers also use atlas maps of regions, countries, continents and the world. Atlases, websites, textbooks, magazines, television programs, computer databases and even some advertisements use many kinds of maps.

Topographic maps

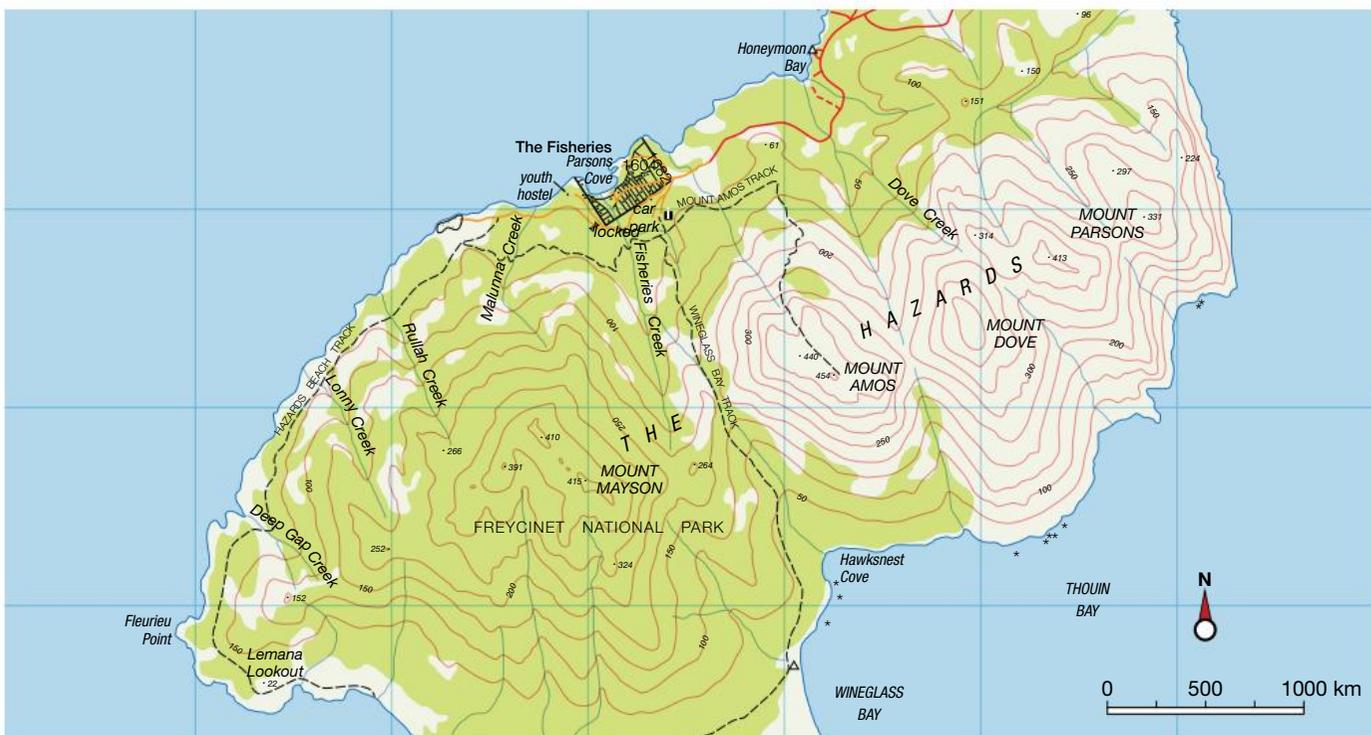
Figure 7.3.1 is an example of a topographic map that shows a small area of the Earth's surface in detail. It depicts the shape of the land (**topography**) as well as different types of natural features (such as rivers and vegetation) and cultural features (such as land use, settlement patterns, and road and rail networks). Topographic maps use a variety of symbols to represent these features.

Physical and human features maps

The maps in an atlas are often labelled with human (cultural and political) features such as boundaries, countries and cities. Physical (natural) maps show features such as rivers, mountains, plains and lakes.

Thematic maps

Thematic maps are often used to show the distribution (or spread) of one or more measurements. These include measurements of climate, vegetation types, average rainfall, average temperature, population density (the number of people in an area), various development indicators (for example, population growth rates) and agricultural land uses. Figure 7.3.2 is a thematic map showing average annual rainfall in South America.



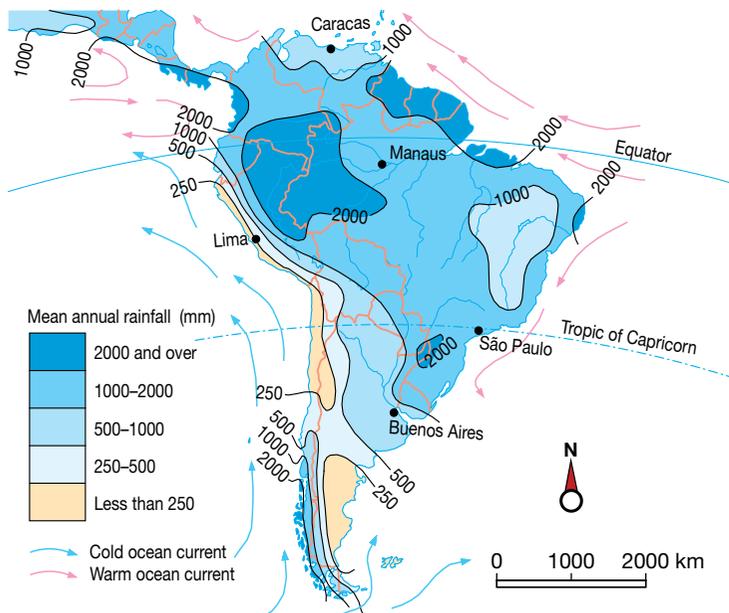
	sealed	unsealed
Road with bridge; with gate		
Walking track (approximate position) with bridge		
Building; Visitor information centre		
Contour with value; Camping; Spot elevation		
Medium forest		
Tidal rocks or ledge; Offshore rock		
Reserve boundary; Land parcel boundary and number		
	1682	

Base image by TASMAP
(www.tasmap.tas.gov.au),
© State of Tasmania

7.3.1 A topographic map extract of Wineglass Bay, Tasmania

Choropleth maps

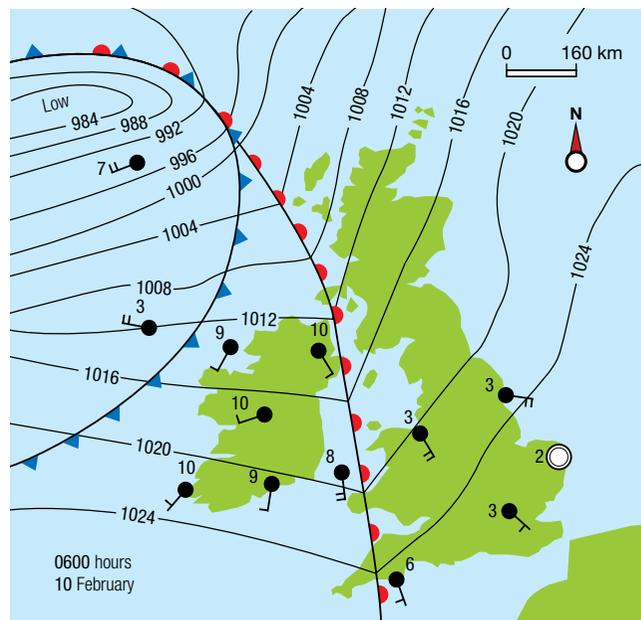
A choropleth map is a special type of thematic map that uses a colour **scale** or shading to show a pattern. This type of map uses graduated shades of one colour to indicate the average values of some property or quantity in a given area. Typically, the darkest shade shows the distribution of the highest data category. Figure 7.3.2 is an example of a choropleth map.



7.3.2 This thematic map shows mean (average) annual rainfall in South America. It is a choropleth map because of the shading it uses to illustrate rainfall patterns.

Weather maps

Weather maps show weather conditions over particular areas of the Earth's surface at a particular time. In Figure 7.3.3 you see the condition of the atmosphere (including air pressure, and wind direction and strength) at a certain time. You also see the **location** (or position) and direction of warm and cold fronts. From this information, forecasts about the weather can be made several days ahead.



7.3.3 This weather map shows weather conditions in the United Kingdom in February

Activities

Remembering and understanding

- Copy and complete the following table.

Map type	What it shows	Purpose
Topographic		
Thematic		
Weather		
Choropleth		

Geographical skills

- Study Figure 7.3.1. List at least three features of each of the biophysical and built environments shown on the topographic map extract.
- Study Figure 7.3.2. Identify the mean annual rainfall for:
 - São Paulo
 - Caracas.
- You are a geographer working as a ranger in your local national park. You are researching the impact of feral cats on the native bird population. What type of map should you use to display your findings? Explain why you chose this type of map.

7.4 Elements of maps

Maps

Maps play a very important role in the study of geography. They tell us about places and help us to identify patterns and changes in the landscape.

Maps range from the very simple to the very complex. No map can show every feature of the landscape, as it would then be impossible to read. Maps need to be selective in what they show. Cartographers (map-makers) use symbols, shading and colour to show how the features of the Earth's surface are arranged and distributed. This also makes maps easier to read and explain.

Elements of maps

Map essentials include a **B**order, a direction symbol (**O**rientation), a **L**egend, a **T**itle, a **S**cale and a **S**ource, which are commonly referred to as **BOLTSS**.

Border

The border of a map can be described as the frame that surrounds it.

Orientation

Orientation is the direction or positioning of things. To use a map, you need to know where the compass directions are on it. An arrow shows which way is north. Once you know where north is, you can work out the other directions. This process is known as orientation and makes it easier to describe the location of places.

Legend

The legend of a map is also called the key. It lists all the symbols that are used on the map and shows what each of them means.

Map symbols are used to show the location of features on a map. They look like the items they represent (see Figure 7.4.1).

The colour used for a symbol may also provide a clue to its meaning (such as blue for water and green for vegetation). The importance of a feature may be shown by the size of the symbol, the thickness of the line or the size of the words used to label it.

Title

A title tells us the purpose of a map. Usually the title has two parts: the name of the place, and what is being shown on the map.

Scale

Scale is the relationship between the distance from one point and another as shown on a map, and the actual physical distance between those points. A map is a graphic representation of part of the Earth's surface, drawn to scale (to indicate relative size and distance). The amount and type of detail shown on a map depends on its scale and purpose. For example, a street map of Melbourne with a scale of 1:20 000 (see Figure 7.4.2a) can show a lot more information about the city than a map of Europe with a scale of 1:18 000 000 (see Figure 7.4.2b). The street map shows a smaller area in greater detail.

Source

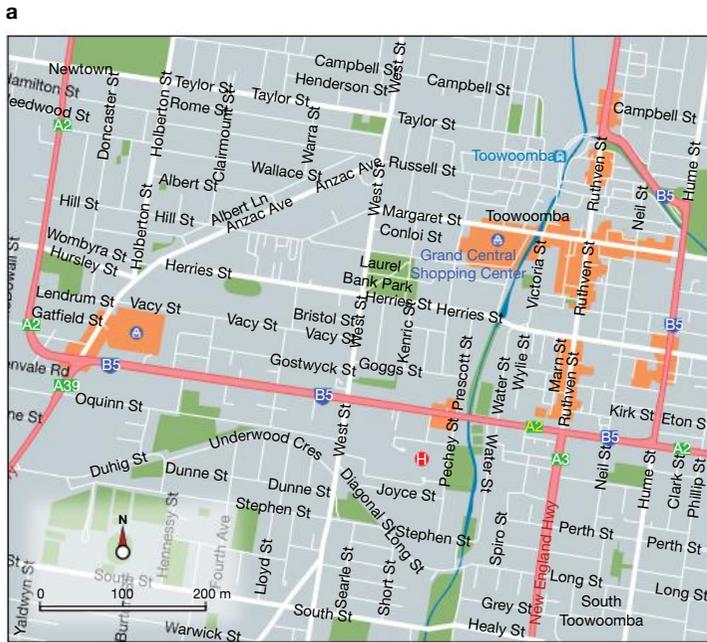
If you use information from other sources when you create your own maps, you need to indicate where that information came from. It is important to correctly cite other work in a source line.

Using scale

The scale on a map shows how much smaller the map is than the actual area. Using a scale, you can measure distances on the map and calculate the distances they represent on the Earth's surface.

	Capital city		State or territory boundary		Permanent ice
	City		Swamp		Mountain and height in metres
	International boundary		Watercourse		Railway station
	Water as international boundary		Wetlands		International airport

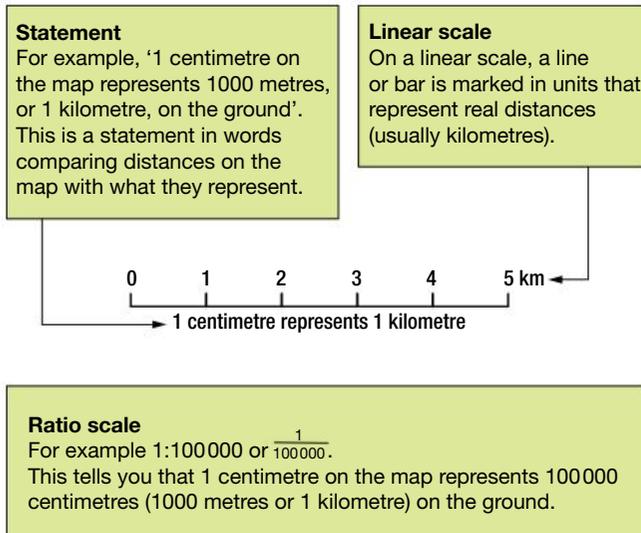
7.4.1 Some common map symbols



7.4.2 Compare these (a) small-scale and (b) large-scale map extracts

The scale on a map can be expressed in three different ways (see Figure 7.4.3):

- ▶ as a statement; for example, ‘1 centimetre (on the map) represents 1000 metres (on the ground)’, or ‘1 centimetre represents 1 kilometre’
- ▶ as a ratio or representative fraction; for example, 1:100 000
- ▶ as a linear scale.



7.4.3 Ways of expressing scale on a map

Activities

Remembering and understanding

- 1 Define what a map is.
- 2 Outline the role maps play in the study of geography.
- 3 Explain why maps cannot show every feature of the landscape.
- 4 State what is used to show how features of the Earth's surface are arranged and distributed.
- 5 List the essential elements of a map.

Geographical skills

- 6 Design suitable map symbols for the following features.

a bicycle track	b bus stop
c fast-food outlet	d football field
e tennis court	f basketball stadium
g swimming pool	h playground
i racecourse	j school
k skate park.	
- 7 Draw a sketch map of your school. Make sure it is to scale and has the essential elements of a map.

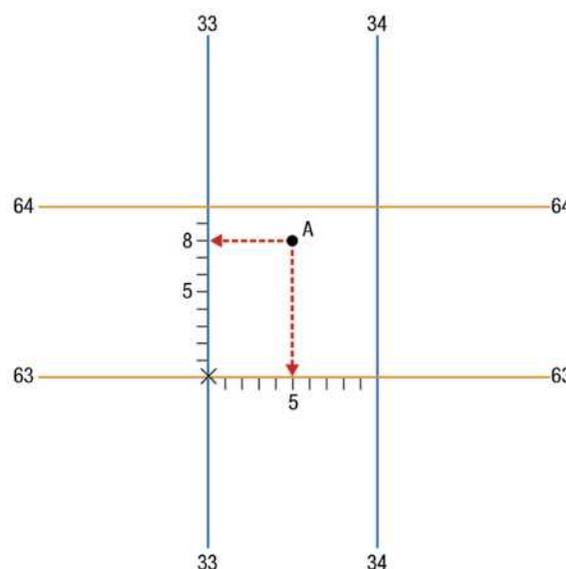
7.5 Grid and area references

Finding places

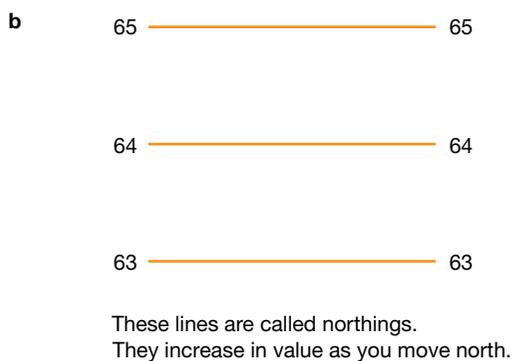
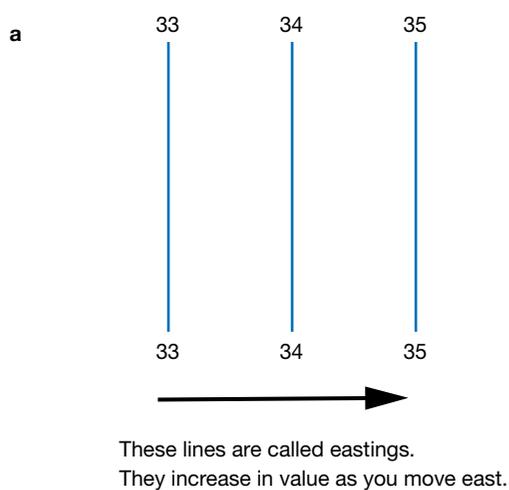
You can easily locate (find) places on a map by using the map's grid lines. On a topographic map, vertical grid lines are called eastings because they increase in value as you move eastwards. Horizontal grid lines are called northings because they increase in value as you move northwards.

Grid references

You can locate features on maps by using a six-figure grid reference (GR). The first three digits refer to the eastings (see Figure 7.5.1a) and the last three digits refer to the northings (see Figure 7.5.1b). Each set of three digits is referred to as a coordinate. The first two digits of each coordinate refer to the eastings and northings that surround the map. The third digit needed to complete each coordinate is found by dividing each easting and each northing into tenths. In Figure 7.5.2, point A is located at GR 335638.



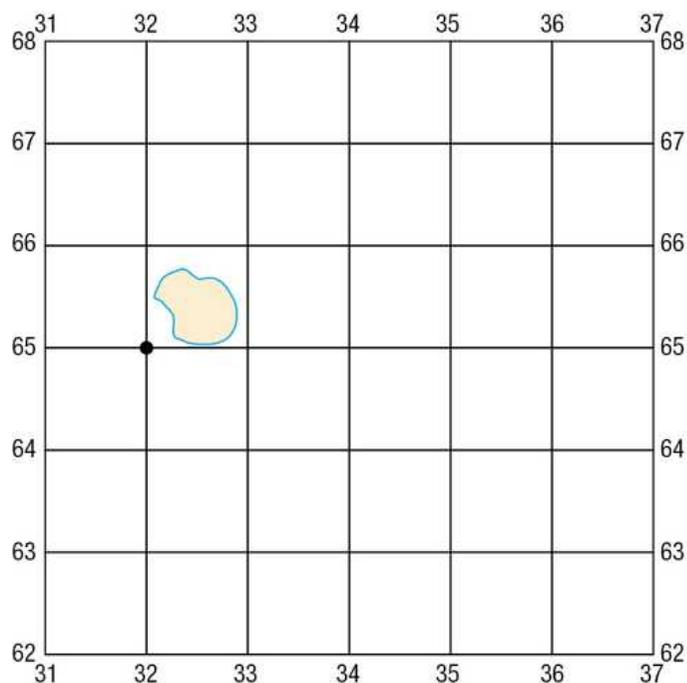
7.5.2 Point A on this map is located at GR 335638



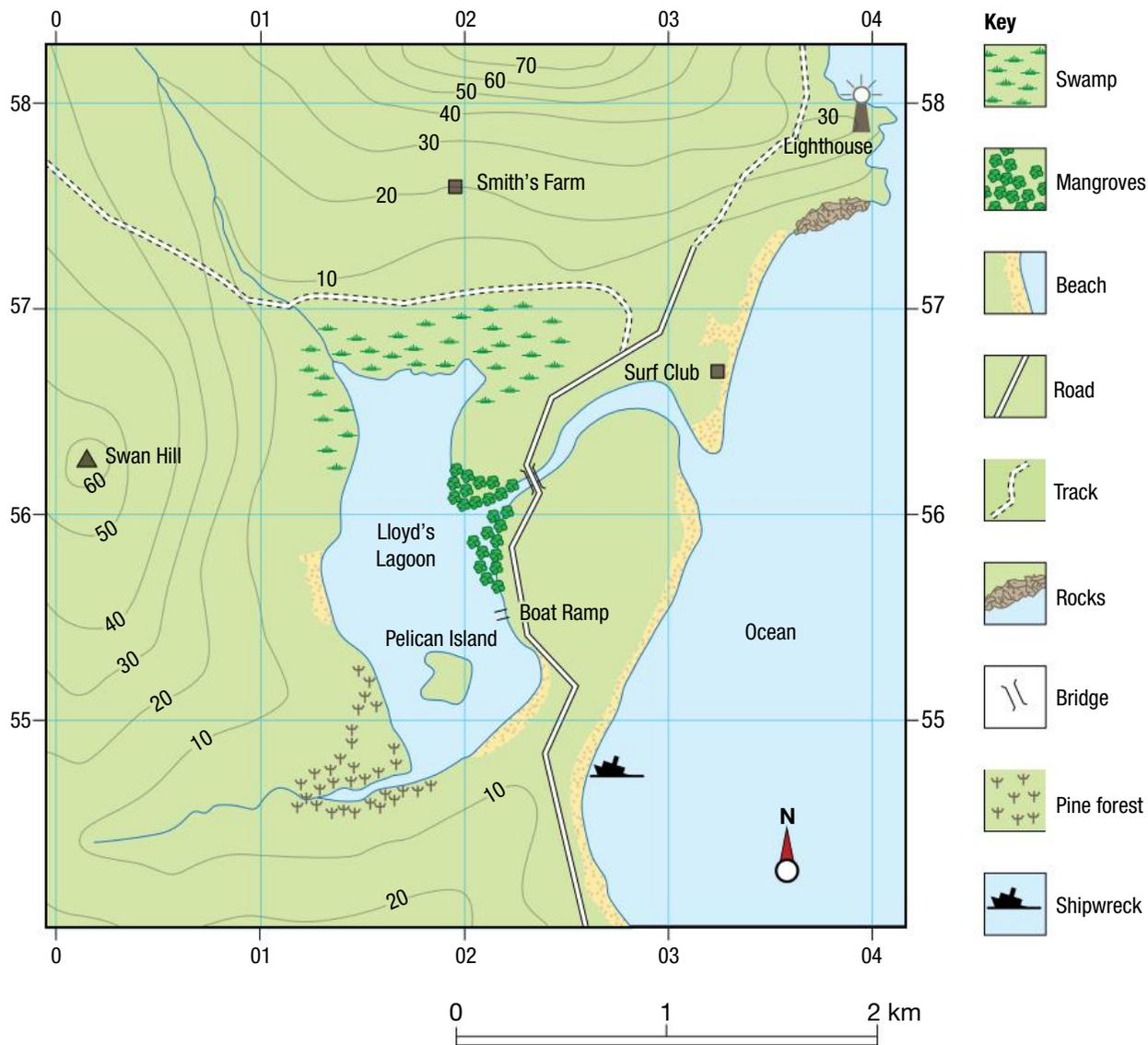
7.5.1 Eastings and northings

Area references

Features such as a small lake, quarry or village are usually located using a four-figure area reference (AR). To find the AR of a feature, use the coordinates of the lower left-hand corner of the grid square in which the feature is located. As in grid references, eastings come before northings in area references. In Figure 7.5.3, the quarry is located in AR 3265.



7.5.3 The quarry on this map is located in AR 3265



7.5.4 Map extract: grid and area references

Activities

Remembering and understanding

- 1 Explain the difference between eastings and northings.

Geographical skills

- 2 Study Figure 7.5.4 and answer the following questions.
 - a Identify the feature located at each of the following grid references.
 - i GR 028548
 - ii GR 039580
 - iii GR 032567
 - iv GR 019553.

- b What is the grid reference of the following features?
 - i Swan Hill
 - ii bridge
 - iii boat ramp
 - iv Smith's Farm.
- c What type of vegetation is found in:
 - i AR 0256
 - ii AR 0154?
- d What is the direction of the lighthouse from Swan Hill?

7.6 Topography and relief maps

Relief

Relief is the term geographers use to describe the shape of the land. Understanding relief is central to the study of landscapes and landforms.

Topographic maps

On topographic maps, the main techniques used by cartographers to show relief are spot heights, **contour lines**, contour patterns, and layer colouring and landform shading.

Spot height

Spot height is shown on a map as a black dot with the height written next to it. Spot heights give the exact height above sea level of particular locations or features.

Contour lines

A contour line is a line on a map that joins points of equal height above sea level. Every point along a line has the same value.

Contour lines provide information about the shape and slope of the land, and the height of features above sea level (see Figure 7.6.1). The contour interval, or vertical interval, is the difference in height between two contour lines that are next to each other on a map. This interval is normally stated in the map's legend or near the edge of the map.

Contour patterns

Each type of topographic feature is represented by its own distinctive contour pattern.

- The spacing of the contours on a map shows the steepness of slopes. Contour lines that are close together show that the area has steep slopes. Widely spaced lines indicate that the area is very flat.
- The spacing of contour lines on a map also shows the shape of a slope. Evenly spaced contours indicate a uniform (or regular) slope. When the spacing of contour lines reading from high to low decreases, the slope is convex (curves outwards). When the spacing of contour lines reading from high to low increases, the slope is concave (curves inwards).

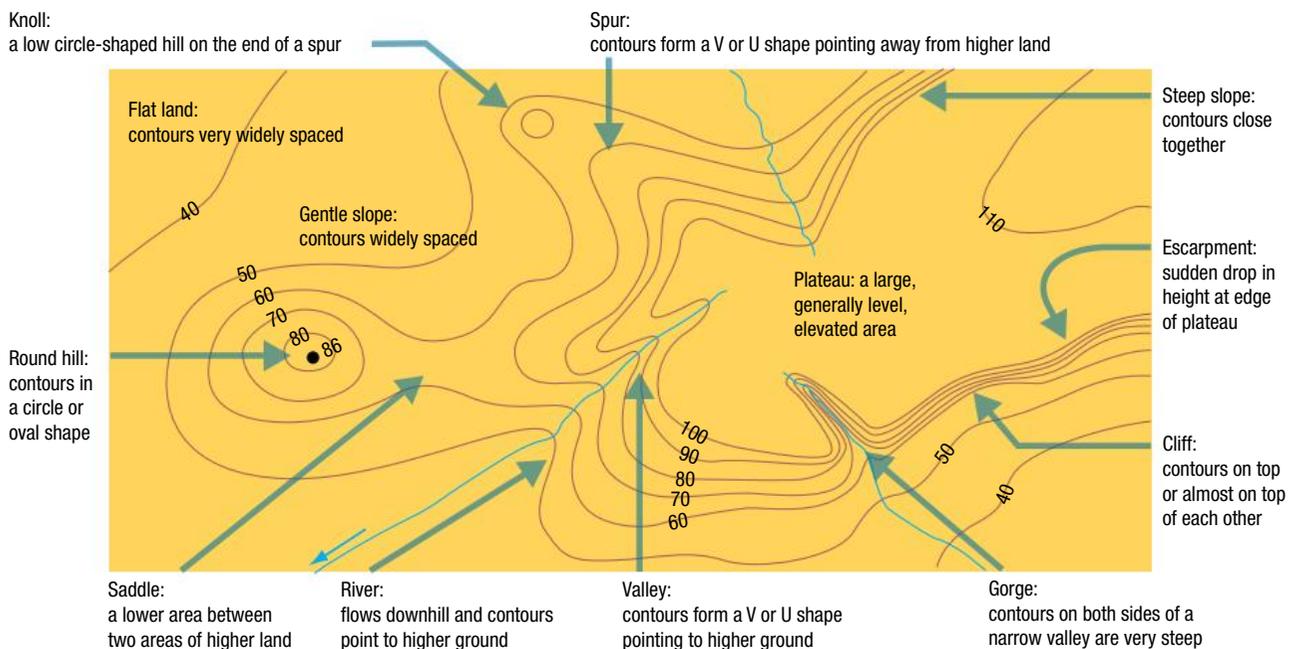
With practice, you can visualise the shape of the land by interpreting the patterns of the contour lines on a map.

Layer colouring

Layer colouring is a simple way of showing relief on maps. It involves colouring the area between selected contours in different colours. When it is used in combination with spot heights, and sometimes landform shading, layer colouring can tell you a good deal about the shape of the land.

Isolines

An isoline is a line that joins points of the same value. Examples are equal elevation (contour lines), temperature (isotherms) and barometric pressure (isobars).



7.6.1 Reading contour lines and patterns can tell us a lot about the nature of landforms

Landform shading

Shading can be used on maps, with colours darkening as elevation (the height of a point above sea level) increases. Shading may be used as if the light is coming from one direction, so that one side of a hill is shown in a lighter shade than the other, to give it greater definition. Landform shading is sometimes used with contour lines.

Skills builder

Estimating heights of landform features

Sometimes you will need to know the height of a map feature, such as the top of a hill. If it has no spot height, you can estimate the height by studying the contour lines of the map. Use the following examples as a guide.

Example 1: Estimate the height of the hill at point A

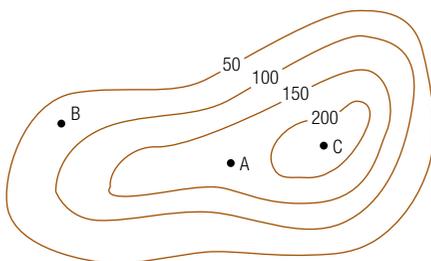
In Figure 7.6.2, point A lies more than 150 metres above sea level. However, it is obviously less than 200 metres above sea level. Your answer can be expressed in one of two ways:

- as a statement: point A is more than 150 metres, but less than 200 metres, above sea level
- as an estimate: point A is 175 metres (any number between, but not including, 150 and 200 would be acceptable) above sea level.

Example 2: Estimate the height of point B

In Figure 7.6.2, point B lies between the 50 and 100 metres contour lines. Your answer can be expressed in one of two ways:

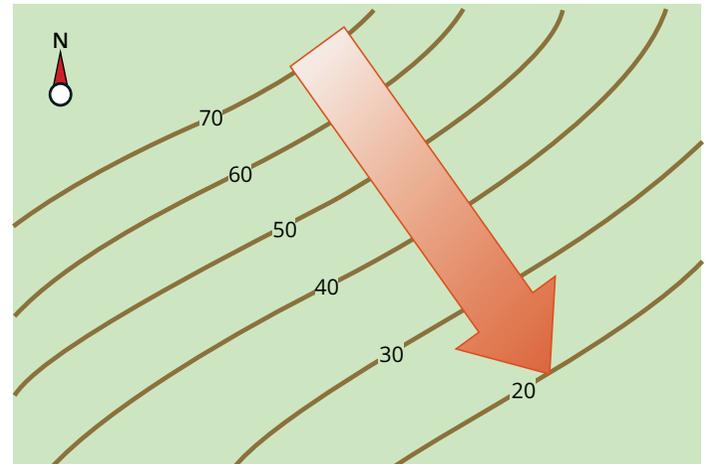
- as a statement: point B is more than 50 metres, but less than 100 metres, above sea level
- as an estimate: point B is 75 metres (any number between, but not including, 50 and 100 would be acceptable) above sea level.



7.6.2 Contour heights

Aspect

Aspect refers to the direction a slope faces. The aspect of a slope can be determined by examining the height and pattern of contour lines.



7.6.3 A slope with a south-easterly aspect

Activities

Remembering and understanding

- 1 Define relief.
- 2 List the techniques used to show relief on maps.
- 3 Explain what the spacing between contour lines tells us about relief.
- 4 Study Figure 7.6.1 and answer the following questions.
 - a Describe the difference between a cliff and an escarpment.
 - b State the spot height that is shown.
 - c What is the contour interval?

Geographical skills

- 5 Study Figure 7.6.1.
 - a List the different landform features.
 - b Find an image of each landform feature from your list.
 - c Copy Figure 7.6.1 and annotate your diagram with the landform images you have collected.

7.7 Topographic maps

Interpreting topographic maps

Being able to interpret topographic maps is an important geographical skill. It allows you to:

- locate features of the biophysical and constructed environments
- describe distribution patterns
- identify relationships between features.

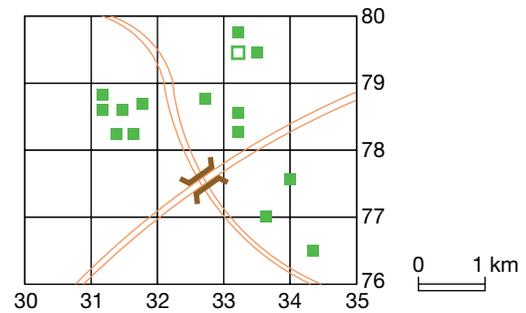
Many different people use topographic maps for work and recreational purposes. For example, an architect would not start designing a building without knowing the shape of the land, nor would a bushwalker set out on a walk without first studying a topographic map.

Topographic maps generally show a large amount of detail. Figure 7.7.1 is a topographic map showing a town next to the sea. The map includes many of the elements common to topographic maps.

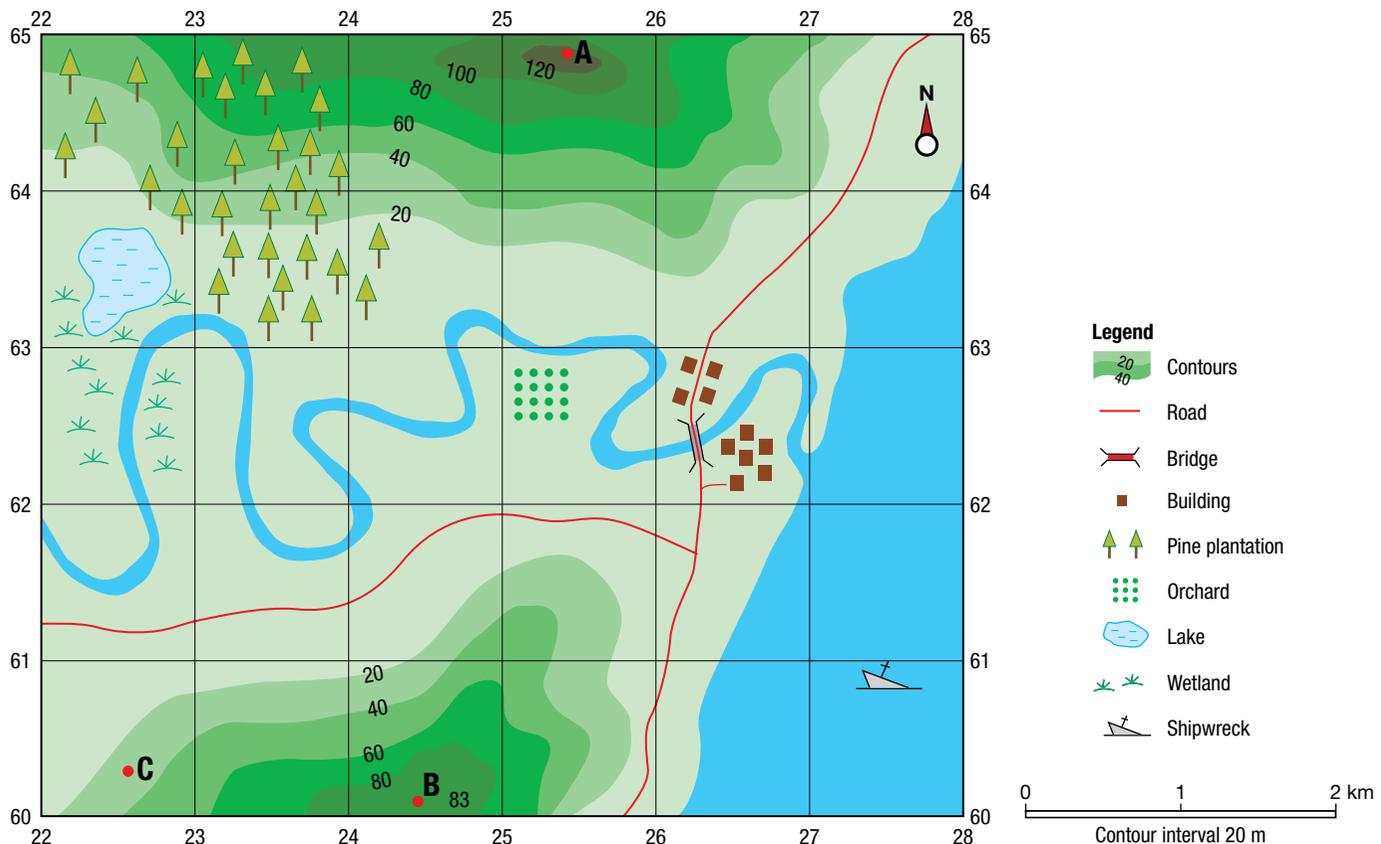
Density

The density of a feature is found by counting the number of times that feature occurs within a specific area. Answers should be expressed as the number of features per square kilometre.

For example, in Figure 7.7.2, the density of buildings in AR 3178 is 6 per square kilometre (or 6/km²).



7.7.2 Density should be shown per square kilometre



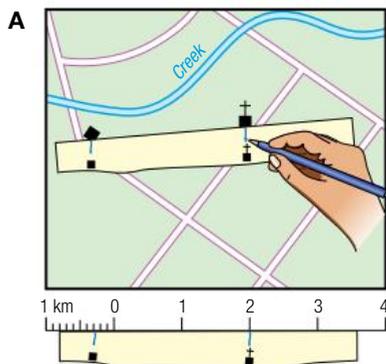
7.7.1 Example of a topographic map

Skills builder

Measuring distances on maps

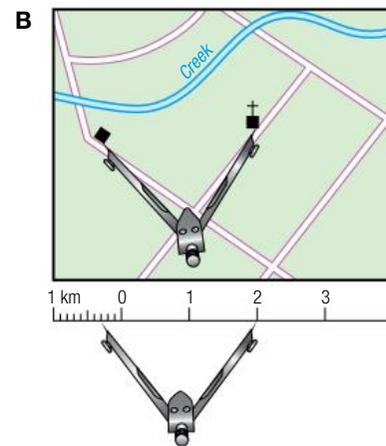
Scale can be used to calculate the distance between places on maps, vertical aerial photographs or satellite images. Figure 7.7.3 shows ways to find:

- the straight-line distance between two points (A and B)
- the distance between two points along a railway line, road, track or river (C and D).



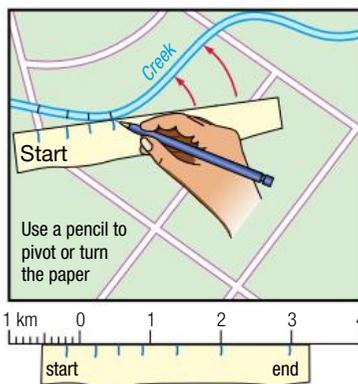
Measuring straight-line distance using paper

Place a sheet of paper between the two points. Mark the two points, then measure the distance along the line scale.



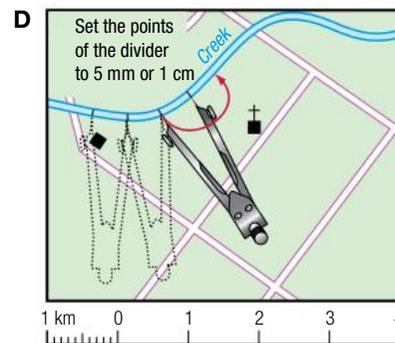
Measuring straight-line distance using dividers

Open out the dividers to the distance between the two points. Then measure that distance on the line scale.



Measuring around a bend using paper

Mark the starting point. Keeping the paper firmly on the map, move your pencil to pivot the paper at each bend or curve to reach the end point. Mark the end point, then measure the distance on the line scale.



Measuring around a bend using dividers

From the starting point, 'walk' the dividers around the curve, counting the number of 'steps' to the end point. If the distance is not an exact number of steps, open the dividers up for the final step. Calculate the total distance of all the steps, then measure that distance on the line scale.

1.5.3 Historical perspectives and interpretations

Activities

Geographical skills

- Being able to read and understand grid and area references are important geographic skills. Study Figure 7.7.1 and answer the following questions.
 - What landform feature is found in AR 2263?
 - In what area reference is the orchard located?
 - What is the grid reference of point C?
 - What features of the built environment are located at:
 - GR 275608
 - GR 263624?
 - What is the straight-line distance between point A and point B?
 - What is the direction of the bridge in AR 2662 from the hill in AR 2460?
 - In what direction is the river flowing in AR 2262?
 - What is the aspect of the slope in AR 2564?
 - What is the height of the hill located in AR 2564?
 - What is the height of point C above sea level?
 - What land use activity is found in the north-west quadrant of the map?
 - What is the density of buildings in AR 2662?



Water: A renewable natural resource

8

Water is our most precious natural resource; we can't live without it. Under the right conditions, water is a renewable resource because rain and snowfall regularly top up storages. However, water is very unevenly distributed. Rapid world population growth, unsustainable usage and changes to patterns of rainfall are placing increasing demands on water resources all over the world. In many areas, ecosystems are under stress. Shortages of clean water can impact negatively on human wellbeing and slow the rate of economic development. Such concerns highlight the importance of carefully managing the world's water resources.

OVERVIEW QUESTIONS

- 8A** What are the different forms that water takes at different stages of the water cycle?
- 8B** How are water resources managed in Australia and around the world?
- 8C** What are the causes of water scarcity?



Before you begin

8.0.1 A woman carries water in Africa

GLOSSARY

air mass a body (or area) of air with similar temperature, humidity and pressure

aquifers layers of rock that can store large quantities of water

atmospheric pressure the pressure/weight of the atmosphere at sea level

catchment an area of land where water (from precipitation) is collected by the natural landscape. The water then flows or drains into rivers, creeks, streams, dams, lakes or into a groundwater system

climate the long-term weather pattern for a place or region

desalination the removal of salts from seawater or other saline (salty) solutions

drainage basin the area where water collects and moves towards a river and its tributaries (branches of water from the main river); similar to how a bath catches waters and drains; also known as a catchment or river basin

groundwater water beneath the Earth's surface that fills pores or tiny spaces in materials such as sand, soil or gravel

humidity the amount of moisture in the air

precipitation any moisture reaching the surface of the Earth, such as rain, hail, snow and sleet (snow and rain falling together)

river basin land that acts as a container for water to flow towards a main river or ocean; also known as a catchment or drainage basin

run-off the movement of surface water down slopes

tributary a smaller river or stream that flows into a larger one

water cycle the processes of water passing from and to the Earth's oceans, atmosphere and land

water scarcity a situation in which the demand for water is greater than the amount available

watersheds the boundaries between catchments

water stress the negative effect that water scarcity can have on people and environments

weather the daily atmospheric conditions of a place

8.1 The importance of water

Water and life

Water is essential to all forms of life on Earth. Plants and animals depend on water, and access to clean, fresh water is essential to the wellbeing of humans. Without water, the Earth would be a dusty, lifeless planet.

Water and human wellbeing

The human body is largely made of water. There is between 55 and 78 per cent of water in a person, depending on a person's body size. To function properly, the body needs to consume between 1 and 7 litres of water a day. The actual amount depends on a person's level of physical activity, and the temperature and **humidity** (the amount of moisture in the air). Most water is taken in via food and drink. During exercise people need to drink more water.

The main role of water is to remove waste from the human body. It also provides the basis of saliva (which aids in digestion) and the fluid that surrounds the body's joints. Water also helps the body to regulate its temperature through perspiration.

The value of water

The appreciation of beauty in landscapes, aesthetic appreciation, is one of the most important ways that people relate to the biophysical environment. Water views are especially valued. The prices paid for waterfront properties and those with water views are an indication of the value attached to such landscapes.

People value water for spiritual reasons. Water also is central to the practices and beliefs of many religions. Water is symbolic because it cleanses and washes away impurities. Almost all Christian churches have initiation rituals (for example, baptism) involving the use of water.

For Hindus all water is sacred. Holy places are usually located on the banks of rivers, coasts, seashores and mountains. Sites where two or more rivers meet carry special significance and are especially sacred.

Muslims must be ritually pure before approaching God in prayer. Some mosques have a courtyard with a pool of clear water in the centre, but in most mosques water for washing is found outside the walls.



8.1.1 Water plays an important role in the rituals of many of the world's great religions

In Judaism ritual washing is intended to restore or maintain a state of purity. Ritual washing includes washing the hands, or the hands and the feet, or total immersion, and must be done in 'living water'; that is, in the sea, a river, a spring or a mikveh (a bath used for the purpose of ritual bathing).

People value water for recreational reasons. Water-based recreational activities are among the most popular forms of leisure. Inland waterways, for example, are popular for boating, water skiing, swimming, fishing and canoeing. Coastal waters are popular for surfing, windsurfing, diving, boating and fishing.



8.1.2 Water in its various states is a major recreational resource

The importance of water to indigenous cultures

Western culture does pay some attention to the spiritual value of water. However, water is mostly seen as an economic resource. In most indigenous societies, on the other hand, the situation is reversed. The dominant cultural perspective places great importance on spiritual aspects of water, and water bodies such as lakes, streams and springs (where underground water rises to the Earth's surface).

The Western idea that water is a resource to be exploited for the benefit of people is different to the value that, for example, Aboriginal and Torres Strait Islander peoples place on water. They see water as part of their responsibility for the care of the land.

Economic value

Water is an economic good. We use it in crops, fibre and livestock production, manufacturing, and energy production. Water is, as a result, considered to be a cost of production.

Putting a price on water is an important way of achieving efficient and equitable use, and of encouraging conservation and protection of water resources. If the price of water is set too low, it will be wasted. If it is set too high, people are denied access to an essential resource.

Did you know?

- Pure water has no smell and no taste. It also has
- a pH level of around 7 so it is neutral. This means
- that it is neither acidic nor alkaline.

Activities

Remembering and understanding

- 1 Explain why water is so important to life on Earth.
- 2 Outline the aesthetic, spiritual, recreational and economic value of water.

Applying and analysing

- 3 Demonstrate why access to clean, fresh water is important to human wellbeing.
- 4 List all the different ways in which you have used water in the past week.
- 5 Construct a mind map illustrating the value of water.

8.2 Weather and climate

Definitions

We have to understand the factors that determine weather and climate to fully understand the global distribution of the Earth's water resources. The words 'weather' and 'climate' mean different things; **weather** is the day-to-day condition of the atmosphere at a particular place; whereas **climate** is the long-term weather pattern for a place or region.

Weather

Weather includes all the daily changes in temperature, **precipitation** (the moisture that reaches the Earth's surface such as rain), wind, sunshine, humidity and **atmospheric pressure** (air pressure).

To understand weather, you need to understand atmospheric pressure. Atmospheric pressure is the weight of the air pressing down on the Earth's surface. When air is heated by the energy of the sun, it rises. This forms areas of low pressure (this means that there is not much pressure pushing down the air, meaning the pressure is low). When air cools, it sinks towards the Earth's surface. This forms areas of high pressure. The location of high-pressure and low-pressure systems helps us to predict the weather. High-pressure systems are usually associated with settled or fine weather. Low-pressure systems are generally associated with unsettled weather. Figure 8.2.1 shows how high-pressure and low-pressure systems form.

Climate

Climate is the average weather experienced in a place over many years. The climate of a place depends on its latitude (location north or south of the Equator), its altitude (height above sea level), its aspect (facing direction), how close it is to the sea, ocean currents and the season. The factors that contribute to this long-term pattern are discussed below.

Factors affecting temperature

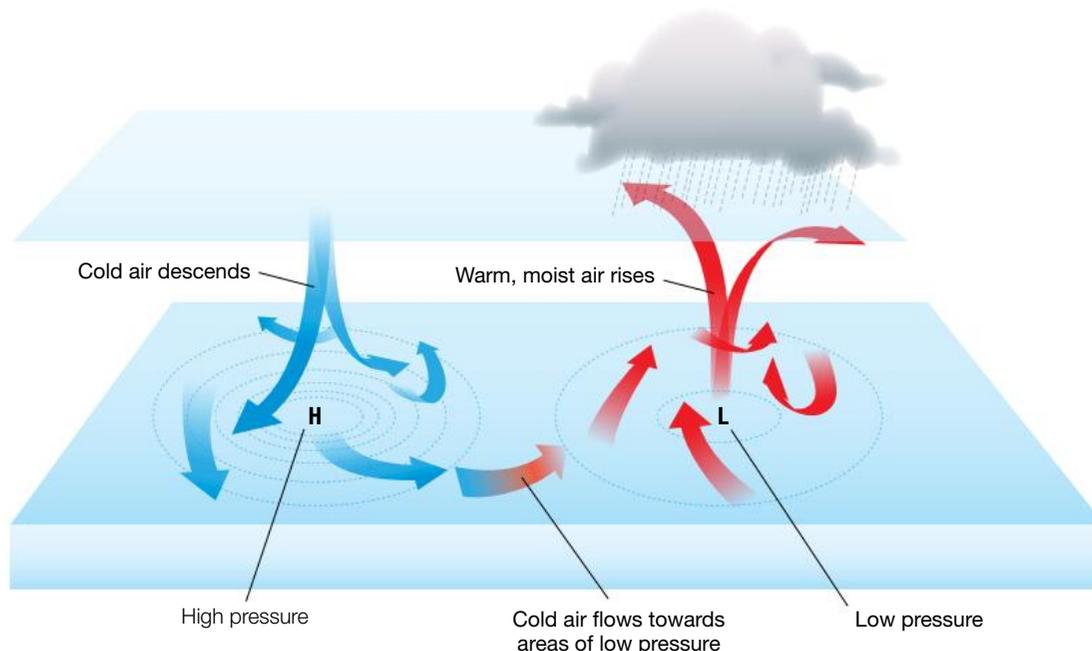
Latitude

The latitude of a place (its proximity or closeness to the Equator) will affect the temperature of that place. Places that are further away from the Equator have higher latitudes and lower average temperatures. This is because at 60° north (and 60° south) solar energy has twice the area to heat as it does at the Equator, due to the curving shape of the Earth, as shown in Figure 8.2.2.

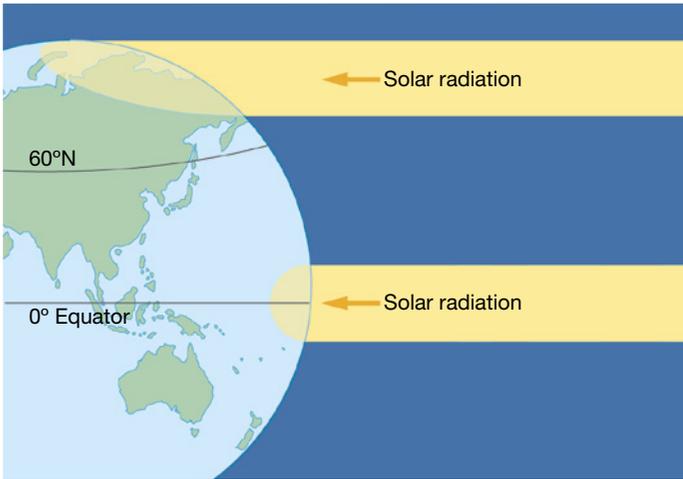
Seasonal differences

The Earth tilts on an angle as it revolves around the sun. This angle influences:

- the angle of the sun's rays as they reach the Earth
- the changing seasons
- the number of daylight hours.



8.2.1 When air near the Earth's surface is heated rapidly, it rises, forming areas of low pressure. As the air cools, it sinks, forming areas of high pressure.



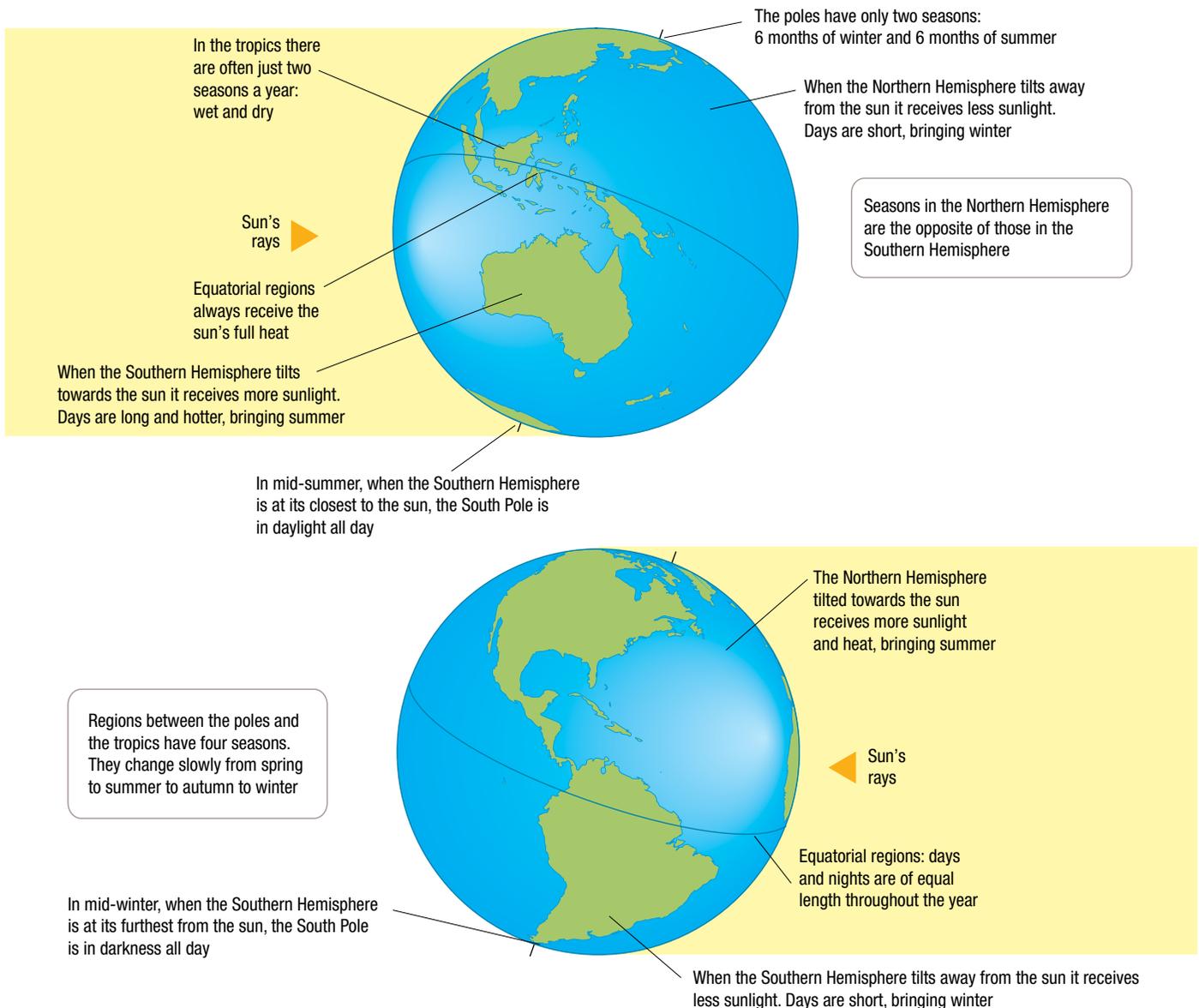
8.2.2 Places at higher latitudes, such as 60° north, will have lower average temperatures than places closer to the Equator. This is because the sun needs to heat a larger part of the Earth's surface at these locations.

Figure 8.2.3 shows that from December to February the Southern Hemisphere is tilted towards the sun. This is when there are hotter summer months. From June to August, the Northern Hemisphere is tilted towards the sun. This is why the Northern Hemisphere has its summer in the middle of the year, while Australia is having its winter.

The daily number of daylight hours changes with the seasons because the Earth's axis is tilted at an angle of 23.5°. The shorter the day, the less opportunity there is for the Earth and its atmosphere to absorb heat.

Aspect

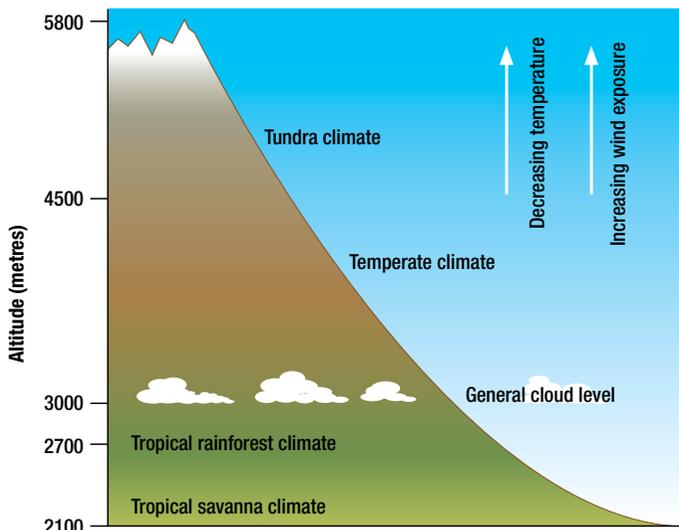
The direction a feature faces is known as its aspect. A feature that faces the sun will generally be warmer than one that does not.



8.2.3 The seasons we experience are the result of the Earth's revolution around the sun and the tilt of the Earth on its axis

Altitude

Mountain areas are cooler than areas that are lower because of their high altitude (elevation or height above sea level). In higher altitudes there is less air pressure; less air pressure causes any heat to be lost. Mount Kilimanjaro is Africa's highest mountain at 5894 metres above sea level. Its top is permanently covered with snow, even though it is only just south of the Equator. On average, temperature drops by approximately 6.5°C with every 1000 metres of increase in altitude. This affects the climate of places at different heights above sea level (see Figure 8.2.4).



8.2.4 As altitude increases, air pressure decreases and the temperature and climate changes, becoming cooler

Factors affecting temperature and rainfall

Distance from the sea

The distance from the sea influences both temperature and rainfall.

Temperature

The sea gains and loses its heat much more slowly than the land. This means that the sea maintains more even temperatures. Places near the coast therefore experience smaller differences in temperature than inland places. Places away from the coast can have higher temperatures during the day and lower temperatures at night. This is because the land gains and loses heat at much greater speed than the sea.

Rainfall

Winds that blow off warm seas carry a lot of moisture. As a result, places near the coast often receive higher rainfall than those further inland. By the time the winds reach inland areas, they have lost most or all of their moisture.

Ocean currents

The temperature of ocean currents influences both temperature and rainfall.

Temperature

Oceans absorb heat during the day and release it slowly during the night. This helps keep coastal areas much warmer than inland areas.

Rainfall

Water evaporates (turns into a vapour or gas) much more quickly from oceans with warm ocean currents. Consequently, nearby coastal areas are likely to have higher levels of rainfall. Areas affected by cold ocean currents are likely to experience lower rainfall. This is because water evaporates more slowly in cold ocean currents.

Prevailing winds

The prevailing wind direction is the direction from which the wind blows most often. The temperature of the prevailing wind is affected by the area it blows from and passes over. When prevailing winds blow over warm bodies of water, they often bring rain. This is because more water evaporates and rises into the atmosphere in these areas.

Mountain barriers

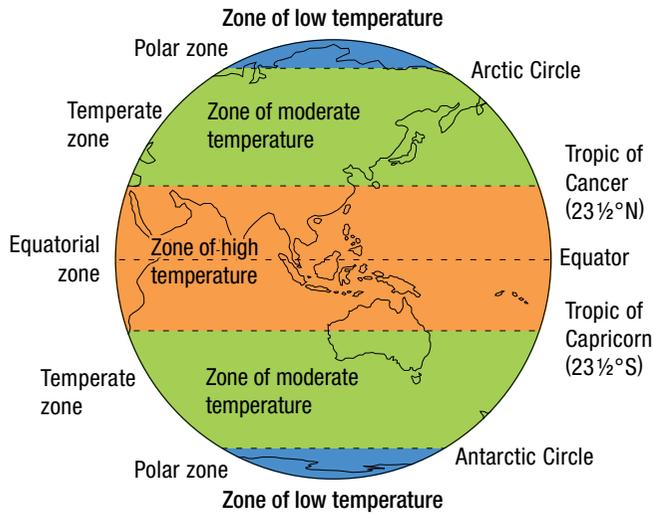
Mountains act as barriers to the movement of air. When warm and moist air meets a mountain, it is forced to rise. As the air rises it cools, and the moisture in it condenses to become more compact. This causes rain to fall on the windward side of the mountain, which is the side facing the wind. This process is known as orographic rainfall. The air that then flows over the mountain is much drier because the moisture has fallen as rain. Deserts are often found on the leeward (sheltered) side of large mountain ranges. This is known as the rain shadow effect.

World climate pattern

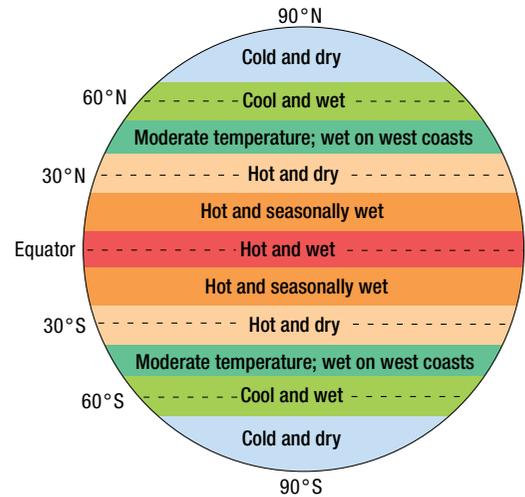
There are three very broad zones of climatic difference across the world. They are the equatorial zone (high temperature), the temperate zone (moderate temperature) and the polar zone (low temperature). These three zones are shown in Figure 8.2.5. The differences in climate are caused by the varying amounts of heat received from the sun.

The three broad zones are only a general indication of climatic difference. Rainfall patterns (or zones) give a more specific guide to rainfall patterns. Figure 8.2.6 shows the broad rainfall zones of the world.

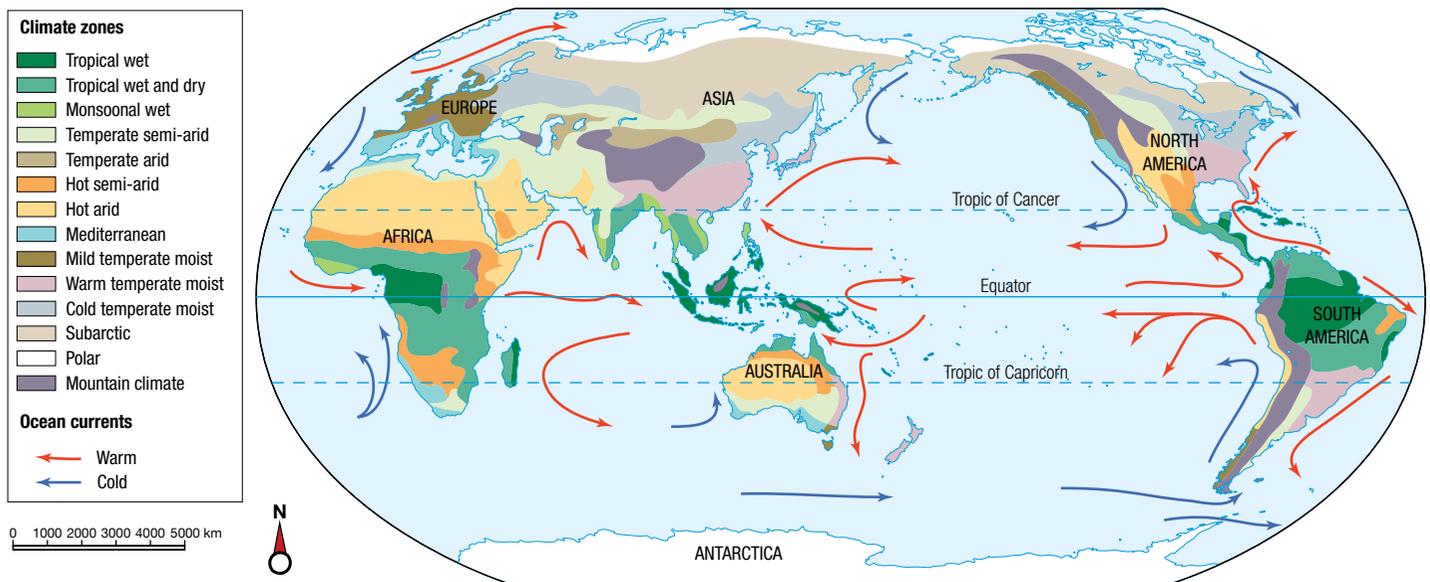
The variety of climate zones across the world results from interactions between temperature and rainfall. These zones are shown in Figure 8.2.7.



8.2.5 The three broad temperature zones of the world



8.2.6 The broad rainfall zones of the world



8.2.7 The different climate zones of the world result from varying temperature and rainfall, which are also affected by ocean currents

Activities

Remembering and understanding

- 1 Explain the difference between weather and climate.
- 2 Study Figure 8.2.1 and fill in the following table.

	How the system develops	Weather associated with the system
High-pressure system		
Low-pressure system		

- 3 Explain how latitude, seasonal differences, aspect and altitude affect temperature.

- 4 Describe how prevailing winds, distance from the sea, ocean currents and mountain barriers affect temperature and rainfall.

Geographical skills

- 5 Study Figure 8.2.7 and do the following tasks.
 - a Name the two lines of latitude that lie either side of the tropical climate zones.
 - b Identify the continents where the monsoonal climate zones are located.
 - c Name one continent that does not have a mountain climate zone.
 - d Identify the types of climates that are associated with cold ocean currents.

8.3 The water cycle

A closed system

The **water cycle** refers to the way water moves and circulates between the Earth's oceans, the atmosphere and land. The water cycle is sometimes called the hydrological cycle ('hydro' means water). It is often referred to as a 'closed system' because the same water has been circulating since the earliest days of the planet. No water is added and none is taken away. Humans interact with the water cycle in many ways.

Movement and change

Water is always moving and changing: it changes its form (ice and snow, liquid water or water vapour) and its location. Water can be used by humans, animals and plants during its journey through the cycle, but it always goes back to nature.

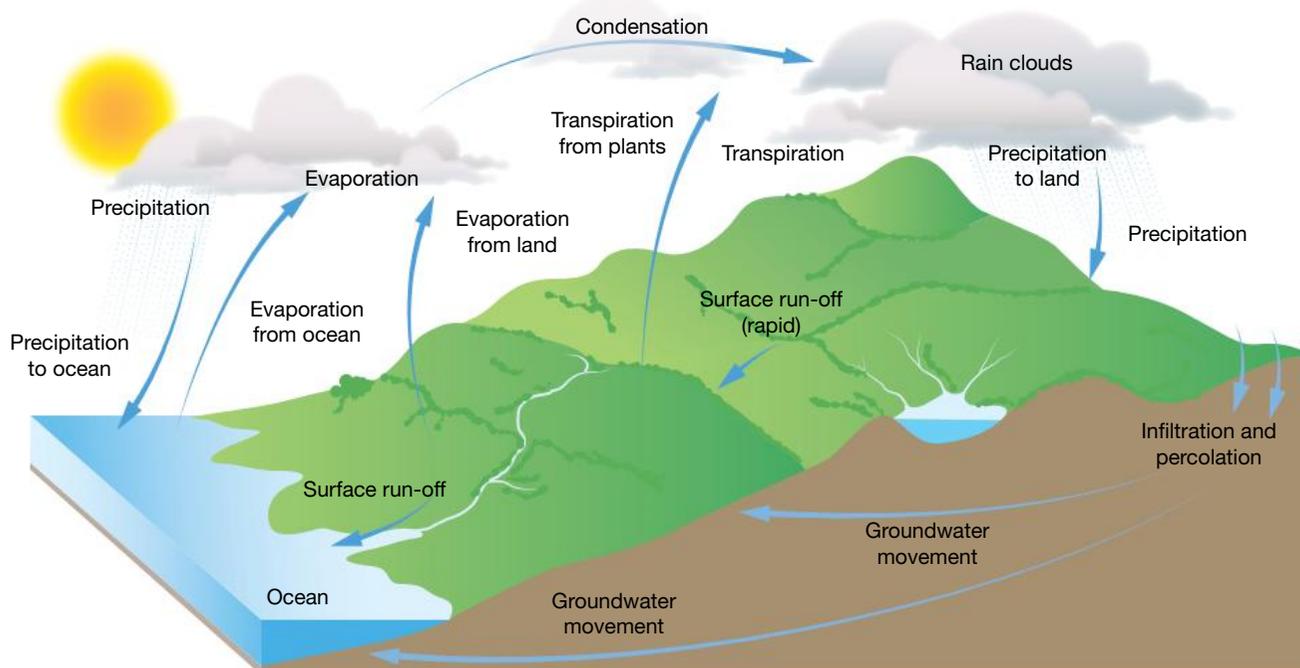
Since the beginning of industrial civilisation, the uses people make of water have multiplied. The water cycle is shown in Figure 8.3.1.

Evaporation
The process of water changing into water vapour or mist. Water can evaporate from any moist surface, but about 84 per cent of the water vapour in the atmosphere comes from the oceans.

Transpiration
The process of water being absorbed by plants and then passing into the atmosphere from the plant's surface, mainly from the leaves

Condensation
The changing of water vapour into droplets of liquid water when it cools, in the form of dew, fog or clouds

Precipitation
Any or all of the forms of water, whether liquid (e.g. rain) or solid (e.g. hail, snow) that fall from clouds and reach the ground



Run-off
The movement of surface water down slopes

Groundwater movement
The slow underground movement of water. Water below the Earth's surface may eventually return to the surface (e.g. as a spring) or seep into the oceans, lakes or river channels.

Groundwater
Water beneath the Earth's surface that fills the gaps between materials such as sand, soil and gravel

Infiltration
The movement of water from the land surface into the soil

8.3.1 The water cycle

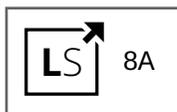


8.3.2 Snow-making machines or 'snow guns', like this one, are often used to add more snow to ski slopes

Human impacts

Humans interact with the water cycle in a variety of ways, sometimes polluting the water and disrupting the cycle. Examples of human impact on the water cycle include:

- building structures, such as levee banks (barriers or walls), to protect farmland and settlements from flooding
- storing water in dams (reservoirs) in areas where rainfall is unreliable (varies)
- using canals and pipelines to transport water from one area to another
- sinking wells and bores to extract **groundwater** (water beneath the Earth's surface)
- using water and gravity to generate hydro-electricity (electricity generated by water flow)
- using large bodies of water, such as oceans or lakes, to dump sewage and pollutants
- clearing land for agriculture (farming), mining and urban development (housing)
- creating artificial precipitation; for example, snow making (see Figure 8.3.2).



Activities

Remembering and understanding

- 1** Explain why the water cycle is referred to as a 'closed system'.
- 2** Describe the difference between evaporation and transpiration.

Applying and analysing

- 3** Select four dot points from the section 'Human impacts'. Discuss how each action affects the water cycle (for example, 'Storing water reduces run-off, which is water moving down a slope').

Evaluating and creating

- 4** Imagine you are a molecule of water. Create a short story about your movement through the water cycle.
- 5** Construct a diagram that represents the water cycle. On your illustration, label the main processes involved in the water cycle. Use colour coding to identify those processes that involve a change in state, such as ice to water or water to vapour. Also identify the processes that involve a change in the physical location of water.

8.4 Precipitation

Types of precipitation

Precipitation is the term given to any form of moisture that reaches the Earth's surface from the atmosphere. Rain, hail, snow and dew are all forms of precipitation.

Rain

Rain occurs when cloud droplets grow and become too heavy to remain in the cloud. They then fall towards the Earth's surface. Rain can also begin as ice crystals that join to form large snowflakes. As the falling snow passes through the freezing level (0° Celsius) into warmer air, the flakes melt to become raindrops.

The smallest raindrops reaching the Earth's surface are over ten times the size of the average cloud droplet. Coalescence is the merging of the smallest cloud droplets to create larger droplets of water. These larger droplets then fall as rain or snow.

Did you know?

- Approximately 505 000 cubic kilometres of water
- fall as precipitation each year, and 398 000 cubic kilometres of this falls over the oceans. Given the
- Earth's surface area, this means that the average
- annual precipitation is 990 millimetres globally.

Hail

Hail is made up of hailstones, or large, frozen raindrops that are produced in intense thunderstorms. As water droplets rise rapidly in a storm, they form ice pellets that continue to grow until they begin to fall under the force of gravity. On reaching the bottom of the cloud, some of these ice pellets are carried back to the top of the cloud. As the ice pellets once again fall through the cloud, another layer of ice is added and the hailstone grows even larger. Once the hailstone becomes too heavy to be supported, it falls out of the cloud towards the Earth's surface.



8.4.1 A storm brings rain to the Dandenong Ranges near Melbourne



8.4.2 Hailstones reach the ground as ice since they do not spend enough time in the warm air to melt before they land

Snow

Snowflakes start as tiny ice crystals in clouds where the temperature is at or below freezing point (0°C). As an ice crystal rises and falls within a cloud, it grows by combining with other ice crystals. When they combine they take on the six-sided shape of a snowflake, shown in Figure 8.4.3.



8.4.3 Snowflakes are made up of hundreds of tiny ice crystals that form at or below freezing point

When the snowflake becomes heavy enough, it falls towards the ground. If the temperature in the lower atmosphere and at ground level is at or below 0°C , snow will gather. In places where the temperatures remain mostly below zero, fallen snow is compressed to form an ice sheet or a glacier, and can sometimes be stored in this form for thousands of years.

Dew

Water vapour in the air will form droplets known as dew when the air comes into contact with a cold surface (see Figure 8.4.4). The temperature at which this occurs is known as the dew point. When temperatures are low enough, dew becomes ice and is called frost.



8.4.4 Dew forms when moist air comes into contact with a cold surface

Rising air and precipitation

Under normal conditions, the temperature of the air decreases as altitude increases. Cold air cannot hold as much moisture as warm air. Any water vapour that the rising air cannot hold condenses into water droplets (or ice crystals) and forms clouds. Warm, moist air is pushed up into the atmosphere and forms rain in three ways: frontal rainfall, orographic rainfall and convectional rainfall.

Frontal rainfall

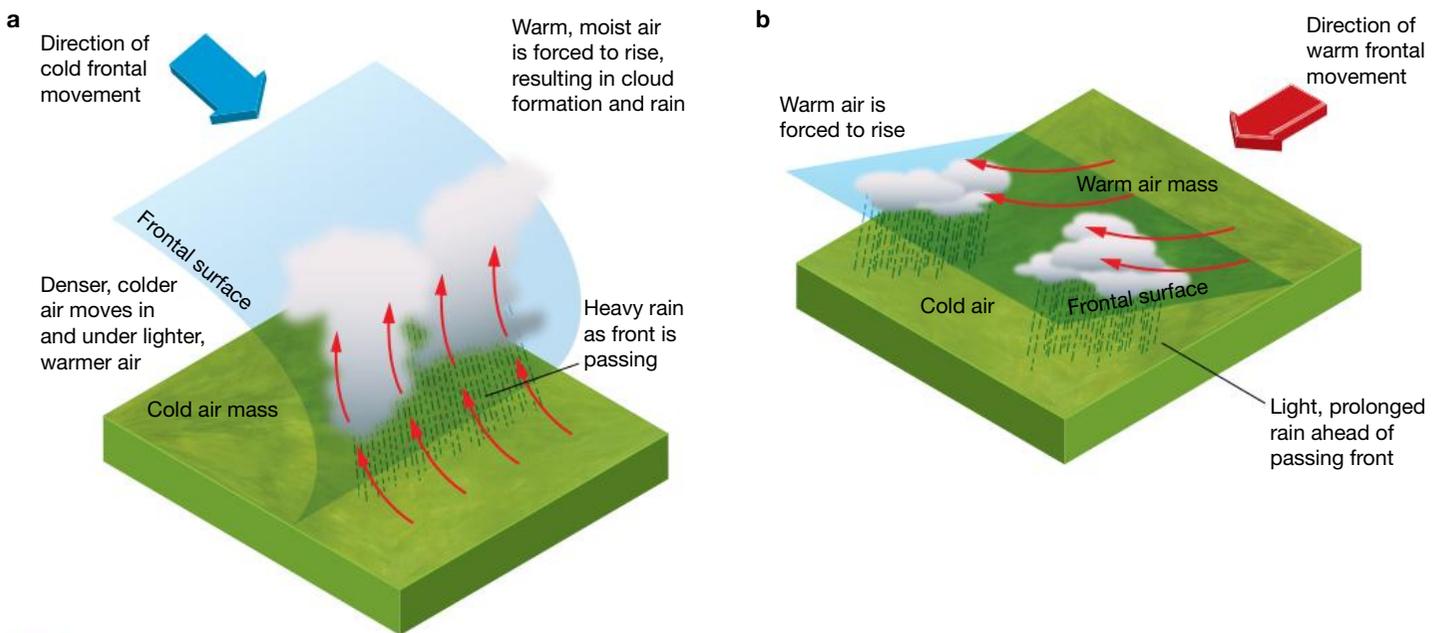
Frontal rainfall occurs when a cold and a warm **air mass** (body of air with similar temperature, humidity and pressure) meet. This meeting point is known as a front.

When a cold air mass meets a warm air mass, the cold air (which is heavier or denser than the warm air) forces the warm air to rise. As the warm air is pushed upwards, it cools. When the air rises and is no longer able to hold all its water as water vapour, it begins to condense and form clouds. This often results in heavy precipitation associated with the passing of storms, as shown in Figure 8.4.5a.

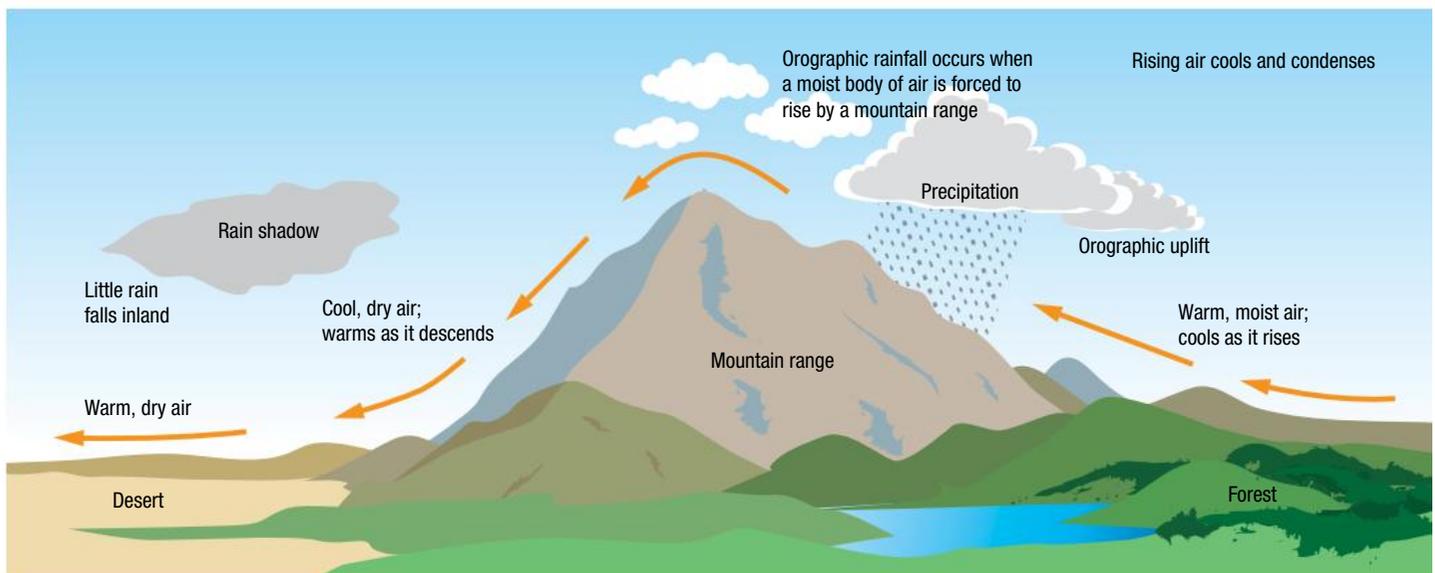
When a warm air mass meets a cold air mass, the warm air mass (which is lighter and less dense than the cold air) rises above the denser and heavier cold air mass. This resulting rainfall extends over a wide area, as shown in Figure 8.4.5b.

Orographic rainfall

Orographic rainfall occurs when a mountain range forces a moist body of air to rise (see Figure 8.4.6). As the air rises, it cools. The water vapour then begins to condense and form clouds, and finally falls as rain or snow. Few clouds and only a little rain make it beyond the mountain range, producing what is called the 'rain shadow effect'. The rain shadow effect is a dry area on the other side of the mountain. It is caused by the mountain blocking the wind that brings clouds and moisture into the area.



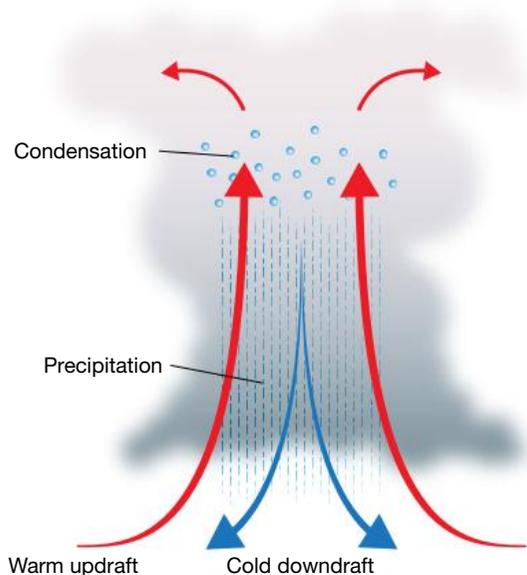
8.4.5 Frontal rainfall associated with the passage of (a) a cold front and (b) a warm front



8.4.6 Orographic rainfall

Convictional rainfall

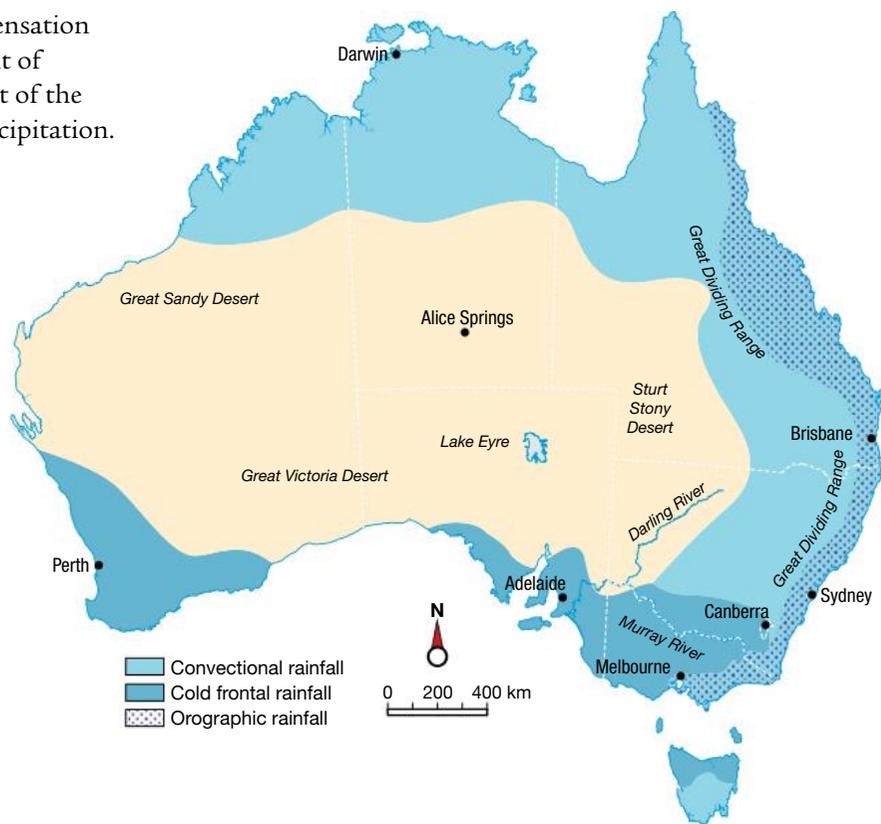
Convictional rainfall occurs when the sun heats the Earth's surface and causes water to evaporate, changing it from a liquid into a gas (see Figure 8.4.7). Warm, moist air then rises and cools. Eventually, the air reaches a point called the condensation level (or dew point). This is when the air has cooled to the point that the water vapour condenses and turns back to a liquid form. This process of condensation high in the atmosphere results in the development of clouds. As the clouds continue to grow, the weight of the water droplets increases, eventually leading to precipitation.



8.4.7 Convictional rainfall

Rainfall in Australia

The topography of the land, distance from the Equator and presence of ocean currents all influence the location of rainfall in Australia. The types of rainfall that different parts of Australia experience are shown in Figure 8.4.8. Note that some locations experience more than one type of rainfall.



8.4.8 Distribution of different types of rainfall in Australia

Activities

Remembering and understanding

- 1 List the forms of precipitation.
- 2 Describe the conditions under which rain develops.
- 3 Explain the process of coalescence.
- 4 Explain how dew forms.
- 5 Explain why rising air is important to the process of precipitation.

Applying and analysing

- 6 Examine Figure 8.4.5. How does precipitation differ depending on whether it is associated with the passage of a cold front or a warm front?

- 7 Construct an annotated sketch or flow chart explaining convectional rainfall.
- 8 Draw a raindrop, a hailstone and a snowflake. Next to each, describe the conditions required for its formation and explain how it forms.

Geographical skills

- 9 Study Figure 8.4.8 and do the following tasks.
 - a Find your present location and name the type of rainfall that occurs there.
 - b Describe the locations where the three different types of rainfall are experienced in Australia.
 - c Name the type of rainfall that is not found in Australia.

8.5 Measuring weather

Aim

The aim of this fieldwork activity is to measure and record weather and rainfall in your area. Once the data has been collected and recorded, you will compare it with weather and rainfall data from the Bureau of Meteorology.

How to record weather data

A variety of instruments can be used to record weather data for a specific location. You can use:

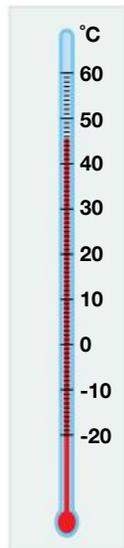
- ▶ traditional weather-recording instruments
- ▶ a handheld weather-recording device (see Figure 8.5.1)
- ▶ a handheld digital tool (such as a smartphone or an Android device) that is able to record weather data at your location. You may need to add weather-recording applications to your digital tool.

To ensure the accuracy of your weather data, ensure that the site you select at which to record your data is:

- ▶ in the open and not under cover
- ▶ free from obstructions, such as overhanging trees or walls and fences
- ▶ not close to heating or cooling vents.



8.5.1 A handheld weather-recording device



8.5.2 A thermometer

Temperature

A thermometer (see Figure 8.5.2) is used to record air temperature.

Method

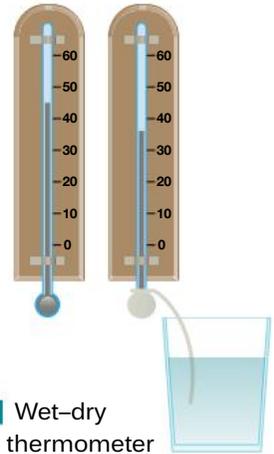
Using a thermometer or handheld weather-recording device, record the temperature.

Note: If using a thermometer, do not hold it by the bulb, as your body heat may affect the temperature reading.

Relative humidity

A wet-dry bulb thermometer (see Figure 8.5.3) is used to measure and record relative humidity. Relative humidity is the amount of water vapour in the air. A wet-dry bulb thermometer consists of two standard mercury-in-glass thermometers. One thermometer bulb is wrapped in muslin, which is kept wet.

The evaporation of water from the muslin has a cooling effect, so the temperature indicated by the wet bulb thermometer is less than the temperature indicated by the dry bulb thermometer. The rate of evaporation from the wet bulb thermometer depends on the humidity of the air: evaporation is slower when the air is already full of water vapour. For this reason, the difference between the temperatures indicated by the two thermometers gives a measure of relative humidity.

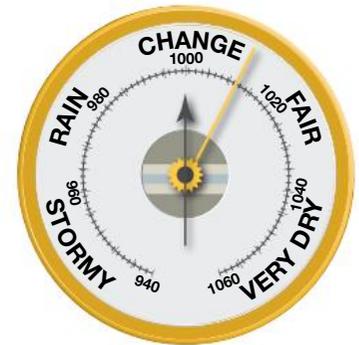


Method

Using a wet-dry bulb thermometer or handheld weather-recording device, record the relative humidity.

Air pressure

You can use an aneroid barometer (see Figure 8.5.4) to measure air pressure. An aneroid barometer contains a sealed box from which most of the air has been removed. Any change in pressure will make the box shrink or expand. Levers magnify these changes, causing a pointer to move on a dial. Air pressure is measured in hectopascals and the air pressure at sea level is generally around 1013 hectopascals (hPa). It can drop to 970 hPa during severe storms. In a high-pressure system it can reach 1040 hPa. A drop in air pressure, measured over a day or two, indicates that unsettled weather (rain) is coming.



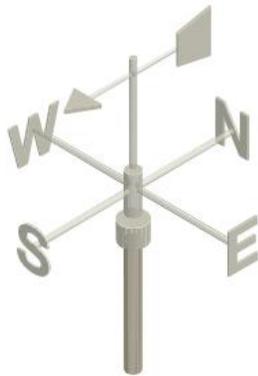
8.5.4 An aneroid barometer

Method

Using a barometer or handheld weather-recording device, record the air pressure.

Wind direction

A wind vane shows the direction from which the wind is blowing. Winds are named after the direction from which they blow. A wind blowing from the south, for example, is called a southerly.



8.5.5 A wind vane

Method

Using a wind vane (see Figure 8.5.5) or handheld weather-recording device, record the wind direction.

Wind speed

An anemometer (see Figure 8.5.6) is used to measure wind velocity (wind speed). An anemometer works by spinning in the wind: the higher the wind speed, the faster the anemometer spins. Wind speed is calculated by counting the number of revolutions per hour.



8.5.6 An anemometer

Method

Using an anemometer or handheld weather-recording device, record the wind speed.

Note: If you don't have an anemometer or handheld weather-recording device, estimate the approximate wind speed by observing the surrounding conditions and comparing these with the descriptions given in the Beaufort scale (see Table 8.5.7). This will give you the approximate wind speed.

8.5.7 The Beaufort scale

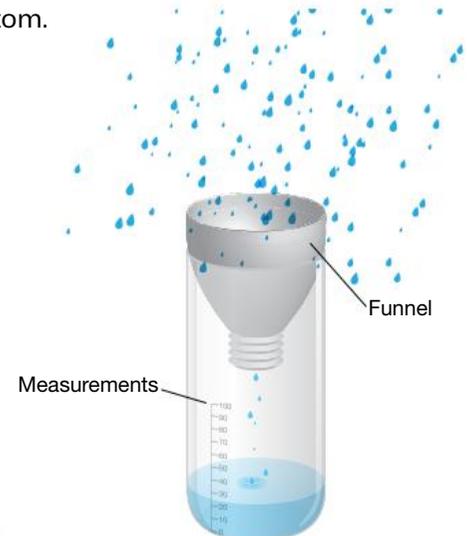
Wind strength	Speed (km/h)	Description
Calm	0–2	smoke rises vertically
Light air	2–5	smoke gently moves with the air current
Light breeze	5–10	leaves rustle, vane moves
Gentle breeze	10–20	leaves and small branches move
Moderate breeze	20–30	small branches move, dust and paper are lifted
Fresh breeze	30–40	large branches move, wave crests appear on water
Strong gale	75–90	large branches come down
Full gale	90–100	trees are uprooted, structural damage to buildings

Skills builder

Making a simple rain gauge

To make a rain gauge, you will need an empty, clear-plastic 2-litre drink bottle and a ruler.

- 1 Cut the top off the empty drink bottle, turn the top part upside down and push it into the bottom part to act as a funnel (see Figure 8.5.8). The larger opening of the funnel should be the same size and shape as the bottom of the bottle.
- 2 On the outside of the bottle, measure out and mark a scale in millimetres (mm). Alternatively, you could tape the ruler to the outside of the bottle. Either way, make sure the scale is vertical and that zero is at the bottom.



8.5.8 A simple rain gauge

Rainfall

A rain gauge is used to measure the amount of rainfall received in a 24-hour period. Rainfall is measured in millimetres. A funnel collects the rainfall and directs it into a measuring tube.

Method

- 1 Find a location for the rain gauge where it will be free from obstruction. There is a minimum distance that official rain gauges must be from such obstructions. For example, if a nearby tree is 5 metres tall, the rain gauge must be at least twice that distance (i.e. 10 metres) away.
- 2 Leave the rain gauge in place for 24 hours, and then measure the amount of water it has collected. To measure rainfall, hold the rain gauge so that your eye is level with the top surface of the water. Read the rainfall in millimetres from the scale on the gauge.
- 3 Record your rainfall data, including the date and time of measurement. After you have measured the water, empty the rain gauge and put it back in place. You will need to measure rainfall at the same time each day.

Note: If you do not have access to a rain gauge, you can create your own. See the Skills builder box ‘Making a simple rain gauge’.

Did you know?

- Rain can be light, medium or heavy.
- Raindrops are usually larger than 0.5 mm in diameter, while drizzle is smaller than 0.5 mm in diameter.

How to access weather and rainfall data

Bureau of Meteorology

The Bureau of Meteorology (BoM) is Australia’s national agency for weather, climate and water. The BoM has numerous monitoring stations throughout Australia to record weather, climate and water data. You will need to find the weather station closest to where you recorded your data.

Method

- 1 Go to the BoM website. On the home page, select ‘Climate and Past Weather’, then click ‘Weather & climate data’ to go to the Climate Data Online page.

- 2 In section 1 of the ‘Select using Text’ tab, choose ‘Weather and climate’ from the drop-down menu. Under Statistics, click the ‘Monthly’ button.

In section 2, type in the box the location where you recorded your data. Click the ‘Find’ button. Click to select your location from the list, then click the weather station closest to your location.

In section 3, click the ‘Get Data’ button.

Spotlight

Clouds

The names of some clouds are derived from Latin words that describe their appearance; for example, cirrus (a lock of hair), cumulus (a heap), stratus (from stratum, a blanket or covering). Others are named after different characteristics, such as nimbus (a shower of rain).



8.5.9 (a) Cirrus and (b) nimbus clouds

Activities

Aim

Outline weather and rainfall data and how much it varies in an area.

Method

- 1 Choose a suitable site in or near your backyard to record weather data. Ensure you use the same location each day at the same time.
- 2 Select the weather-recording device or instruments that you will use to collect your data.
- 3 Collect weather data on temperature, relative humidity, air pressure, rainfall (precipitation), wind speed and wind direction over a 5-day period.
- 4 Copy the fieldwork data table below and record your findings. Include a description of the weather for each day.

Fieldwork data table					
Date:	Time:			Location:	
	Day 1	Day 2	Day 3	Day 4	Day 5
Temperature (°C)					
Relative humidity (%)					
Air pressure (hPa)					
Precipitation (mm)					
Wind speed (km/h)					
Wind direction					
Weather description					

- 5 Access the Bureau of Meteorology website and select your nearest capital city or the main town closest to your home. Alongside your fieldwork data table, note the average monthly rainfall (precipitation).

Average monthly data table	
Date:	Location:
	Monthly average
Temperature (°C)	
Relative humidity (%)	
Air pressure (hPa)	
Precipitation (mm)	
Wind speed (km/h)	
Wind direction	

Evaluation

- 6 Analyse the data you collected by answering the following questions.
 - a Can you see any patterns in the information you collected?
 - b Compare your data you collected with the monthly average for the area. Is there a similarity or a difference between them? Explain.
 - c Why do you think there might be a similarity or a difference?
 - d What do the results of this activity tell you about weather and climate in an area?

Conclusion

- 7 Describe what worked well and what did not work well during the fieldwork activity.
- 8 Outline what you would do differently during a similar fieldwork activity.
- 9 What do you think was the most important thing you learnt during this activity? Explain.

8.6 Water in Australia

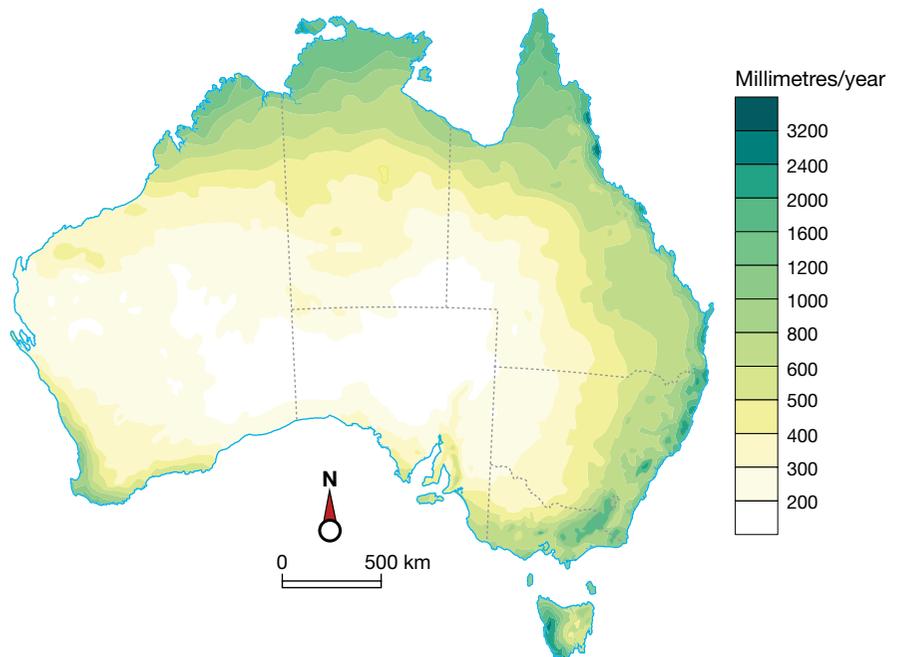
Water availability

Australia is a dry continent. Long periods of no rain are called droughts. Droughts are common in Australia. Often they end when flooding rains occur. This creates a range of challenges for those managing water resources.

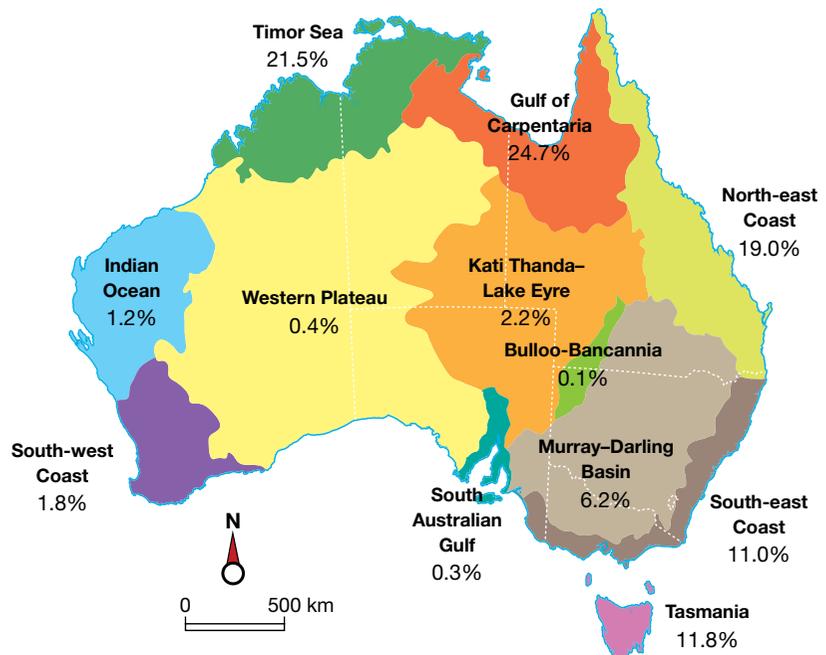
Australia's rainfall is unreliable and highly variable, which means it can change and is not consistent. Average annual rainfall is 469 millimetres per year (see Figure 8.6.1). While this is not very low, only 12 per cent of the water runs off into rivers. The remaining 88 per cent either evaporates or soaks into the ground.

In the more populated south-eastern states, water in dams, rivers and lakes is used at a high rate. In response, all Australians, in cities and rural areas alike, are being encouraged to use less water. Several strategies are in place to encourage people to use less water and to use water more wisely. They include increasing the price of water and promoting water recycling and water trading.

In northern Australia, many river systems have not been dammed. This means that the wetlands, rainforests, eucalypt savannas and native grasslands associated with these river systems do not lose access to a water supply. Nearly two-thirds of Australia's water run-off occurs in this northern region (see Figure 8.6.2). However, rainfall in northern Australia is highly seasonal, with heavy rains in summer and little rain in winter. The water that falls there is a potential resource, but it would have to be stored and transported to where it is needed. Building dams and pipelines to transport water would be very expensive.



8.6.1 Average annual rainfall in Australia



8.6.2 Percentage of rainfall run-off by major drainage division

Storing water

Since Australia's rainfall is so unreliable and variable, water **run-off** needs to be collected and stored in dams. The water can then be moved to where it is needed and used with care in drier times. Australia has 447 large dams and together they store nearly 84 000 gegalitres (GL) of water (one gegalitre is equal to 1 000 000 000 litres, or in other words one thousand million litres of water, which is about 400 Olympic-size swimming pools; see Table 8.6.3).

8.6.3 Storage capacity of large dams by state or territory

State or territory	Storage capacity (GL)
Australian Capital Territory	120
New South Wales	24629
Northern Territory	280
Queensland	10657
South Australia	258
Tasmania	23652
Victoria	12109
Western Australia	12148
Australia	83853

Source: National Water Commission, 2012

This stored water is used mainly to meet urban needs and for irrigation, to avoid flooding and for the production of hydro-electricity (see Figure 8.6 .4). Australia also has several million farm dams. These contain approximately 9 per cent of all stored water in the country.



8.6.4 The 140-metre-high Gordon Dam, on Tasmania's Gordon River, is the tallest dam in Tasmania. It stores water for the production of hydro-electricity. The associated Gordon Power Station is Tasmania's largest power station.

The biggest 'store' of water is Australia's vast underground **aquifers** (layers of rock that can store large quantities of water). These aquifers provide 25 780 GL of groundwater a year. This water is suitable for farming and domestic use, and for irrigated agriculture.

Learning from the past, looking to the future

For Australia's Aboriginal and Torres Strait Islander peoples, water and land are connected. This is significantly different from how other Australians have viewed water and land; they have generally seen the two as separate and have seen both as resources to be used for profit. However, this view is beginning to change. Water managers are beginning to understand that land and water cannot be managed independently of each other.

Due to changing climate and increasing demand for water, Australia faces major challenges in ensuring that it has a sustainable water supply. Any program aimed at securing Australia's future water security will include acting on climate change, using water wisely, securing additional sources of water and supporting healthy river systems.

Activities

Remembering and understanding

- 1 State the factors that complicate the management of water resources in Australia.
- 2 State why so little run-off finds its way into Australia's rivers.
- 3 Explain why the run-off from Australia's northern rivers is best described as a potential resource for use in other parts of Australia.

Applying and analysing

- 4 Identify Australia's principal stores of water.

Geographical skills

- 5 Study Figure 8.6.1. Describe the general pattern of annual rainfall in Australia.
- 6 Study Figure 8.6.2. Identify the drainage divisions with the highest and lowest run-off rates. How does this affect the management of Australia's water resources?
- 7 Study Table 8.6.3. Explain why the amount of stored water varies from state to state.

8.7 Water supply in Australia

Water distribution

Australia is a continent of extremes. There is an abundance of water in the tropical north, where few people live, and much less water in the more populated southern parts of the continent. In addition, neither north nor south receives reliable rainfall all year round.

Addressing past mistakes

Poor management of water resources has led to an over-allocation (over-sharing) of water to farmers who use water to irrigate their land. This is especially so in the Murray–Darling Basin. There is also increasing competition between irrigators and mining, urban and industrial users of water. As a result, there has been a major deterioration or decline in the health of many river systems and their environments throughout Australia.

For Australia to have environmentally sustainable and productive river systems, water needs to be managed better and used more efficiently. One strategy is to encourage water buybacks where the government pays farmers to give back some of their allocated water. Another strategy is to create more efficient irrigation technologies. These strategies could help to guarantee an environmental flow (the amount of water needed to maintain healthy ecosystems) for river systems. Such plans are difficult to apply. Irrigators and river-dependent communities fear that their economic wellbeing will be affected.

Grand plans

Since European settlement, many proposals have been put forward to transport water from the north of Australia to the south. Some notable examples are described below.

The Bradfield Scheme

In 1938, John Bradfield, the designer of the Sydney Harbour Bridge, presented a plan to the Queensland Government. He proposed diverting water from northern Queensland's coastal rivers across the Great Dividing Range and into central Australia. The aim of the scheme was to 'droughtproof' much of inland Queensland and South Australia by giving people access to water even if there was a drought.

South-east Queensland water grid

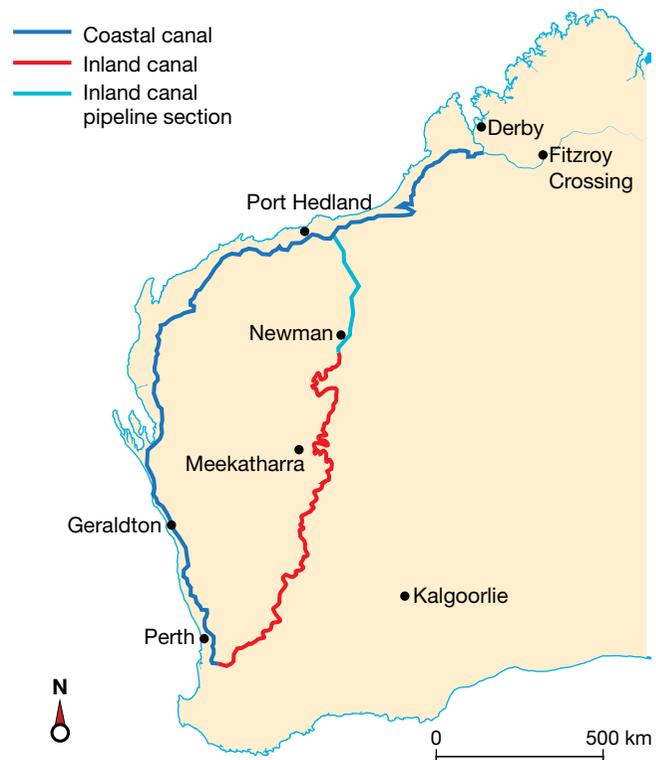
In 2007, the Queensland Government commissioned a report on a proposal to transport water from the north-east of Australia by diverting it from the Burdekin River to south-east Queensland. There it could be moved between various storage dams by pipelines.

Northern New South Wales

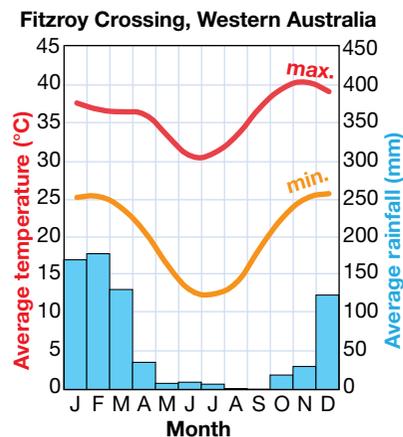
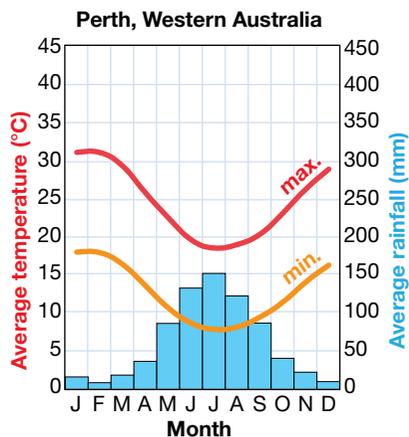
It has been suggested that water from coastal rivers of northern New South Wales could be diverted into river systems west of the Great Dividing Range.

The Kimberley–Perth Canal

In 2006–08, plans to build a 2500-kilometre canal from Western Australia's Kimberley region to Perth received considerable media and political attention (see Figure 8.7.1). At that time, Perth was suffering one of its worst-ever droughts. The Kimberley region receives higher rainfall than Perth at different times of the year, as shown in Figure 8.7.2, and it was proposed that rivers in the region could also supply water.



8.7.1 The Watering Australia Foundation's proposed route for the Kimberley–Perth Canal



8.7.2 Climate graphs for Perth and Fitzroy Crossing in the Kimberley region. It was proposed that the Kimberley's summer rains be diverted by canal to meet Perth's water needs.

Alternatives to the canal proposal included a pipeline to transport the water from north to south, and transporting the water by sea in tankers or in large water bags towed by tugboats. The construction of a desalination plant (a factory that removes salt from salty water) proved to be a cheaper alternative (see Figure 8.7.3).



8.7.3 The Perth Seawater Desalination Plant produces 45 billion litres of fresh drinking water a year, which is about 18 per cent of Perth's water supply

Reality check

The cost of capturing and storing water, then transporting it from north to south, would be enormous. Even if cost were not an issue, the idea is not without problems. These include:

- the lack of suitable locations for building a dam, given that much of northern Australia is flat
- the variability of rainfall across northern Australia
- environmental impacts in the catchments (the areas that 'catch' (collect) rain which then flows into rivers or is drained by them) being harvested
- the current and potential uses of the north's water resources.

Alternatives

There are alternative ways of addressing the issue of water scarcity (when demand for water is greater than the amount available) in Australia. These include:

- reducing consumption by improving the effectiveness of rural and urban water use
- pricing water at a level that discourages waste
- recycling and **desalination** (removing salt from salty water).

Activities

Remembering and understanding

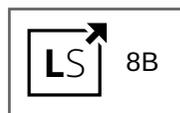
- 1 Explain why effective water management is essential in Australia.
- 2 List the errors that were made in water management in the past.

Applying and analysing

- 3 Outline the aim of John Bradfield's water diversion scheme.
- 4 Create a PMI chart about moving water from the north of Australia to the south. Consider the economic, environmental and social costs.

Geographical skills

- 5 Study the climate graphs in Figure 8.7.2.
 - a Describe how the climates of Perth and Fitzroy Crossing differ.
 - b What is the link between the seasonal pattern of rainfall received by each station and proposals to transport water from the north to the south?



8.8 Distribution of water

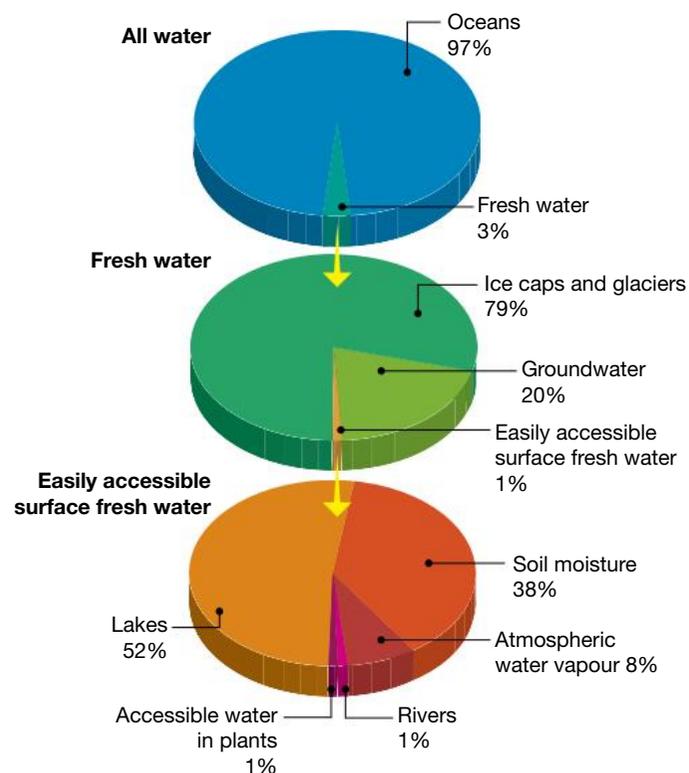
Location of fresh water

Of the world's store of fresh water, 79 per cent is stored in glaciers and the polar ice caps. A further 20 per cent is stored as groundwater, soil moisture, swamp water and permafrost (rock, soil and sediment that is frozen for more than 2 years). Just 1 per cent is easily accessible fresh water. Figure 8.8.1 shows the distribution of the Earth's water.

While the amount of available fresh water may seem small, the total amount is far greater than the Earth's population requires. Unfortunately, it is not evenly distributed across the Earth's surface. Some areas are critically short of water, while others have plenty.

Water storage

The length of time that water is stored varies according to how or where it is stored. Table 8.8.2 shows the estimated time that water spends in storage in the world's water resources.



8.8.1 The global distribution of the Earth's water resources

Did you know?

- The Antarctic ice sheet is a 40-million-year-old glacier. If the glacier melted, sea levels around the world would rise over 61 metres.

8.8.2 Estimated time in storage of the world's water resources

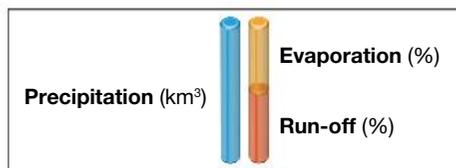
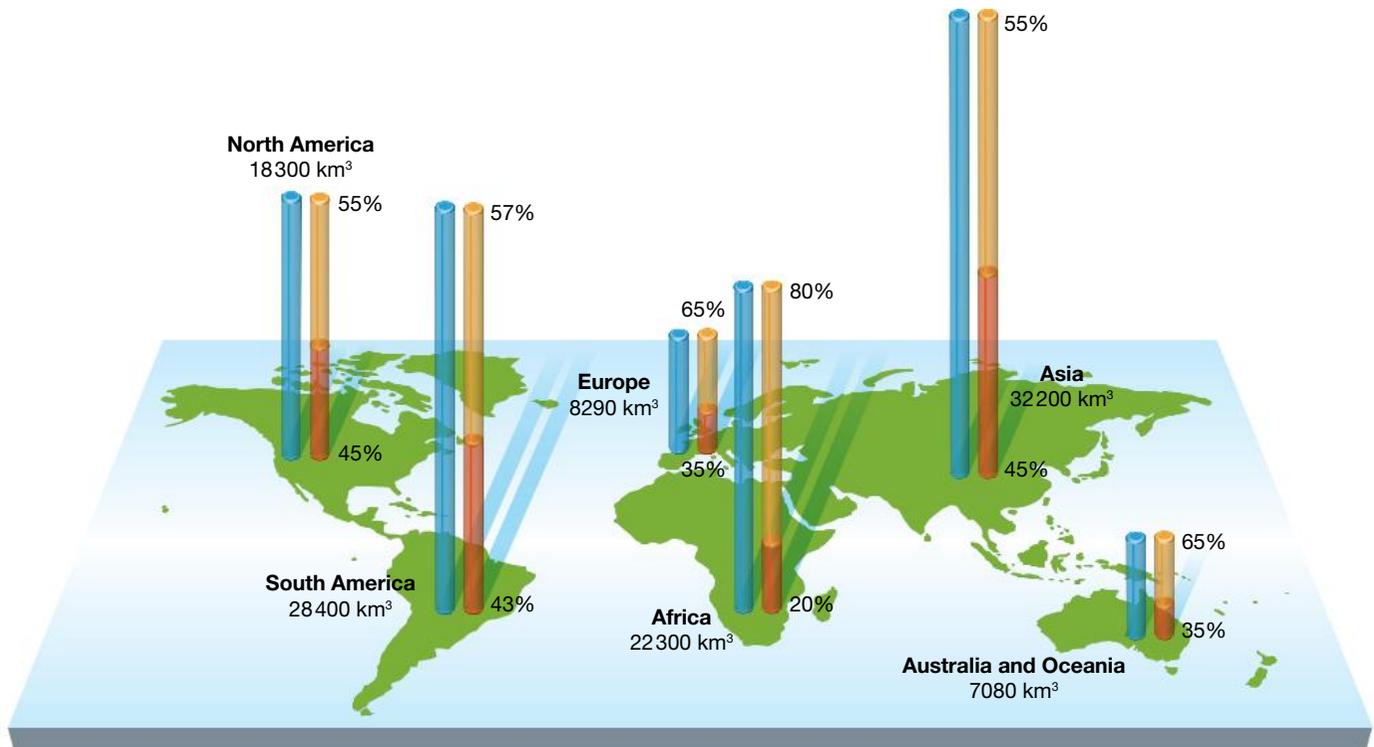
Water resource	Time held in storage
Biospheric water*	1 week
Atmospheric water	1.5 weeks
River channels	2 weeks
Soil moisture	2 weeks to 1 year
Swamps	1 to 10 years
Lakes and reservoirs	10 years
Ice caps and glaciers	1000 years
Oceans and seas	4000 years
Groundwater	2 weeks to 10 000 years

* Water held in animals and plants

Water loss

Some water is lost to evaporation or becomes run-off and flows into streams, creeks and rivers, or underground to become groundwater (see Figure 8.8.3). Factors that influence the type of water loss are:

- *climate*: warm or hot climates will have greater evaporation than cooler climates
- *vegetation*: types of plants and plant cover; for example, there will be more evaporation in the grassy paddocks of a sheep farm than in denser vegetation that holds moisture
- *soil type*: some soils are more permeable than others (they allow water to soak in)
- *topography* (shape of the land): steep areas will have more run-off than flatter areas
- *location*: hard surfaces such as roads and pavements lead to greater evaporation than unpaved surfaces, so there is greater evaporation in cities and towns than in rural locations.



Source: UNEP/GRID-Arendal

8.8.3 Annual average of precipitation (in cubic kilometres) for each continent, and the percentage of that water that is lost to evaporation or becomes run-off

Activities

Remembering and understanding

- 1 What percentage of the Earth's fresh water is stored on the surface in storages such as rivers, wetlands and lakes?

Applying and analysing

- 2 Study Figure 8.8.3 and answer the following questions.
 - a Which continent has the largest annual average volume of run-off?
 - b What is the average annual volume of run-off on the driest of the continental landmasses shown on the map?
 - c How much bigger is the average annual volume of run-off in South America than in North America?
 - d Which region receives the greatest precipitation?

- e Which region has the least precipitation?
- f Which region has the greatest rate (percentage) of evaporation?
- g What are the implications of this data for agriculture (farming) in Africa?

- 3 Study Table 8.8.2 and present the information in the table in a graphic form.

Geographical skills

- 4 Study Figure 8.8.1 and answer the following questions.
 - a State the proportion of the Earth's water that is fresh (i.e. not salty).
 - b State the proportion of the Earth's fresh water that is easily accessible. Of this, how much is stored as soil moisture?
 - c State the amount of the world's fresh water that is stored as groundwater.

8.9 Water scarcity

Defining water scarcity

Water scarcity occurs when the demand for water exceeds the amount available. Water scarcity can lead to **water stress**, which is the negative effects a lack of water has on people and environments. Most of the world's water-stressed countries are in North Africa.

Types of scarcity

Water scarcity can be either physical or economic. Physical scarcity occurs when there is not enough water to meet all demands, including those of ecosystems. Economic scarcity occurs when there has not been enough investment in the infrastructure needed to store and transport water to where it is needed.

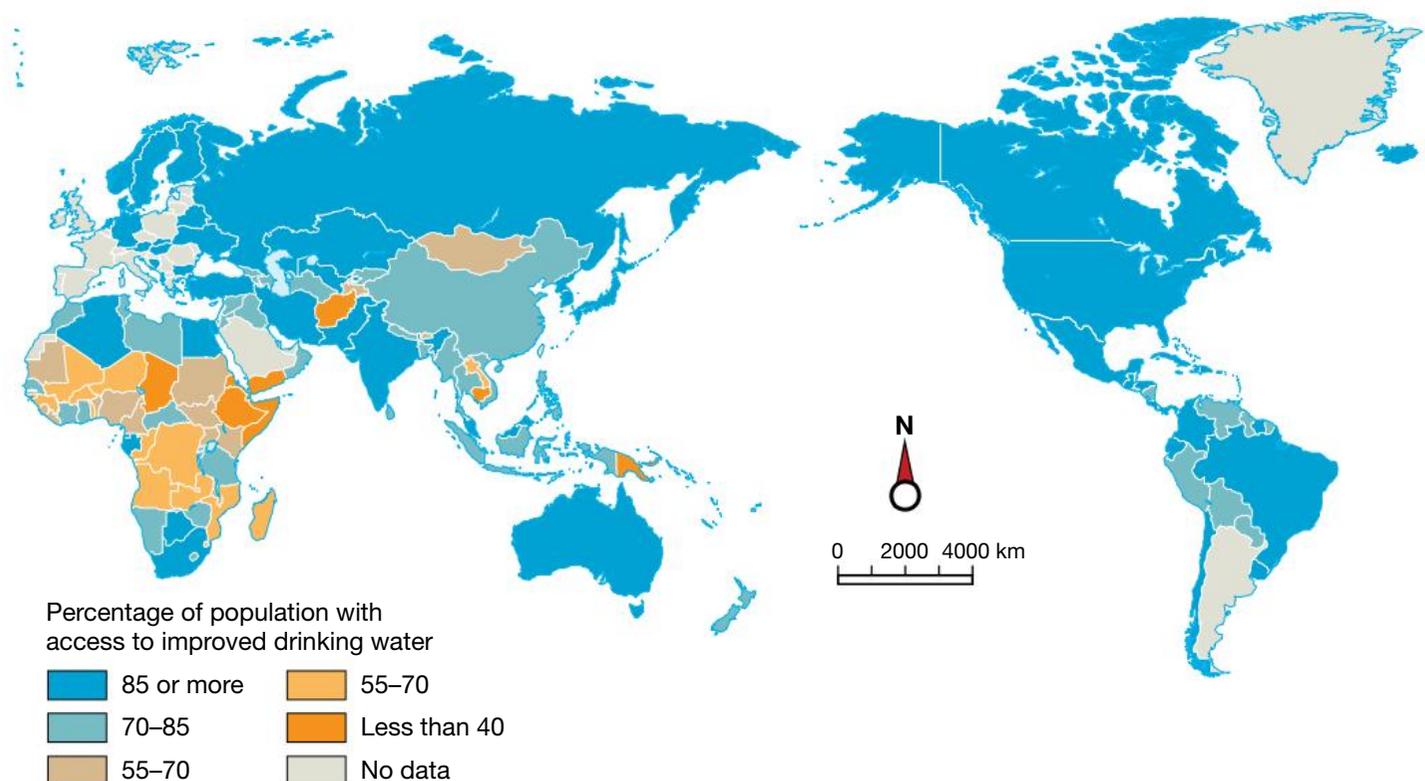
Did you know?

Water scarcity affects nearly every continent. Many of the water systems that are needed to feed the world's growing population and keep ecosystems thriving have become stressed. At the current rate of consumption, this situation will only get worse.

Reasons for scarcity

Water scarcity can occur in areas where there is plenty of rainfall. The quality of the water available determines whether there is enough to meet the needs of households, farmers, industry and the environment.

Approximately 1.2 billion people, or almost one-fifth of the world's population, live in parts of the world where water scarcity is already a problem, and 500 million people are approaching that situation. Another 1.6 billion people face water shortages due to a lack of infrastructure to extract water from rivers and aquifers. Rapid population growth, urbanisation (movement of people from rural areas to cities), and increases in water use by households and industry are making the situation worse. Figure 8.9.1 shows the availability of fresh water in the world. The total amount of available fresh water is changing due to climate change. This is causing glaciers to lessen, river flows to reduce and lakes to shrink. Many aquifers have been over-pumped and are not refilling quickly.



8.9.1 World water availability

Effects on water quality

Water scarcity results in people having to rely on unsafe sources of drinking water. Maintaining personal hygiene is difficult. There is often not enough water to bathe or wash clothes properly. Much of the world's fresh water has become too polluted or salty for use in households, industry and agriculture.

Contaminated water (unclean water) also increases the risk of infection from waterborne diseases such as cholera, typhoid and dysentery. Water scarcity can lead to diseases such as trachoma (which can lead to blindness), plague and typhus. Contaminated, stagnant water provides a breeding ground for mosquitoes, which are carriers of diseases such as dengue fever and malaria.

The use of wastewater in agriculture is growing. This puts people at risk from crop contamination. More than 10 per cent of the world's people consume food grown using wastewater that contains various chemicals or disease-causing organisms.

Solutions

To avoid a global water crisis, industries and cities will need to find ways to use water more efficiently. Farmers will have to increase productivity to meet growing demands for food without greatly increasing their water usage. People need to take personal responsibility and learn how to conserve and protect water resources.

Target 10 of the United Nations Millennium Development Goals was to halve the proportion of people without access to safe drinking water and basic sanitation (toilets and human waste) by 2015. This goal has been replaced by the new Sustainable Development Goal, Target 6. This new target focuses on 'clean water and sanitation'. Water is an essential resource to sustain life.

Spotlight

Water scarcity in Africa

Fourteen countries in Africa already experience water stress. Another eleven countries are expected to join them by 2025. By this time, an additional 50 per cent of the continent's estimated population of 1.45 billion people will experience either water stress or water scarcity. In sub-Saharan countries, nearly 51 per cent of the population (300 million people) lack access to a supply of safe water, and 41 per cent lack adequate sanitation.



8.9.2 Searching for water in a dry riverbed in northern Kenya

Activities

Remembering and understanding

- 1 Explain the difference between physical and economic water scarcity.
- 2 Describe the nature and extent of water scarcity in Africa.
- 3 List the percentage of the world's population that is affected by water scarcity.
- 4 List the types of water issues that affect people around the world.

Applying and analysing

- 5 Discuss how places with high rainfall can experience water scarcity.
- 6 Study Figure 8.9.1.
 - a Identify the continents experiencing water scarcity, water stress or water vulnerability.
 - b Identify the continents not experiencing water scarcity, water stress or water vulnerability.
 - c Discuss reasons for the different answers to parts a and b.

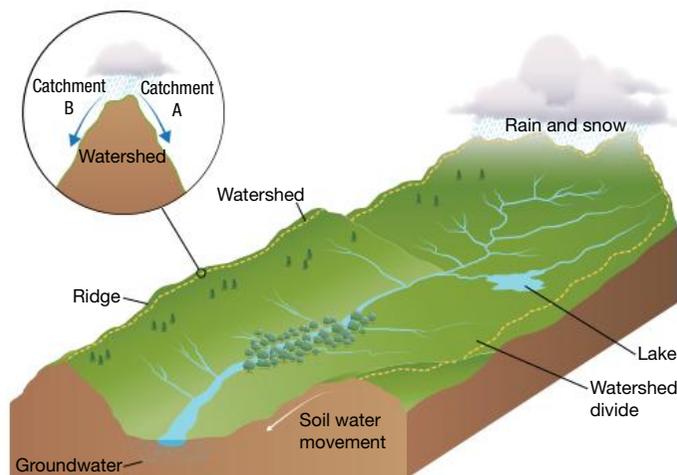


8.10 Catchments

A river catchment

A **catchment** is an area of land where water is collected by the natural landscape. A river catchment, or **drainage basin**, is the area where water collects and moves towards a river and its tributaries (branches of water from the main river). Every part of the Earth's land surface is part of a catchment. Neighbouring catchments are divided by **watersheds** (boundaries between catchments), and rivers are arranged within catchments in drainage patterns.

When precipitation falls to the ground, water moves over the land and finds its way into streams or down into the ground. Some of this water evaporates into the atmosphere, and some is stored as groundwater. The rest is slowly discharged into rivers. This is why rivers continue to flow even when there is no rainfall or precipitation. Figure 8.10.1 shows a catchment in a mountainous area. It also shows a watershed (also known as a drainage divide) separating neighbouring catchments. In flat areas, the watershed may be difficult to identify.

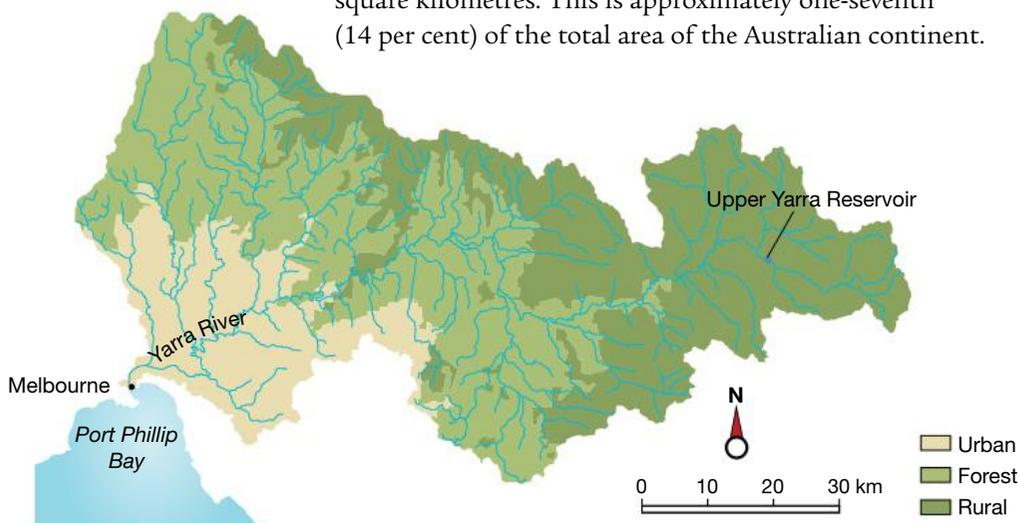


8.10.1 A catchment and dividing watershed. A watershed is the point at which precipitation falls and flows into either one of two neighbouring water catchments.



Location of Yarra River catchment in Victoria

8.10.3 The Yarra River catchment



8.10.2 The Amazon River Basin

Catchment sizes

Catchments vary greatly in the area they cover. They range from small urban or coastal catchments to catchments covering thousands of square kilometres. South America's Amazon River Basin (a **river basin** is where water drains into the river) covers approximately 7 050 000 square kilometres (see Figure 8.10.2). Melbourne's Yarra River catchment covers 4078 square kilometres (see Figure 8.10.3). The Murray–Darling catchment in south-eastern Australia covers parts of three states and has an area of 1 061 469 square kilometres. This is approximately one-seventh (14 per cent) of the total area of the Australian continent.

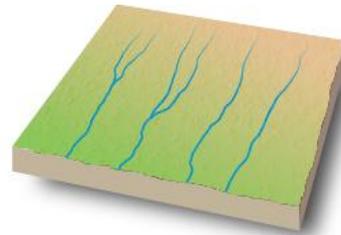
Not all rivers flow into the sea. Some rivers flow inland, into inland seas, lakes or wetlands. For example, the Diamantina River, which has its source in central Queensland, flows into Lake Eyre, South Australia. Since all rivers and streams have their own catchment, it is not unusual to find catchments within catchments. For example, each **tributary** (smaller river flowing into a larger one) will have its own catchment area.

Drainage patterns

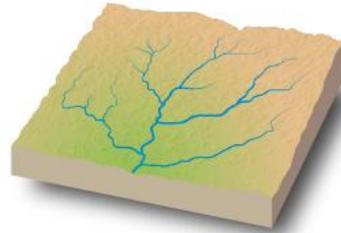
The arrangement of rivers within a catchment is known as the drainage pattern. Most drainage patterns develop over a long period of time. Their development is heavily influenced by the geology and landforms of the catchment. The most common patterns are shown in Figure 8.10.4.

The importance of catchments

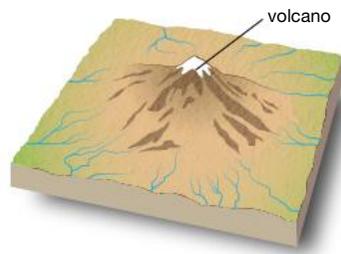
In a river catchment, soil, plants, animals and water all function together. Any change affecting one of these elements will have an impact on the others. The protection and management of catchments is important because they are where all our food is grown and where our drinking water comes from. Catchments are therefore part of our life support systems.



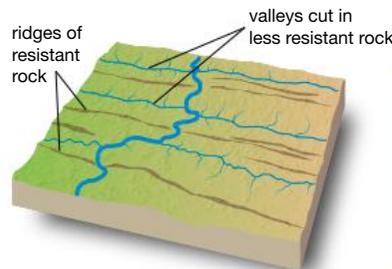
Parallel
A drainage pattern where rivers and tributaries flow downhill more or less parallel (next) to each other.



Dendritic
A tree-like drainage pattern with tributaries converging on the main river channel. Common in areas dominated by one rock type.



Radial
Commonly found in areas dominated by dome-shaped mountains or volcanic cones. Rivers flow outwards from a central point like the spokes in a wheel.



Trellis (or irregular)
A drainage pattern that develops in areas dominated by areas of harder, more resistant rocks and softer, less resistant rock.

8.10.4 Common drainage patterns found in catchments

Activities

Remembering and understanding

- 1 Explain the difference between a catchment and a watershed.

Applying and analysing

- 2 Discuss why catchments are important.
- 3 Why do rivers continue to flow even when it has stopped raining?

Geographical skills

- 4 Study Figures 8.10.2 to 8.10.4 and answer the following questions.
 - a What is the name of the drainage pattern in the Amazon River Basin and the Yarra River catchment?
 - b In which direction does the Amazon River flow?

Evaluating and creating

- 5 It is important to understand the connection between how we use the land and water, and how this can damage and pollute our waterways.
 - a Brainstorm a list of the ways the environment within a watershed might be used by people.
 - b Create a narrative (story) that follows the path of the river through all the activities on your brainstormed list. For example, you might like to demonstrate that the water starts off clear and drinkable, and ends up heavily polluted after being involved in the activities you have listed.

8.11 Importance of water: Aboriginal and Torres Strait Islander communities

Aboriginal and Torres Strait Islander peoples, and the environment

The history of Aboriginal and Torres Strait Islander peoples in Australia spans at least 65 000 years (or more than 2000 generations). For most of this time, these groups of people lived in specific areas for lengthy periods of time. Groups would only move from place to place when water and food supply changed. In doing so, they developed a close relationship with the land and its resources, including water. This relationship with the land continues today.

Aboriginal and Torres Strait Islander peoples have learnt to adapt to and work with the environment, and use its resources sustainably. They understand the rhythms of nature and its signals, and so they can live from the land without depleting its supply of food and water.

Aboriginal and Torres Strait Islander peoples, and water

Historically, most Aboriginal and Torres Strait Islander peoples located themselves over a well-defined area with boundaries that were respected by other groups. They established campsites around waterholes such as springs, soaks (waterholes in a riverbed) and billabongs. When they travelled through arid (dry) regions, groups would move from waterhole to waterhole. Their shelters were simple and temporary, and were made of materials that were available locally. Many groups stayed in the place they had settled, especially if there was a regular supply of water.

The ability to find water is vital, especially in arid areas. Aboriginal and Torres Strait Islander peoples are skilled in finding 'hidden' water in the root hollows of trees such as the boab tree. They know exactly where to dig for soaks in sandy riverbeds, even in times of severe drought. In some parts of Australia, the locations of waterholes were recorded on sacred boards, which served as maps. Given the importance that water played in the survival of Aboriginal and Torres Strait Islander peoples over thousands of centuries, it is not surprising that many waterholes feature in Aboriginal Dreaming stories.



8.11.1 Mound springs in South Australia's desert. A mound spring is a natural outlet for water that is forced to the surface by water pressure. Aboriginal and Torres Strait Islander peoples' knowledge of water sources like this provided them with water in arid regions.

Murray–Darling Basin

Despite a history in the region spanning tens of thousands of years, Aboriginal peoples today possess less than 1 per cent of the land in the Murray–Darling Basin. Many Aboriginal people nevertheless retain a strong link with the Basin's rivers, and a desire to protect and preserve them.

In 1998, twenty-one groups of traditional landowners from the southern part of the Murray–Darling Basin formed an organisation called the Murray Lower Darling Rivers Indigenous Nations. A similar organisation, the Northern Murray–Darling Basin Aboriginal Nations, was formed in April 2010. It comprises representatives of twenty-two Aboriginal Nations from the northern part of the Basin and representatives of other Aboriginal organisations.

Ngarrindjeri elder Tom Trevor sums up the traditional owners' approach to the management of water and other resources in this way:

Our traditional management plan was: don't be greedy, don't take any more than you need, and respect everything around you. That's the management plan—it's such a simple management plan, but so hard for people to carry out.

Source: A Yarn on the River: Getting Aboriginal Voices into the Basin Plan, Murray–Darling Basin Authority, Canberra

Spotlight

Managing the Barmah Forest wetlands

The Barmah Forest is found on the flat flood plain of the Murray River, about 220 kilometres north of Melbourne. It is one of the largest stands of river red gums found in Australia. These trees are under threat, but they provide habitat (home) to more than 200 different bird species and many other animals. Since 2010, the Barmah Forest has been protected in a national park.

The Yorta Yorta people are the traditional custodians of the Barmah Forest. They play an important part in the management of the park environment. Over many years of European settlement, the wetlands of the forest have suffered. The use of four-wheel drive vehicles, logging, grazing and the activities of feral animals have all taken their toll on the environment.

Some of the important fish species within the wetlands have now disappeared. However, by using the knowledge of the area's traditional custodians, scientists are starting to understand the role of these fish in the broader environment.

A partnership has been formed between the Yorta Yorta people and the government agency responsible for managing the wetlands (the Goulburn Broken Catchment Management Authority). Each group is learning from the other. The Yorta Yorta people are passing on their knowledge of the wetlands to the scientists to help them to make better decisions.



8.11.2 A representative of the Yorta Yorta people monitoring work in Barmah National Park

Activities

Remembering and understanding

- 1** Describe the nature of the relationship between Aboriginal and Torres Strait Islander peoples and the land.
- 2** Outline the role that water availability played in the Aboriginal and Torres Strait Islander way of life.

Applying and analysing

- 3** Study the Spotlight box 'Managing the Barmah Forest wetlands' and answer the following questions.
 - a** Why is the Barmah Forest considered so important?
 - b** Outline the reasons the forest is threatened.
 - c** How have the Yorta Yorta Aboriginal traditional custodians of the Barmah Forest become involved in its management?
 - d** What do you think are the advantages of having the Yorta Yorta people involved in the management of the Barmah Forest?

Evaluating and creating

- 4** The Barmah Forest wetlands are home to over forty-nine threatened species of fauna. Its river red gum environment provides a protected environment and breeding ground for several animals. Investigate three threatened species of fauna in the area (for example, squirrel glider, barking marsh frog, barking owl, painted honeyeater, Murray cod, silver perch, eastern bearded dragon, tree goanna). Research and write a report responding to the following points.
 - Describe the physical characteristics of the species.
 - Show a map of the species's habitat.
 - What are the population estimates for this species?
 - Explain why the species is threatened.
 - What is being done to help protect the remaining population?

8.12 Importance of water: Sayan village, Bali

Bali

Bali is an island province of Indonesia, located to the east of Java. It is home to Indonesia's small Hindu minority, who make up more than 90 per cent of Bali's population of 4.2 million people.

Until the 1980s, the Balinese economy was largely agriculture-based. Today, 80 per cent of the island's economic activity is generated by tourism. Despite this, the island's biggest employer is still agriculture, particularly growing rice. Fruit, vegetables and coffee are also grown, and fishing is an important economic activity as well.



8.12.1 Bali's terraced paddy fields are an example of a managed environment

Sayan

Sayan is a village located 5 kilometres to the west of Ubud in central Bali. Water is critical for the growing of paddy rice, which is the basis of the community's economic and spiritual wellbeing.

Paddy rice

The term 'paddy rice' is the name given to rice grown in semi-aquatic environments such as flooded paddy fields (see Figure 8.12.1). Paddy fields dominate the landscape of rice-farming areas throughout East, South and South-East Asia. The paddies can be built on river flood plains or carved into steep hillsides as terraces. Their construction and maintenance require a great deal of labour. The crops also need large quantities of water for irrigation. Getting the water to the paddy often involves complex water transfer systems, many of which have been in place for hundreds of years.

Flooded paddies provide an ideal environment for rice growing. This also prevents the growth of weeds that would otherwise compete with the rice plants for nutrients.

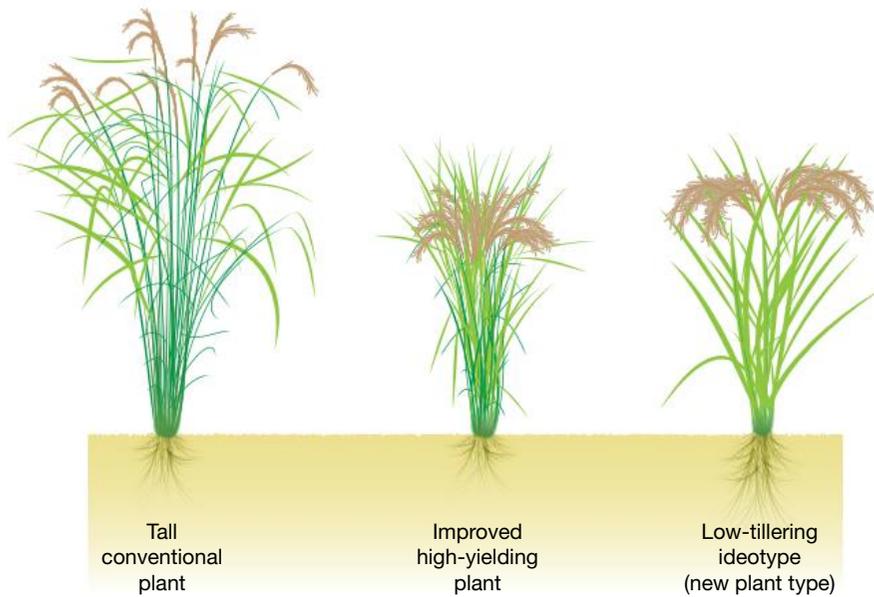
Rice varieties

Sayan rice farmers plant high-yielding varieties of rice that allow three growing seasons each year (see Figure 8.12.2). Fertilisers and pesticides are expensive. Therefore, farmers plant seeds in small nursery plots before planting them in accurately spaced rows in flooded paddy fields. This is a very labour-intensive process, but it increases the amount of rice grown.

Irrigated paddy rice in Bali

The landscape surrounding Sayan is mountainous in nature so farmers have terraced much of it to create small plots of land that can be farmed. Many of these terraces are more than 2000 years old. Farmers carved the stepped terraces out of steep hillsides with hand tools. Generation after generation of farmers have extended the terraces and kept them in order. They have done this out of necessity: rice is the islanders' main food.

The water needed to grow the rice comes from the rugged, mountainous interior of the island. To transport it to where it is needed involves a complex system of canals, tunnels, pipes, dams and dykes. The farmers use this system to flood or drain the rice fields at the right time.



8.12.2 New varieties of rice have thicker stems, which means they are less likely to bend and fall over under the weight of the grain they carry

The *subak*

Supplying these small terraced plots with water dominates communal life in Sayan. Just like their ancestors, today's rice farmers are members of a community cooperative called a *subak*.

The *subak* system involves much more than just managing water storage and supply, and draining rice terraces. The system is a complex part of an artificial ecosystem developed over thousands of years. It is also part of Balinese culture. Every Balinese village has a *subak*, and all rice farmers must join and participate in its activities. This helps to ensure that the limited irrigation water is given out fairly, and that a limited number of farmers use the flowing water at the same time. Importantly, this ensures that a farmer does not block the water from flowing downwards to rice terraces below. The *subak* is a major reason why a farmer is able to get up to three crops per year from the one paddy.

The *subak* also plays an important role in the spiritual life of rice-growing communities. Every month, *subak* members will come together in the village temple to discuss matters concerning the *subak*. These include water supply, the harvest and the celebration of the anniversary day of the *subak* water temple. They worship Dewi Sri, the rice goddess.

Spotlight

Bali's potential water crisis

Bali is expected to have a water crisis in 2025 because of its current level of tourism and increasing population. Tourists use a lot of water and this impacts the agricultural sector. In fact, 750 hectares of fertile rice fields are sold each year for tourist development.

Activities

Remembering and understanding

- 1 List the main religion in Bali.

Applying and analysing

- 2 Explain how Sayan's farmers have adapted the rice-growing agricultural system to the province's topography.
- 3 Outline the role and responsibilities of the *subak*.
- 4 Create a PMI on the benefits of taking a collaborative approach to the management of water resources. Consider how the relationship between people's spiritual beliefs and the management of an environmental resource, such as water, can contribute to the long-term stability of a managed environment.

Evaluating and creating

- 5 Select one of the following rice-growing countries, and investigate how the irrigation and growing of rice is managed in that society. What are the similarities and differences between it and Sayan in Bali?
 - Australia
 - India
 - Madagascar
 - Malaysia
 - Thailand
 - Vietnam.



Water use and management

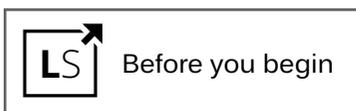
9

Rapid world population growth and unsustainable use of water are placing increasing demands on water resources all over the world. In many parts of the world, ecosystems are under stress because the water they rely on is being used for agriculture and other purposes. Problems like this highlight how important it is to carefully manage water in industry and homes.

In this chapter, we focus on the various ways people use water and its resource management on a local and global scale. We look at strategies to increase the supply of water and conserve existing sources.

OVERVIEW QUESTIONS

- 9A** How can the supply of water be increased and existing resources conserved (saved and not wasted)?
- 9B** How can individuals and households contribute to the conservation of water resources?
- 9C** What are the direct, indirect and competing uses for water?
- 9D** How are water resources managed in Australia?



GLOSSARY

aqueducts artificial channels built to transport water

blue water fresh surface water and groundwater, such as lakes, rivers and aquifers

brine a very salty solution

dam a structure built across a river to control the river's flow and create a reservoir (lake)

deep aquifers deep underground layers of water stored in rock; this water is difficult to access except with expensive drilling

green energy energy (electricity) produced using renewable resources, such as wind or sunlight, without creating greenhouse gases

green water the precipitation (rainfall) on land that does not run off or become groundwater, but is stored in the soil or temporarily stays on top of the soil or in vegetation

grey water water generated from domestic activities such as washing clothes, dishwashing and bathing

leaching the removal of salt from the upper layer of soils by the downward movement of water

reservoir a large natural or artificial lake used as a source of water supply

sanitation the infrastructure related to the collection and disposal of sewage (human waste)

virtual water the volume of fresh water that is consumed (or polluted) when a product is created

water footprint the total volume of fresh water used by an individual, a household, a business, a community or a country

water table the level at which underground rock is saturated (soaked) by water

9.1 Water use

Types of water

Blue water is a term often used to describe the Earth's fresh surface water and groundwater (water beneath the Earth's surface). This includes the water in freshwater lakes, rivers and aquifers. The term **green water** is used to describe water that is stored in the soil or present in vegetation. **Grey water** is wastewater. It comes from domestic activities such as washing clothes, washing dishes and bathing. Grey water can be recycled and used to water gardens and sporting fields.

Where water is used

About 69 per cent of all available fresh water is used for agriculture (see Figure 9.1.1). A further 21 per cent is used in industry. Major industrial users are power plants, refineries and manufacturing plants. It is estimated that just 10 per cent of worldwide water use is for household purposes. These include drinking, bathing, cooking, **sanitation** (toilets) and the watering of gardens.

Per capita water use

Water consumption (the use of water) can be very high. The average amount used per capita (by each person) for 1 day is 575 litres in the US, and 193 litres in Germany. Compare this with the 20–30 litres per person per day that is considered enough to meet basic human needs. Figure 9.1.2 shows past, current and predicted global water consumption.

Water use in Australia

Australia has one of the world's highest rates of water use per capita (per person). The largest consumer of water in Australia is the agriculture (farming) sector. Two-thirds of all the people on Earth use less than 60 litres each of water

Spotlight

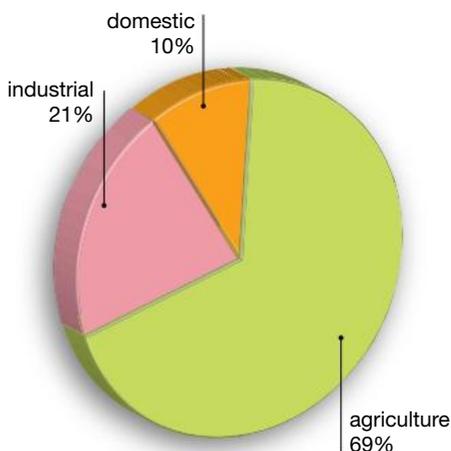
Bottled water

Global sales of bottled water in 2015 amounted to 2.34 billion litres. The value of bottled water sales was over US\$60 billion. Bottled water is more expensive than petrol; a litre of bottled water is about \$3.00 and a litre of petrol is \$1.40. Bottled water is also an environmental problem worldwide.

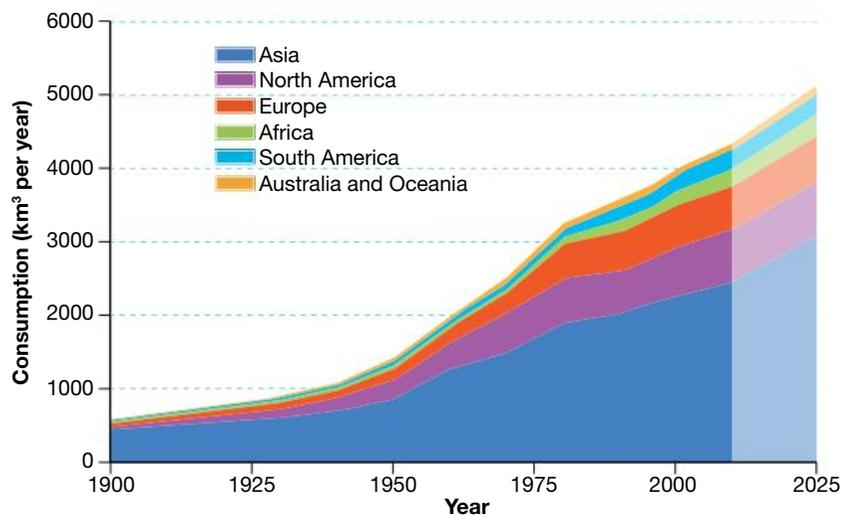
- Plastic bottles are made from oil. The production of these bottles emits hundreds of times more greenhouse gases than the equivalent amount of tap water.
- Australia's annual bottled water use creates more than 60 000 tonnes of greenhouse gas emissions. This is equal to about the same amount that 13 000 cars generate over the same time.
- Relatively few bottles are recycled (approximately 36 per cent). Each year, hundreds of millions of bottles end up in landfill or as rubbish on our streets and in waterways such as creeks.

a day. Meanwhile, the average Australian uses more than twice that amount during a single shower, and about 493 litres a day in total.

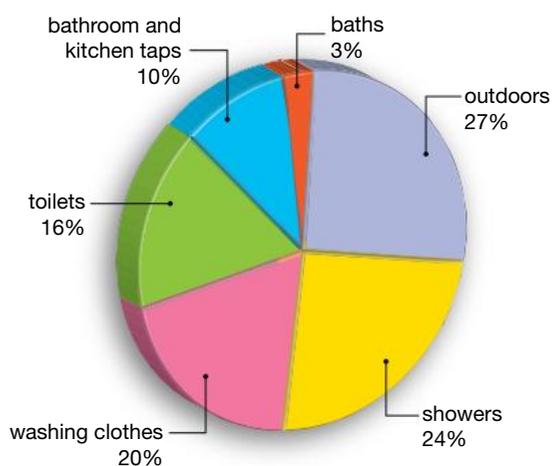
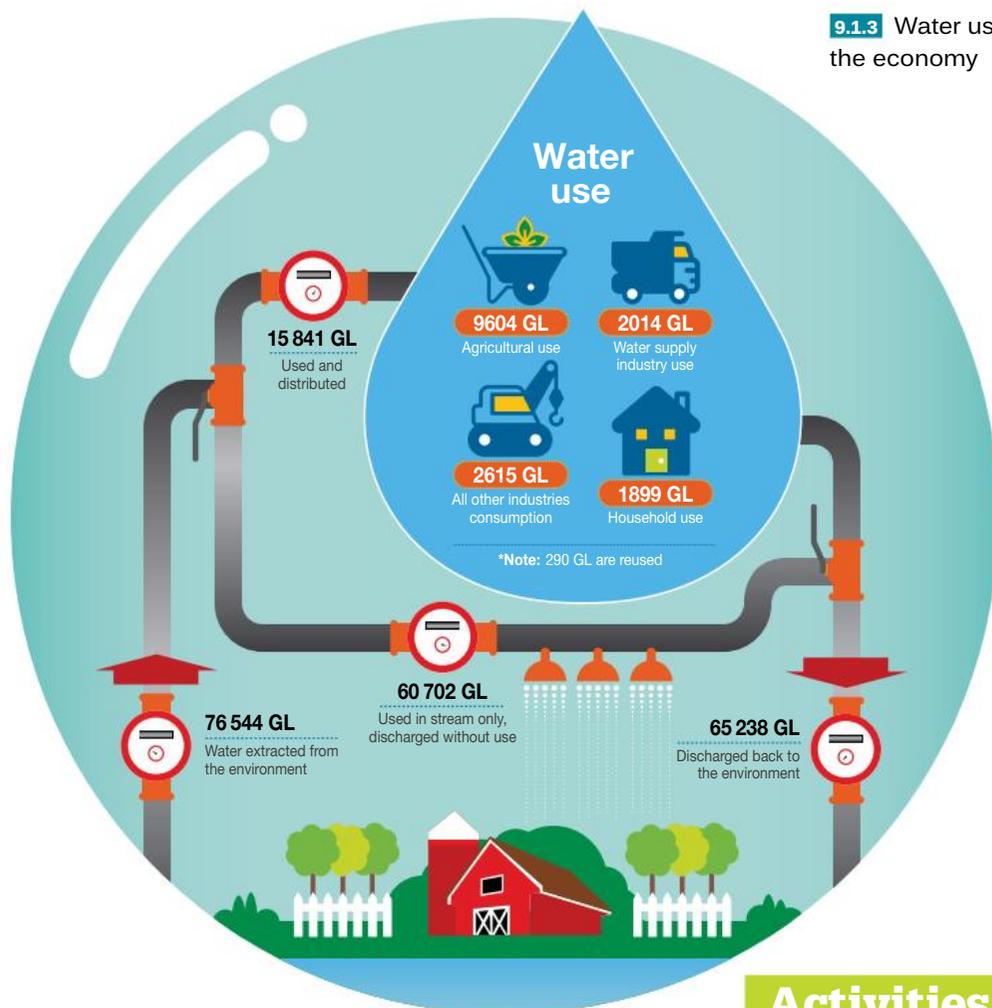
Figure 9.1.3 shows water use in Australia by different sectors of the economy. Figure 9.1.4 further analyses water use in Australian households.



9.1.1 Global water use by sector: agriculture, industry and domestic uses



9.1.2 Global water consumption, 1900–2025



Source: ABS

9.1.4 Typical household water use in Australia

Did you know?

A chicken is made up of 75 per cent water. Elephants are closer to 70 per cent water.

Activities

Remembering and understanding

- 1 State the estimated amount of basic water needs for a person. How does this compare with the average Australian household water use?
- 2 What is the difference between 'blue', 'green' and 'grey' water?

Geographical skills

- 3 Study Figure 9.1.2. Describe the change in global water consumption since 1900. Suggest reasons for this.
- 4 Study Figure 9.1.4. Identify the three largest areas of household water use in Australia. Do you think these would be the three largest areas of water use in your household? Explain.

Evaluating and creating

- 5 Design a plan to reduce bottled water use in Australia. Your plan should include reasons for your decisions and an explanation of how the plan should work.

9.2 Water footprint

Definition

A **water footprint** is the total volume of fresh water used by an individual, a household, a business, a community or a country. For an individual, it includes water used directly (for example, for drinking, bathing, cooking and washing clothes) and water used indirectly (for example, in producing things such as food, paper, electricity, steel and cotton clothes).

Water use and footprint

The water footprint of countries can be used to determine and compare global water use. National water use consists of two parts:

- ▶ the internal water footprint, which is the water used inside the country
- ▶ the external water footprint, which is the water used to produce goods and services that are imported from other countries.

Table 9.2.1 shows internal and external water use for selected countries.

Water use includes virtual water. **Virtual water** is the amount of fresh water that is used (or polluted) when a product is created. An example of virtual water is the water used in coal power stations. Countries can both import and export virtual water.

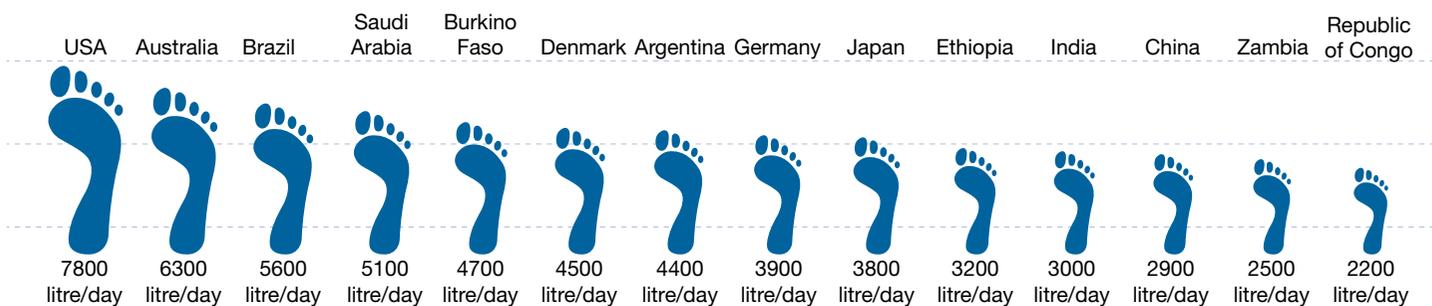
For example, your family might buy an imported car that had used approximately 150 000 litres of water during the production process. This equates to using another nation's water (virtual water). Generally, the more economically advanced a country, the greater both its internal and its external water footprint (see Figure 9.2.2).

Did you know?

- The total global water footprint is 7450 billion cubic metres per year. This is an average of 1240 cubic metres per year for every person on Earth.

9.2.1 Average water footprint and proportion of water use sourced internally and externally, for selected countries

Country	Total water footprint (m ³ /year)	Internal %	External %
USA	820 000 million	80	20
India	1 100 000 million	97	3
Australia	45 000 million	88	12
China	1 400 000 million	90	10
Argentina	60 000 million	96	4
Denmark	8 700 million	38	62
Japan	170 000 million	23	77
Germany	120 000 million	31	69
Brazil	360 000 million	91	9
Zambia	9 700 million	90	10
Burkina Faso	20 000 million	97	3
Ethiopia	78 000 million	98	2
Republic of Congo	2 400 million	67	33
Saudi Arabia	39 000 million	34	66



9.2.2 Water footprint per capita for selected countries

Australia's water footprint

In 2015–16, Australia's total household water use was 16 132 gigalitres (1 gigalitre is approximately the amount of water in 400 Olympic swimming pools). This is a 3 per cent increase or 1899 gigalitre increase since 2014–15. There was an increase of 3 per cent because of an increase in the number of households, but the average increase per household was 1 per cent.

Average household water use in Australia equals 80 500 litres per person per year.

A family's water footprint

Water supply authorities want to reduce the amount of water that households use. They do this in various ways:

- through public education campaigns
- through the price they charge for water
- by installing water-efficient appliances
- by imposing water restrictions (in some cases).

An Australian 'water wise' household's water use is shown in Table 9.2.3. Individual figures will, of course, vary. The amount your household uses depends on such things as how much time you spend at home, how often you have visitors, the size of your garden and whether you have a pool.

To encourage people to use less water, there are several online water footprint calculators. There are also apps you can download onto your mobile phone that calculate your water footprint. They can tell you how much water is used in the production of selected goods, and they can track your use of water, gas and electricity.

9.2.3 Water consumption of a 'water wise' Australian household

People per household	Water consumption/day (litres)
1	239
2	360
3	458
4	542
5	619
6	689

Source: Sydney Water

Reducing water use

There are many ways households can reduce their direct water footprint (that is, their home water use). Examples include:

- installing dual-flush toilets, and water-saving showerheads, dishwashers and clothes washers
- turning off the tap when brushing their teeth
- using less water in the garden (for example, by planting drought-resistant plants, mulching garden beds and using drip irrigation)
- collecting rainwater
- using grey water for irrigation.

Activities

Remembering and understanding

- 1 What is meant by the term 'water footprint'.
- 2 Define the term 'virtual water'.
- 3 Discuss why Australia's water footprint has been decreasing.

Analysing and applying

- 4 Distinguish between a country's internal and external water footprint.

Geographical skills

- 5 Study Figure 9.2.1 and do the following tasks.
 - a List the five countries with the highest water footprint per capita.
 - b Compare the internal footprint of each of those five countries with its external footprint.
 - c Identify the countries that have a larger external water footprint than internal water footprint. Provide reasons why this might be so.
 - d The US has the third-largest population of all the world's countries, but the highest water footprint per capita. Discuss why this is so.

Evaluating and creating

- 6 Investigate your water footprint by accessing one of the many online water footprint calculators. How does it compare with the Australian average? Are there any obvious ways you could reduce your footprint?

9.3 Virtual water

Definition

Virtual water is the water used in the production of goods and services we use. For example, to produce a hamburger with the lot takes about 2400 litres of water, most of which is used to grow the grain that feeds the cattle.

Water in food production

If we know how much virtual water is needed to produce a product, then we can use that knowledge to help us to use water more wisely.

Most of the virtual water that we use goes into the production of food. A typical breakfast can consume up to 1100 litres of water: 140 litres for a cup of coffee, 120 litres for eggs, 240 litres for milk and 80 litres for each piece of toast (not including butter or jam).

Large amounts of water are also used to produce many of the manufactured goods we use each day. Figure 9.3.1 outlines the water required to produce selected foods and products.

Did you know?

The annual global trade in virtual water exceeds 800 billion tonnes, or the equivalent of ten Nile Rivers.

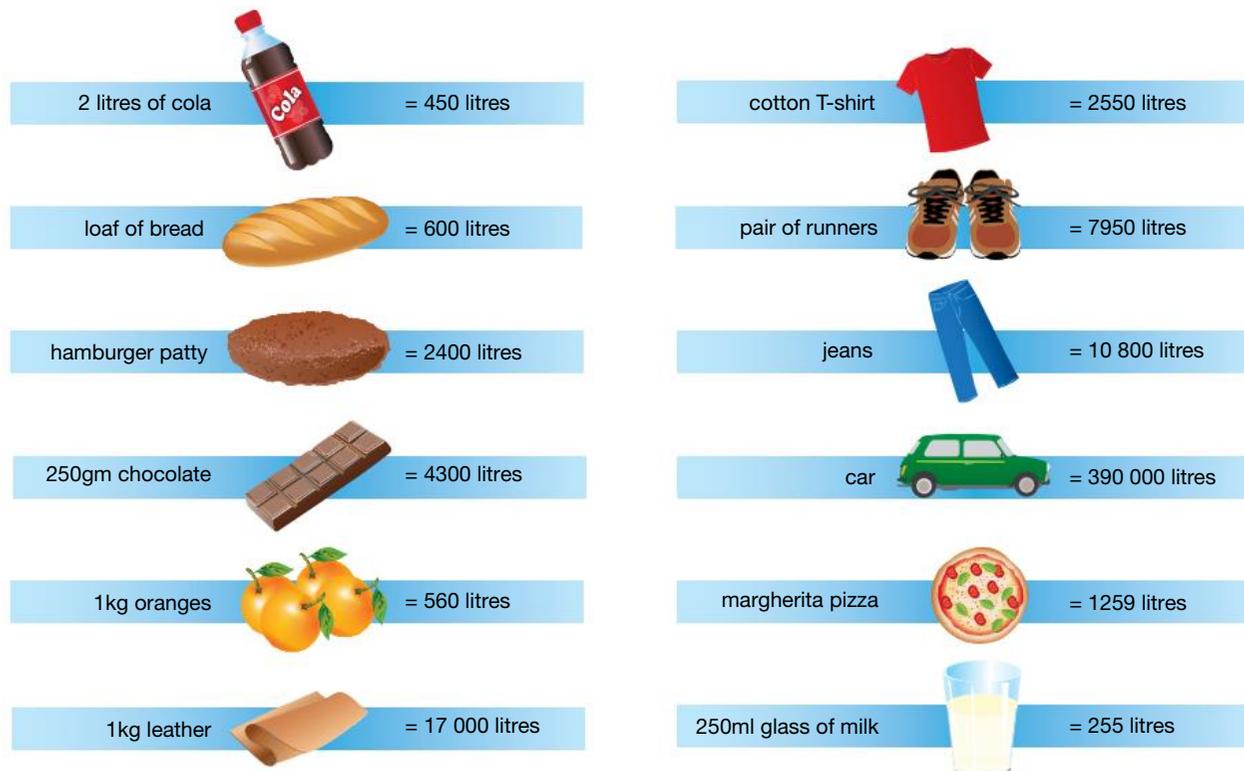
Trade in virtual water

Trade in virtual water refers to the idea that when goods and services are exchanged, so is the water that was used to produce them.

How the trade works

When a country imports 1 tonne of wheat, that country saves about 1300 cubic metres of its own water. If water is scarce in that country, the water it saves can be used for other purposes. However, if water is scarce in the exporting country, it has exported 1300 cubic metres of water that is no longer available for other purposes.

For some countries it makes sense to save real water by importing the virtual water embedded in grain or meat. The Netherlands, Jordan, the United Kingdom, Japan and South Korea depend on virtual water imports for more than 62 per cent of their water needs. Large exporters of virtual water (mostly in the form of wheat, corn, soybeans and other food crops) are the European nations, the US, Australia and Brazil.



9.3.1 The amount of water used to produce selected foods and consumer products

Spotlight

Coffee's big thirst

Coffee is one of the most important agricultural products traded in the world. However, producing coffee requires a lot of water. It takes about 21 000 litres of water to produce 1 kilogram of roasted coffee. A standard cup of coffee needs 7 grams of roasted coffee, so each cup of coffee 'costs' 140 litres of water. Assuming that a standard cup holds 125 millilitres of coffee, we need more than 1100 drops of water to produce one drop of coffee.

International trade in coffee products is responsible for 80 billion cubic metres of virtual water exports. Of all crop and livestock products, coffee tops the list of global virtual water flows.

In total, the world's population needs 120 billion cubic metres of water per year to enjoy all the coffee it drinks. This is about 6 per cent of the world's total international virtual water flows.



9.3.2 Finland was the top coffee-consuming country in 2017. The average Finnish citizen consumes 12 kilograms each year.

Activities

Remembering and understanding

- 1 State how much water is used in creating a hamburger with the lot.
- 2 State why it is important to know the amount of virtual water involved in producing goods and services.
- 3 Explain the concept of 'trade in virtual water'. What are the implications of this concept for countries with scarce water resources?

Applying and analysing

- 4 Study Figure 9.3.1 and the information under 'Water in food production'.
 - a Calculate the amount of virtual water required to produce:
 - i a breakfast of two slices of toast and one cup of coffee
 - ii a lunch of a hamburger in bread and a 500 mL bottle of cola.

- b Think about how many pairs of jeans you own. In total, how much water was required to produce them?

Evaluating and creating

- 5 Study the Spotlight box 'Coffee's big thirst'. Use this as a guide to investigate the amount of water required to develop, produce and run one of the following products:
 - mobile phone
 - television
 - tablet computer such as an iPad
 - desktop or laptop computer
 - other technological device.Develop an oral report, supported by a multimedia presentation, outlining the findings of your research.

9.4 Increasing water supply

Demand for water

The global demand for water will continue to increase as the world's population heads towards 7.9 billion in 2025. Not only will we need to increase the amount of fresh water available, but we will also need to use existing supplies more carefully.

Solutions

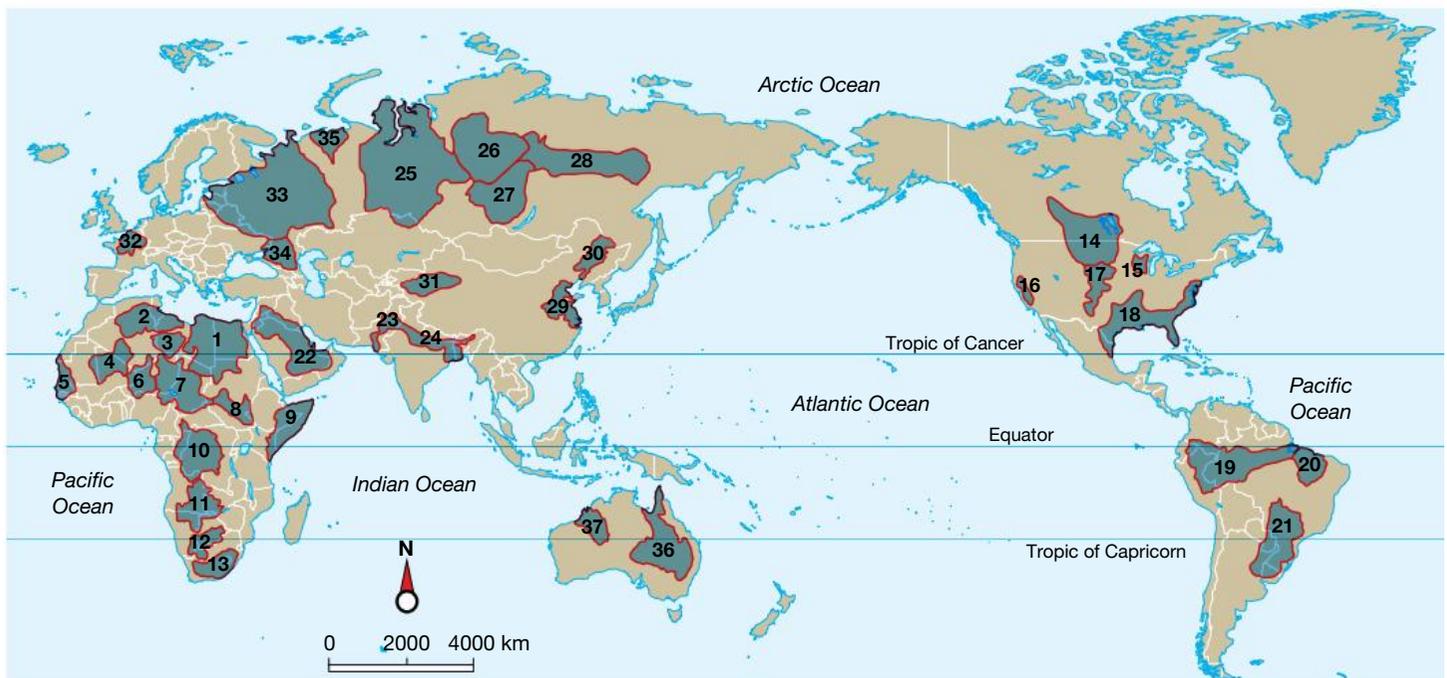
Ways of increasing the water supply include:

- extracting more groundwater
- building dams and reservoirs
- transporting water
- desalination (removing the salt from ocean water).

Extracting groundwater

Most aquifers are a renewable resource. That is unless the groundwater they contain becomes contaminated or is removed faster than it can be refilled by rainfall. At present, the **water table** (the level at which layers of underground rock are saturated by water) in many places is falling. This is because water is being withdrawn faster than the rate of natural recharge.

The world's **deep aquifers** are a potential source of additional groundwater, but they are largely unused currently (see Figure 9.4.1). Tests indicate that some of these aquifers hold enough water to support billions of people for centuries. Unfortunately, deep aquifers are not considered a renewable resource because they have taken millions of years to reach their current state and cannot be replenished on a human time scale.



Large aquifer systems

- | | | |
|-------------------------------------|---|-------------------------------------|
| 1 Nubian Aquifer System | 14 Northern Great Plains Aquifer | 27 Angara–Lena Artesian Basin |
| 2 North-west Sahara Aquifer System | 15 Cambro-Ordovician Aquifer System | 28 Yakut Basin |
| 3 Murzuk–Djado Basin | 16 California Central Valley Aquifer System | 29 North China Plain Aquifer System |
| 4 Taoudeni–Tanezrouft Basin | 17 High Plains–Ogallala Aquifer | 30 Songliao Basin |
| 5 Senegalo–Mauritanian Basin | 18 Gulf Coastal Plains Aquifer System | 31 Tarim Basin |
| 6 Iullemeden–Irhazer Aquifer System | 19 Amazonas Basin | 32 Parisian Basin |
| 7 Chad Basin | 20 Maranhao Basin | 33 East European Aquifer System |
| 8 Sudd Basin | 21 Guarani Aquifer System | 34 North Caucasus Basin |
| 9 Ogaden–Juba Basin | 22 Arabian Aquifer System | 35 Pechora Basin |
| 10 Congo Intracratonic Basin | 23 Indus Basin | 36 Great Artesian Basin |
| 11 Northern Kalahari Basin | 24 Ganges–Brahmaputra Basin | 37 Canning Basin |
| 12 South-east Kalahari Basin | 25 West Siberian Artesian Basin | |
| 13 Karoo Basin | 26 Tunguss Basin | |

Source: WHYMAP

9.4.1 The world's large aquifer systems

In addition:

- ▶ little is known about the impact withdrawing this water would have on the geology of the area
- ▶ some deep aquifers underlie more than one country, which makes them a potential source of conflict
- ▶ the cost of tapping this resource would be very high.

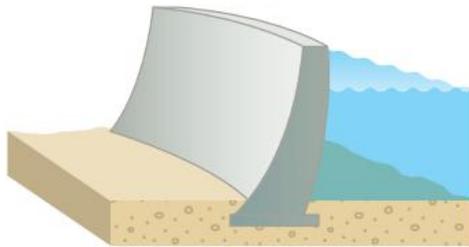
Dams and reservoirs

A **dam** is a structure built across a river to control the river's flow. The dammed water creates a **reservoir** (or lake) behind the dam. The main purpose of a dam is to capture and store water run-off. The water is then released when needed to control floods, generate electricity (hydro-electricity), or supply water for irrigation and for towns and cities. Reservoirs also provide opportunities for recreational activities such as swimming, fishing and boating.

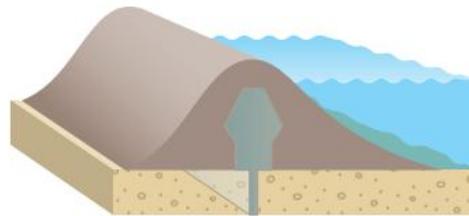
There are now more than 45 000 large dams worldwide (22 000 of these are in China). Together, they capture and store about 14 per cent of the world's surface water run-off. They provide water for almost half of all irrigated crop land, and supply more than half of the electricity used in 65 countries. These dams have increased the reliable availability of water for human use by nearly one-third.

Large dams have benefits and drawbacks. While they greatly increase water supplies in some areas, they also disrupt ecosystems and displace people.

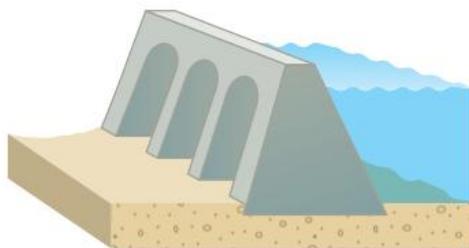
Dams can be classified into different types according to their structure (see Figure 9.4.2).



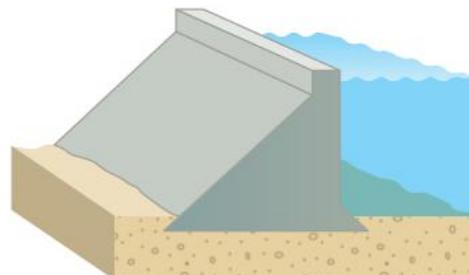
Arch dam
This has a curved shape. The inside of the curve faces downstream.



Embankment dam
This is made of a huge pile of rocks and earth. The dam relies on its sheer bulk to hold back the water.



Buttress dam
This has a series of buttresses located on the side of the dam facing downstream.



Massive dam
This is built of concrete and relies on its size and weight to withstand the pressure of the stored water.

9.4.2 Dam types

Transporting water

Water can be transported over long distances using dams, pumps, tunnels, pipelines and lined canals, or **aqueducts** (artificial channels built to transport water). The California Water Project in California, US, is one of the world's largest water transfer projects. It moves water from water-rich northern California to water-poor southern California, where it is mainly used in agriculture. In Australia, the Snowy Mountains Scheme transports water using dams, tunnels, pipelines and aqueducts. They take water from the Snowy River, on the eastern side of the Great Dividing Range, and divert it westwards into the Murray and Murrumbidgee river systems. There it is used for irrigation. There are some people in Australia who argue in favour of building large dams in northern Australia and piping the water south into the Murray–Darling river system.

Did you know?

- ▶ Worldwide, big dam construction has displaced up to 80 million people from their homes and flooded an area of productive land equivalent to twice the size of Victoria.
- ▶ Only twenty-one of the Earth's 177 longest rivers run freely from their source to the sea.

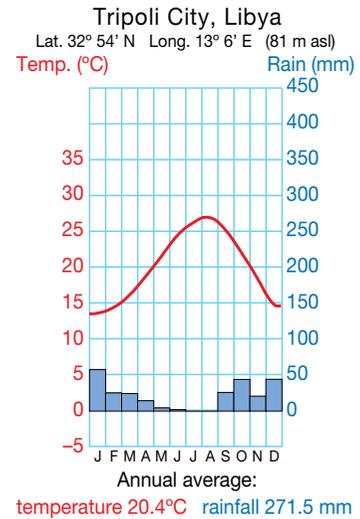
Spotlight

Securing Libya's water supply

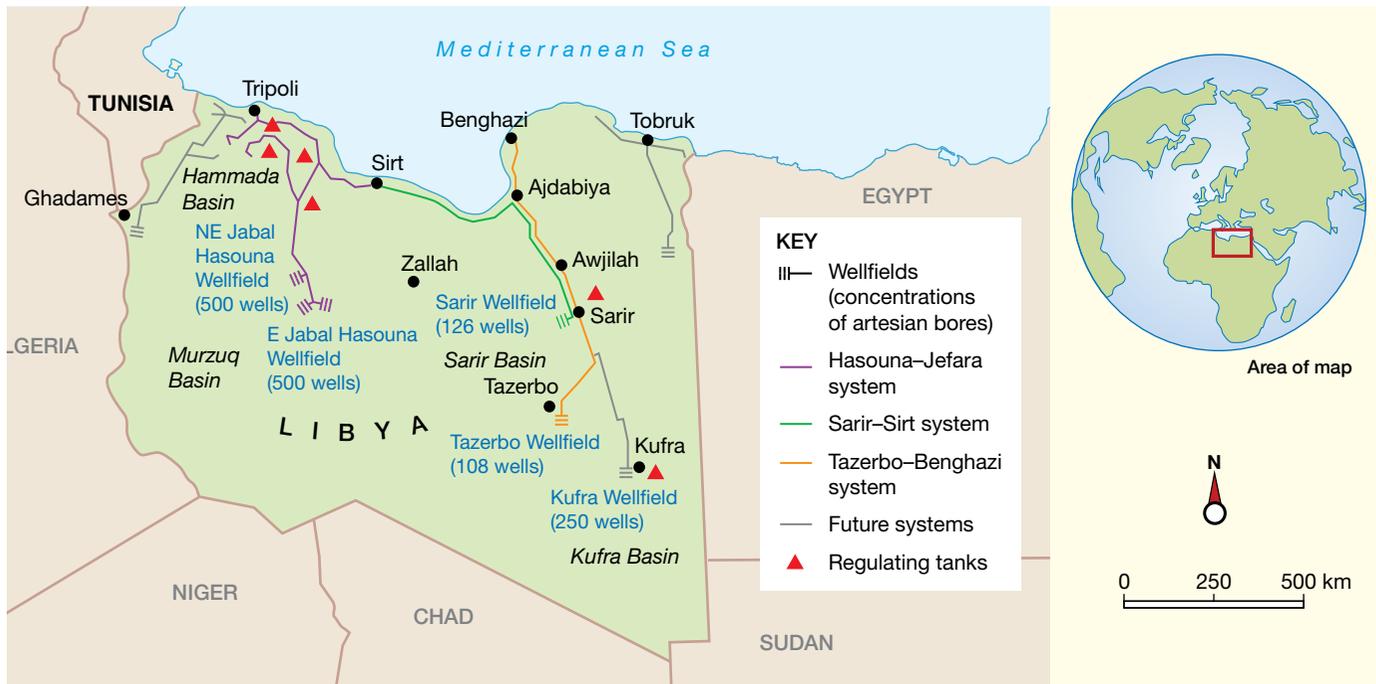
While drilling for oil in Libya in the 1960s, engineers discovered huge reserves of water in aquifers beneath the Sahara Desert. This vast store of water had accumulated over some 70 000 years, much of it at a time when rainfall in northern Africa was much higher than it is now.

To develop its economy, Libya needed to use this water. In the 1970s, the country made huge profits by exporting oil to the countries of the developed world. Much of this money was invested in the Great Man-Made River Project (see Figure 9.4.3). Construction started in 1983 and is still in progress. When completed, the project will improve access to water for over 5 million people and will irrigate dry areas so that the country can become self-sufficient in food production. The project will also generate electricity, which will help to promote industrial development.

To extract the water, more than 1300 wells, most over 500 metres deep, have been dug, and a 3500-kilometre long network of pipelines 4 metres in diameter is still under construction. Three major reservoirs (at Ajdabiya, Sirt and Benghazi) store 35 gigalitres of water. The project has made 135 000 hectares of land available for production. Large quantities of fruit and vegetables, as well as 270 000 tonnes of crops and 760 000 tonnes of fodder (feed for livestock), are now grown on irrigated land.



9.4.4 Climate graph for Tripoli, Libya's capital



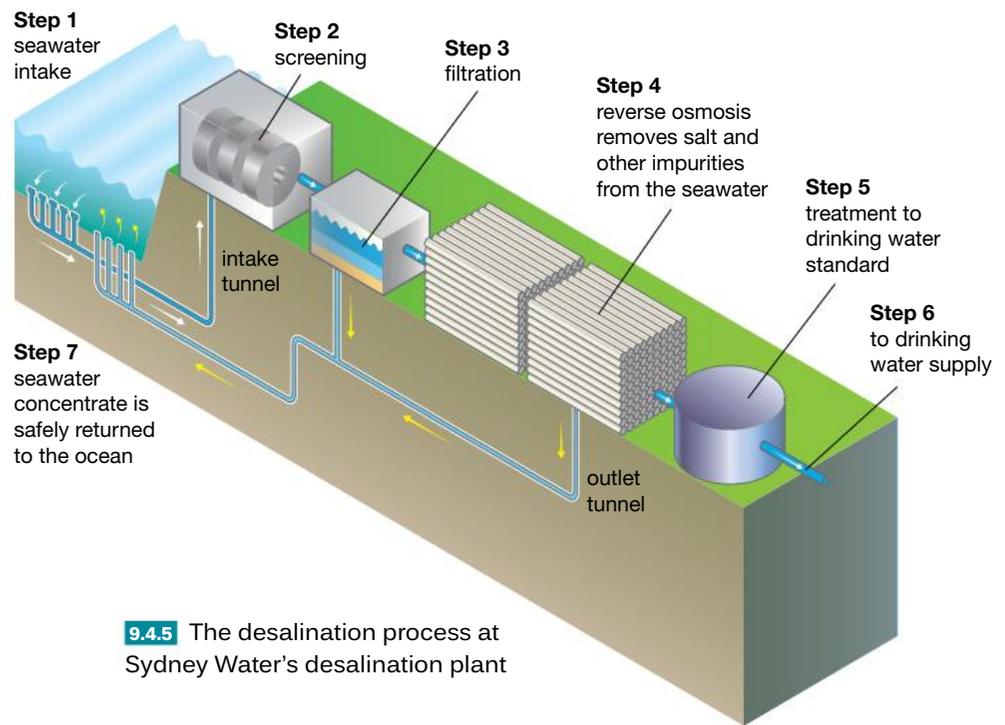
9.4.3 Libya's Great Man-Made River Project. Libya is a hot, dry country. Any rainfall is limited to a narrow coastal zone. Seventy per cent of Libya's 5 million people live in the coastal cities of Tripoli and Benghazi.

Desalination

Desalination is a process that involves removing the dissolved salt from ocean water. The process most commonly used is called reverse osmosis. This involves forcing water, under high pressure, through a filter that is fine enough to remove the salt. Today, there are more than 14 500 desalination plants operating in more than 125 countries. Australia has six desalination plants either in operation, waiting to be used or under construction. Desalination is an energy-intensive process that is very expensive.

Desalination plants are very expensive to build and operate, and they use enormous amounts of electricity. They can have a serious impact on nearby marine ecosystems. This is because of the toxic chemicals used to kill algae and the **brine** (very salty water) that is dumped back into the sea.

When operated at capacity, Sydney's desalination plant (see Figure 9.4.5) supplies 15 per cent of Sydney's water needs. A large wind farm has been built to provide **green energy** (electricity produced using renewable resources) for the plant.



9.4.5 The desalination process at Sydney Water's desalination plant

Activities

Remembering and understanding

- 1 List the ways in which supply of water in an area can be increased.
- 2 Under what condition can groundwater be considered a renewable resource?
- 3 Outline the potential benefits and dangers associated with extracting water from the world's deep aquifers.
- 4 State the role played by dams.

Applying and analysing

- 5 Identify the infrastructure needed to transport water.
- 6 Study Figure 9.4.5. Discuss the process of desalination.
- 7 Discuss, as a class, the various options outlined in this unit for increasing water supplies. List the benefits and costs of each approach. Decide which is the most beneficial in terms of:
 - a the economic benefits
 - b minimising the environmental impact.

- 8 Study Figure 9.4.4. Describe the climate of Tripoli. Explain why water extraction, storage and transport are essential in Libya.

Evaluating and creating

- 9 Investigate the California Water Project. What has been the environmental cost of the undertaking?
- 10 Study the Spotlight box 'Securing Libya's water supply'. Using the internet, find another example of a large-scale water transfer project. Present your findings as an oral report supported by a multimedia presentation.
- 11 Investigate one of Australia's desalination plants. Why was it built? Is it necessary? What are the environmental impacts of the plant?

9.5 Water management in Australia

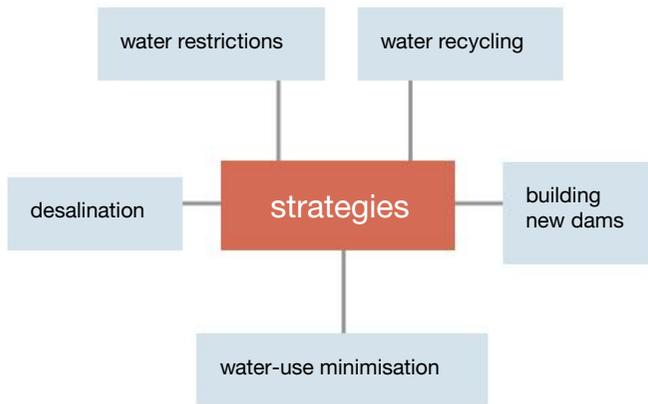
Competing demands for water

Australia is the driest inhabited continent on Earth. It is essential that we carefully manage our water resources. Water is needed for urban areas, agriculture and industry. In addition, water is vital for the environment.

Water for Australia's cities

Most of Australia's large urban centres are located along the coastline. These coastal areas receive higher rates of rainfall than inland Australia. Even so, most cities face a challenge to meet the water needs of a growing population. In recent years, Brisbane, Sydney, Melbourne and Adelaide have all had to place restrictions on how and when people can use water. Many smaller cities and towns have also had to impose water restrictions.

Figure 9.5.1 summarises some of the strategies that cities around Australia are beginning to use to secure their water supplies for the future.



9.5.1 Some of the strategies used in Australian cities to secure water supplies

Managing the impacts of irrigation

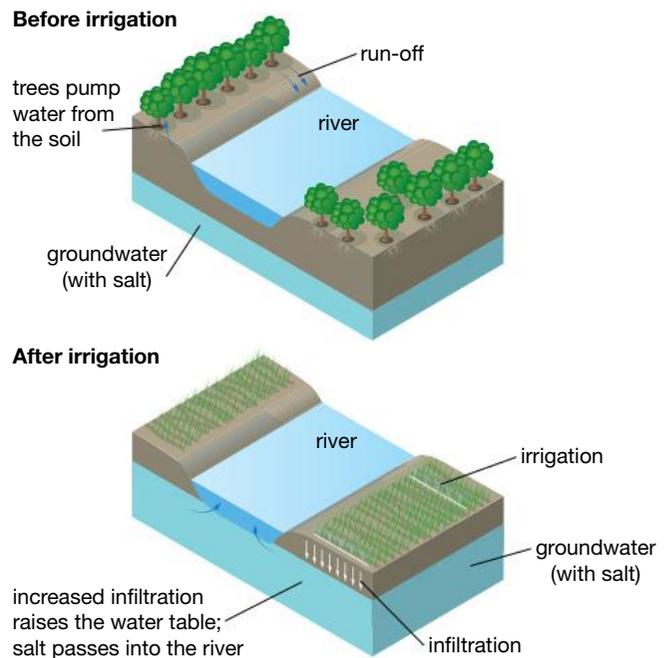
Irrigation allows us to grow crops in areas that are normally too dry. Unless irrigation water is managed carefully, it can have serious environmental impacts. One of the most serious impacts is salinity, or an excess of salt in the soil. There are two types of salinity.

Dryland salinity

Dryland salinity of soils and water is a natural characteristic in semi-arid and arid climates. This salinity results from low, unreliable rainfall and high rates of evaporation. Soils become salty when there is not enough rainfall to remove the salt. This process is known as **leaching**. Flat landscapes and inward-draining regions (such as the Lake Eyre Basin) do not have the advantage of rivers running through them that can carry salt to the sea.

Irrigation salinity

Irrigation salinity occurs when irrigation water seeps down into the soil, causing the water table to rise. When this happens, dissolved salts move up into the root zone of plants. Dissolved salt can also move towards watercourses (see Figure 9.5.2). This results in an increase in the salinity of rivers.



9.5.2 Irrigation salinity happens when irrigation water causes the water table to rise, bringing dissolved salt to the surface

Did you know?

In 2000, 5.7 million hectares of Australia were assessed as having a high potential to develop salinity. Predictions indicate that this could increase to 17 million hectares by 2050.

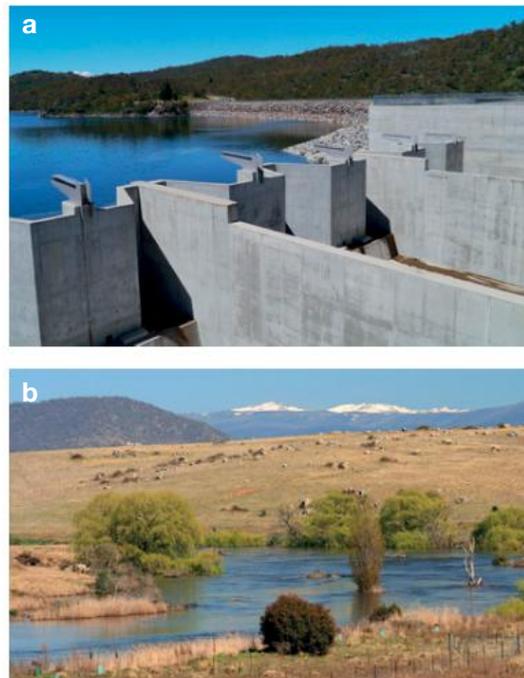
Spotlight

Total catchment management

The best way to protect water quality in our waterways is to manage the whole catchment. Sources of pollution need to be identified. Pollutants (such as sewage, industrial pollution, agricultural fertilisers and pesticides, and salty groundwater) also need to be captured and treated before they find their way into a catchment's waterways.

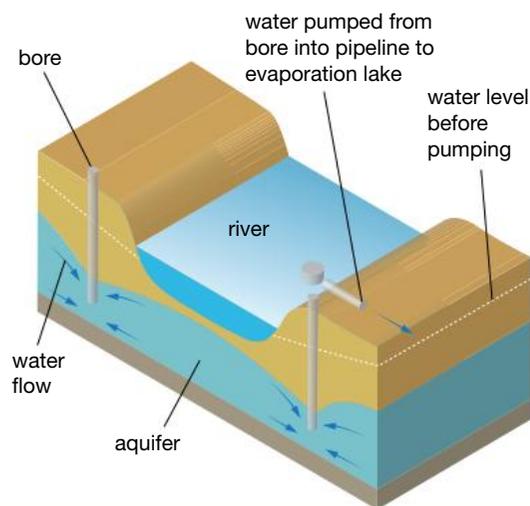
In addition, there is a need to manage the amount of water taken from rivers for irrigation, and for urban and industrial uses. Scientists now talk of maintaining an adequate environmental flow to protect the health of river and wetland ecosystems.

9.5.3 The Jindabyne Dam (a) in the Snowy Mountains was built across the Snowy River, so most of the rivers flow had been diverted into the Murray–Darling Basin. The environmental flow of the Snowy River (b) has been dramatically changed and this has impacted on the health of the river.



Solutions

It is unlikely that there will be a total solution to the salinity problem in Australia, but steps can be taken to stop water tables from rising. One way to do this is by pumping and draining water, as shown in Figure 9.5.4. A second way is by planting deep-rooted vegetation, which reduces the amount of water reaching the water table by increasing the rate of transpiration (the movement of water through a plant and its evaporation from leaves, stems and flowers).



9.5.4 Expensive engineering can be used to lower water tables and protect waterways. The disposal of the salt that accumulates is another significant problem.

Activities

Remembering and understanding

- 1 Explain why it is important that water resources are carefully managed in Australia.
- 2 'Total catchment management' refers to protecting waterways. What needs to be identified so that this protection can commence?
- 3 Explain the concept of environmental flow.

Applying and analysing

- 4 Study Figure 9.5.1. Write a paragraph outlining the strategies used in Australian cities to manage water resources.

- 5 Study Figure 9.5.2. Write a paragraph outlining the relationship between irrigation and salinity.
- 6 Study Figure 9.5.4. Write a paragraph outlining how an engineering response can be used to address irrigation salinity.

Evaluating and creating

- 7 Work in small groups and take the perspective of a government department responsible for managing water in your town or city. Prepare a brochure, digital presentation, or script for a television or radio advertisement about strategies that could be used to reduce water usage.



9.6 Reducing household water use

Conserving water

Conserving water is almost always more effective and less costly than trying to provide a new supply of water. The key idea in water conservation is that there are many ways we can use water resources more sustainably.

Price

Increasing the price of water is one way to reduce water use. When water is cheap, people do not use it wisely. When the price of water rises, people use it more carefully. But, while higher water prices encourage conservation, they can make life difficult for farmers and households on low incomes.

In irrigation

About 60 per cent of the water used in agriculture does not make it to the plants. Flood irrigation systems of agriculture (for example, paddy rice cultivation) typically lose 40 per cent of their water through evaporation, seepage and water run-off. With advanced systems of irrigation, such as centre pivot irrigation and drip irrigation, between 90 and 95 per cent of the water gets to the crops.

Strategies for reducing irrigation wastewater include:

- using the most efficient irrigation technology available (for example, drip irrigation)
- lining canals to reduce seepage
- irrigating at night to reduce evaporation
- monitoring soil moisture and only applying water when necessary
- avoiding growing water-thirsty crops in arid areas
- irrigating with treated grey water
- pricing water at a level that encourages conservation.

In industry and at home

While agriculture is the biggest user of water, industrial and domestic consumption are also significant. In developing countries, between 30 and 60 per cent of the urban water supply is lost through leaking water mains. Even in the cities of the developed world, leakage can account for between 20 and 30 per cent of the water supply. Fixing these leaks is cheaper than building additional storage capacity.

Strategies for reducing wastewater in urban and industrial settings include:

- redesigning manufacturing processes so they use less water

- recycling water, especially in industry
- landscaping public parks and private gardens with plants that have low water needs
- using drip irrigation systems in gardens
- fixing leaking water mains
- using water-saving fixtures in commercial and residential properties
- collecting domestic grey water and using it to water lawns and non-food plants
- purifying and re-using water from homes and commercial buildings
- pricing water at a level that encourages conservation.

Personal responses

There are several actions individuals can take to reduce water consumption (see Figure 9.6.1). These include:

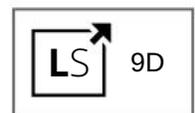
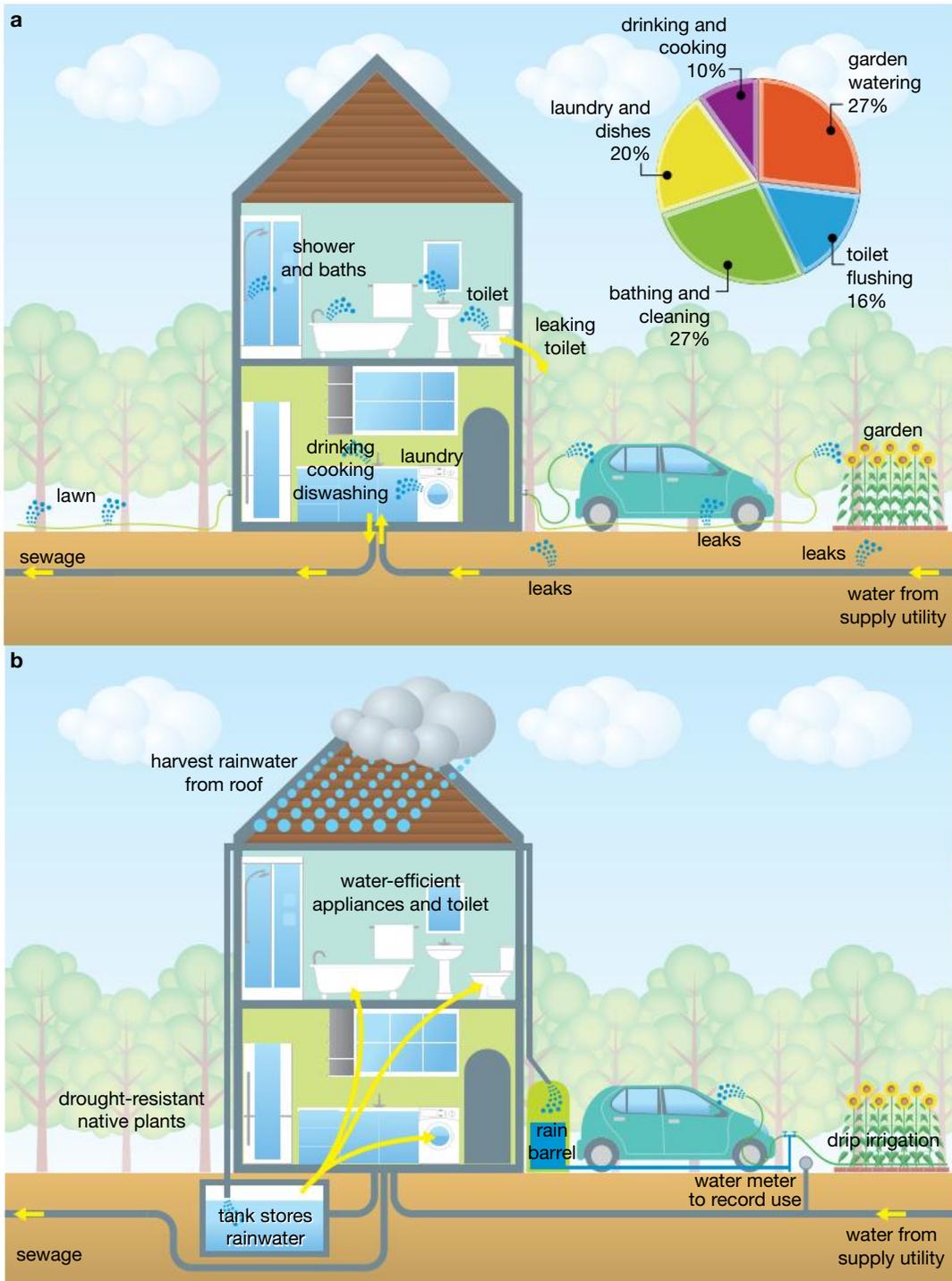
- installing water-saving household appliances, showerheads and toilets
- taking shorter showers
- turning off the tap when cleaning our teeth
- washing clothes only when we have a full load
- using grey water on lawns and gardens
- washing the car using a bucket rather than a hose
- fitting timers to all garden hoses
- growing plants and grasses with low water demand
- watering lawns and gardens early in the morning or late in the afternoon
- installing drip irrigation systems.

Sustainable water use

In addition to personal responses, there are a range of programs to use the Earth's fresh water more sustainably. These include:

- wasting less water and promoting water conservation through education programs
- researching and developing new technologies for efficient water use and recycling
- ensuring that aquifers are used sustainably
- maintaining water quality by protecting forests, wetlands and other natural systems that store and release water
- developing agreements between countries that share water resources
- slowing population growth
- pricing water at a level that encourages conservation.

9.6.1 Making a home water wise: (a) before and (b) after



Activities

Remembering and understanding

- 1 Describe how water pricing can be used to reduce wastewater.
- 2 Discuss how irrigation water can be used more effectively.
- 3 Study Figure 9.6.1. Identify the ways this Australian household has become more water wise.

Evaluating and creating

- 4 Create a poster promoting water conservation in one of the following locations (your poster should outline key ways water use could be reduced):
 - an urban environment
 - an industrial setting
 - a rural environment.

9.7 The Murray–Darling Basin

Geography

The Murray River is Australia’s longest river, with a length of approximately 2508 kilometres. It has its source in the Australian Alps and drains the western side of the Great Dividing Range. The Murray River is joined by the Darling River at Wentworth, on the Victorian border. The Darling River is approximately 1545 kilometres in length and begins its journey in southern Queensland. The Murray then flows into South Australia. It turns south near the town of Morgan, and continues southwards to reach the Southern Ocean near Goolwa. The catchment, or river basin (the area from which water drains into a river system), of the Murray and the Darling covers about one-seventh of Australia’s landmass (see Figure 9.7.1).

Ecosystem

The ecosystem of the Murray–Darling Basin is diverse. The aquatic environment contains several important fish species, including the very large Murray cod. There are also complex communities of mussels and other important animals, including the Murray crayfish and freshwater turtles.

More than 7000 wetlands are found along the Murray and its tributaries. These wetlands are an important habitat (home) for a range of animals, including birds, frogs and other amphibians, as well as larger land-based animals, such as wallabies and kangaroos.

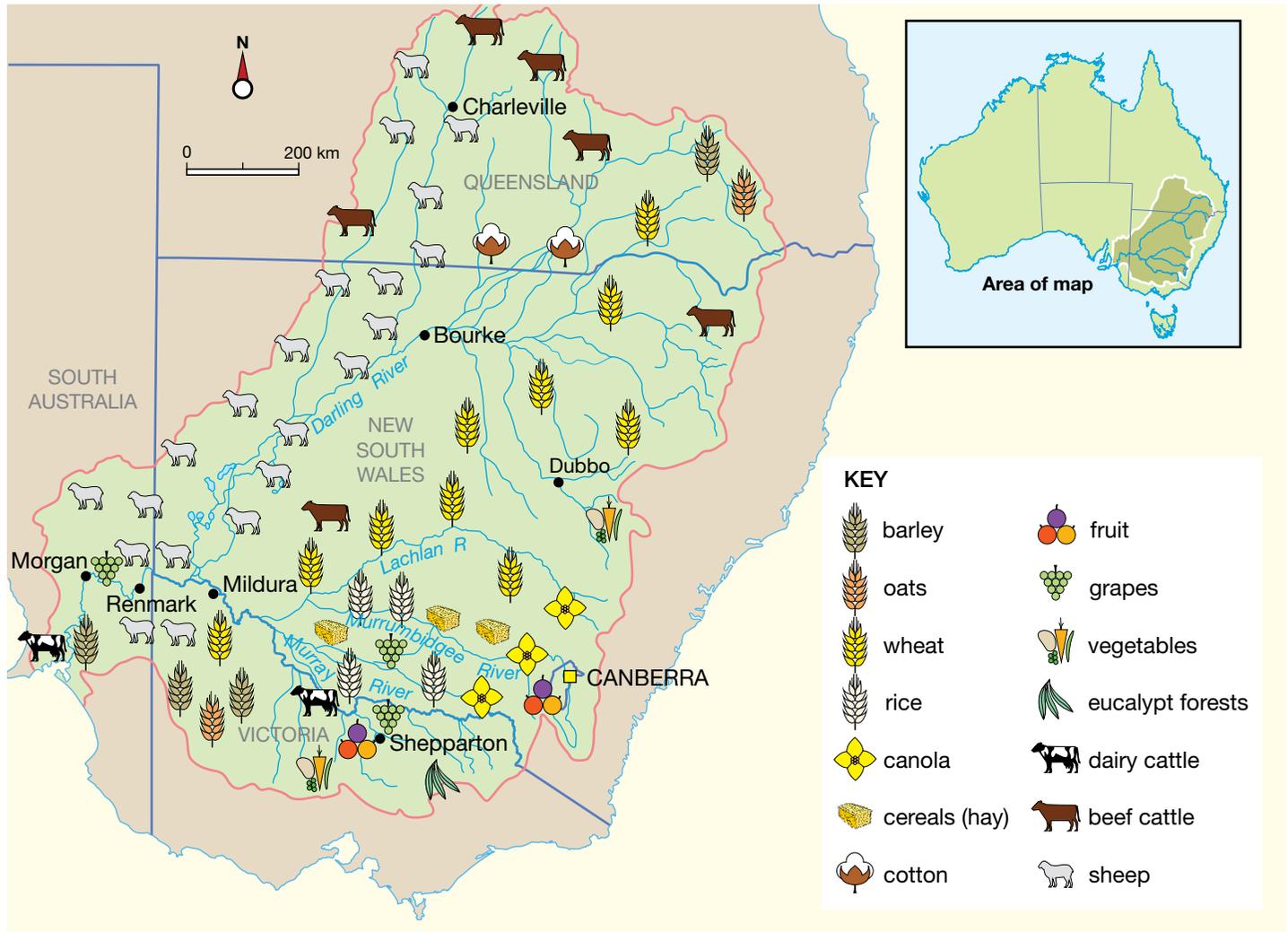
A very important part of the Murray–Darling Basin, and one of its most threatened environments, is the river red gum forests. These trees have evolved over thousands of years to live on the flat flood plains adjacent to the river. They provide important habitats for many species.

Economic importance

The Murray–Darling Basin is Australia’s most important food-producing area because approximately 40 per cent of Australia’s food is produced there. It is where 98 per cent of oranges and 54 per cent of apples are grown. All of Australia’s rice is grown in the Basin. Of the food that Australia exports, 39 per cent comes from the Murray–Darling Basin. Exporting food grown in the Basin creates billions of dollars’ worth of trade.



9.7.1 The Murray–Darling River Basin is so large that it includes the catchments of many large rivers. One of these is the Murrumbidgee River, which flows westwards across south-western New South Wales. Another is the Darling River, which flows southwards from Queensland, through far western New South Wales, before flowing into the Murray.



9.7.2 The Murray–Darling Basin food bowl. The region produces approximately 40 per cent of Australia’s food.

The Murray–Darling Basin is also an important destination for recreation and tourism. People travel to the area to make use of its rivers for boating, water skiing, swimming and canoeing. Each year in December, canoeists paddle 404 kilometres down the Murray during the 5-day Murray Marathon event.

The most important economic benefit of the Murray–Darling Basin is to the 1.26 million people who live in Adelaide and rely on the Basin for their water supply.

Human impacts

Since European settlement, the Murray–Darling Basin environment and its ecosystems have undergone major changes.

Land clearing

There has been extensive land clearing across the Basin. The native scrub and river red gum forests have been replaced with pastures (areas of grassland for grazing animals). Large areas have also been cleared for rice, wheat and other cereal crops, as well as citrus fruits and vineyards.

Water extraction

Large amounts of water are needed to support agriculture and communities across the Basin. Water is extracted from the Basin’s rivers for this purpose.

Water diversion

The Snowy River rises on the eastern side of the Australian Alps and flows south towards Bass Strait. Between 1949 and 1974, a huge system of tunnels and dams was built to divert most of the Snowy River’s water into the Murray River. First, the water is stored in huge dams. Then it is sent westwards across the mountains through tunnels. This water is also used to generate hydro-electricity.

Habitat destruction

Land clearing for agriculture and urban development, as well as the flooding caused by the huge dams and lakes used for irrigation, has led to the destruction of many wetlands and forests. Important habitats for waterbirds and countless other animals have been lost.

Turbidity and nutrient run-off

Turbidity is a measure of the cloudiness of water. It increases when soil and other materials enter the water. High levels of turbidity reduce the amount of sunlight that penetrates the water, and this affects plants growing in the water.

Nutrients, such as fertilisers, can flow into rivers from nearby farms and increase turbidity. This can cause algae to grow. When large blooms of algae die, the bacteria responsible for their decomposition remove oxygen from the water. This reduces aquatic life further by limiting access to vital oxygen.

Soil salinity

The origins of the Murray–Darling Basin stretch back more than 500 000 years. At that time, the area was covered in a shallow saltwater sea. As the sea retreated, it left a deposit of sand and salt, which still covers the area. This means that the soils of the Basin contain huge amounts of salt.

Most of the salt was once trapped deep in the soil. As the land has been cleared and irrigated, the salt has come to the surface, carried by rising groundwater. Before the land had been cleared, trees acted as huge pumps, sucking up large amounts of water and keeping the water table

(and its salt) deep below the surface. The removal of the trees has allowed the groundwater to rise towards the surface, bringing the salt with it. This salt scars the surface and becomes poisonous to plants. It subsequently destroys the environment.

River regulation

The process of river regulation involves the construction of weirs, dams and other engineering works in and around rivers. Such regulation has changed the nature of the rivers of the Murray–Darling Basin. The regular flooding that once came each spring with the alpine snowmelt has been replaced by a more regular flow. Constructions in the river prevent fish from swimming up and down the river, making breeding more challenging.

River mouth

Less water flows down the Basin's rivers because of extracting water, and building dams and weirs to control the river. This means that sediments such as sand, which are normally carried along by the water, build up in the rivers. The mouth of the Murray at Lake Alexandrina, near Goolwa, often requires dredging to keep it open (see Figure 9.7.3).



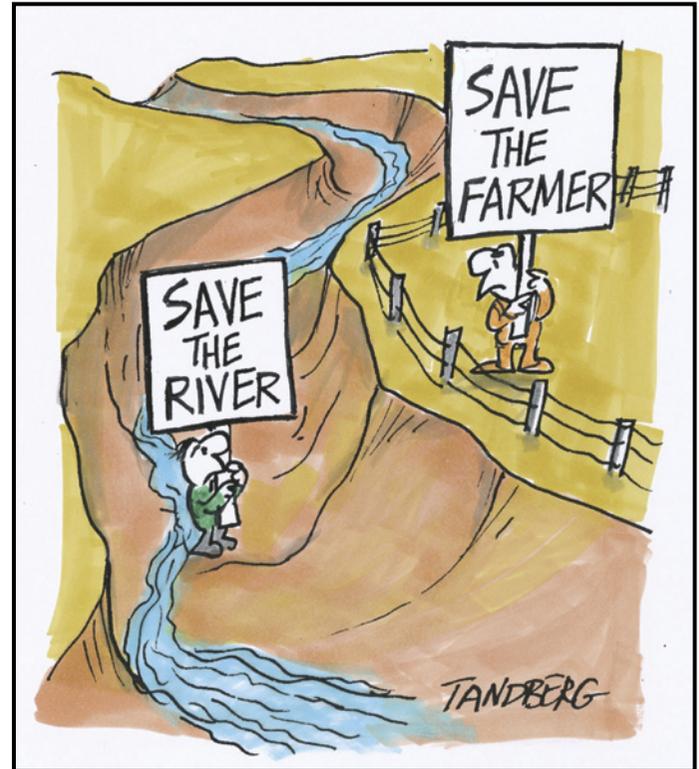
9.7.3 So much water is taken out of the Murray for irrigation and town use that the mouth of the river often fills with sand and needs to be dredged

Management

The Murray–Darling Basin is so important to Australia’s environment and economy that it requires careful management. After much debate, laws were passed in late 2012 to return water to the system for environmental purposes. Initially, an amount of 2750 gigalitres was allocated annually. After environmentalists and the South Australian government argued that this was not enough to protect the river’s ecosystem, the allocation was increased to 3200 gigalitres, to be achieved by 2019. This water will be allowed to flow down the river, flushing it of sediment and salt. It will also help to reduce turbidity and the build-up of nutrients that promote the growth of algae.

Other strategies being used to solve the problems of the Murray include:

- the installation of fish ladders to help fish migrate upriver, past dams and weirs
- reductions in land clearing and increased planting of trees
- careful management of wetlands.



9.7.4 There are many competing demands on the water in the Murray–Darling Basin

Activities

Remembering and understanding

- 1 Explain the importance of the Murray River.
- 2 Copy and complete the following table.

Problem	Cause	Impact	Solution
Salinity			
Habitat loss			
Turbidity			
Nutrient run-off			
River regulation			
Water extraction			
Land clearing			

Applying and analysing

- 3 Using Figure 9.7.1 and the content of this unit, write a paragraph describing the location of the Murray–Darling Basin. List all the states that the Basin is located in.

- 4 Identify the reasons why it is important to protect the Murray River. Summarise your findings using a mind map.
- 5 Study Figure 9.7.4 and answer the following questions.
 - a What is the caption of the cartoon?
 - b Identify the issues being shown in the cartoon.
 - c How has the cartoonist used images in the cartoon to send a message?
 - d Do you think the cartoonist was successful in getting their message across to the audience? Explain.

Evaluating and creating

- 6 Select one of the impacts of human activity on the Murray–Darling Basin. Using the internet and library sources, prepare a digital presentation outlining how humans cause this impact and how it affects the environment of the Basin.



Atmospheric and hydrological hazards 10

Extreme events within biophysical environments can destroy whole communities.

We cannot control the weather, but we can study the processes that cause weather hazards and disasters. This allows us to better predict extreme weather events and to develop better ways of managing their effects.

In this chapter we explore the ways weather-related natural hazards impact on communities. In particular, we focus on storms, tornadoes, tropical cyclones, floods, heatwaves and droughts. In coming years, Australia will face major challenges to ensure that there is a sustainable water supply. This is because there is rising demand and a drying climate.

OVERVIEW QUESTIONS

- 10A** What are the causes, impacts and spatial extent of atmospheric and hydrological (water-related) hazards?
- 10B** How do individuals, groups and governments respond to the impact of natural disasters?
- 10C** What management strategies can be used to reduce the impact of future natural disasters?
- 10D** What is the likely impact of climate change on the occurrence, frequency and extent of a hazard you have studied?

10.0.1 Tornadoes are violent, rotating columns of air, and are common in parts of the United States of America

GLOSSARY

air pressure the weight of the air pressing down on the Earth's surface at a particular location

drought a prolonged (lengthy) period of below-average rainfall

flash floods floods resulting from intense storms dropping large amounts of rain in a short time

floods when land that is normally dry becomes covered by water; floods are caused by overflow of water from a river or stream, or the release of water from a dam

heatwaves short periods (usually no longer than a few days) of well-above-average temperatures

hyperthermia overheating of the body

inundated (geography) covered with water

natural disasters serious disruptions to communities or regions caused by natural hazards

natural hazards events in biophysical environments, such as storms, cyclones, floods or droughts

rapid-onset floods floods that occur with little or no warning

slow-onset floods floods that may last for one or more weeks, sometimes months

storm surge a rapid rise in the height of the ocean along a coastline, caused by storm winds pushing water towards land

tornado a violent, rotating column of air extending from the base of a thunderstorm to the ground

tropical cyclone an intense low-pressure system (when air is heated by the sun and rises) over tropical waters, usually with strong winds and heavy rain



Before you begin

10.1 Hazards and disasters

Natural hazards and disasters

As we go about our daily lives, it is easy to forget that our biophysical environment contains potential threats to life and property. Many of these threats are related to weather and climate. They include severe storms, tropical cyclones, tornadoes, floods, heatwaves and drought.

Natural hazards are extreme and unusual natural events. When natural hazards impact on people, they are referred to as **natural disasters**.

It is important to remember that weather-related hazards and disasters are only one of several types of natural hazards that affect people. Other natural hazards and disasters include events associated with the Earth's surface and those associated with the ocean. Table 10.1.1 lists different types of natural hazards. Figure 10.1.2 shows examples of weather-related hazards.

10.1.1 Natural hazards

Events associated with the Earth's atmosphere (weather-related hazards)

- major floods: the result of prolonged heavy rain
- flash floods: the result of heavy and intense downpours
- tropical cyclones: high-speed winds, heavy rain and storm surges
- droughts: prolonged periods of below-average rainfall
- bushfires: the result of dry conditions, high temperatures and high winds
- storms: high winds, lightning and heavy rainfall

Events associated with the Earth's surface

- earthquakes and tremors: sudden, often violent movements in the Earth's crust
- volcanic eruptions: when lava, ash, volcanic bombs and gases are expelled from a volcano (they can be a sudden explosion or a slow expulsion of material)
- landslides and slumps: sudden downhill movements of soil and rock

Events associated with the ocean

- coastal erosion: the result of storm-induced waves
- storm surges: large waves caused by storms
- tsunamis: very large waves caused by earthquakes, landslides or meteor strikes

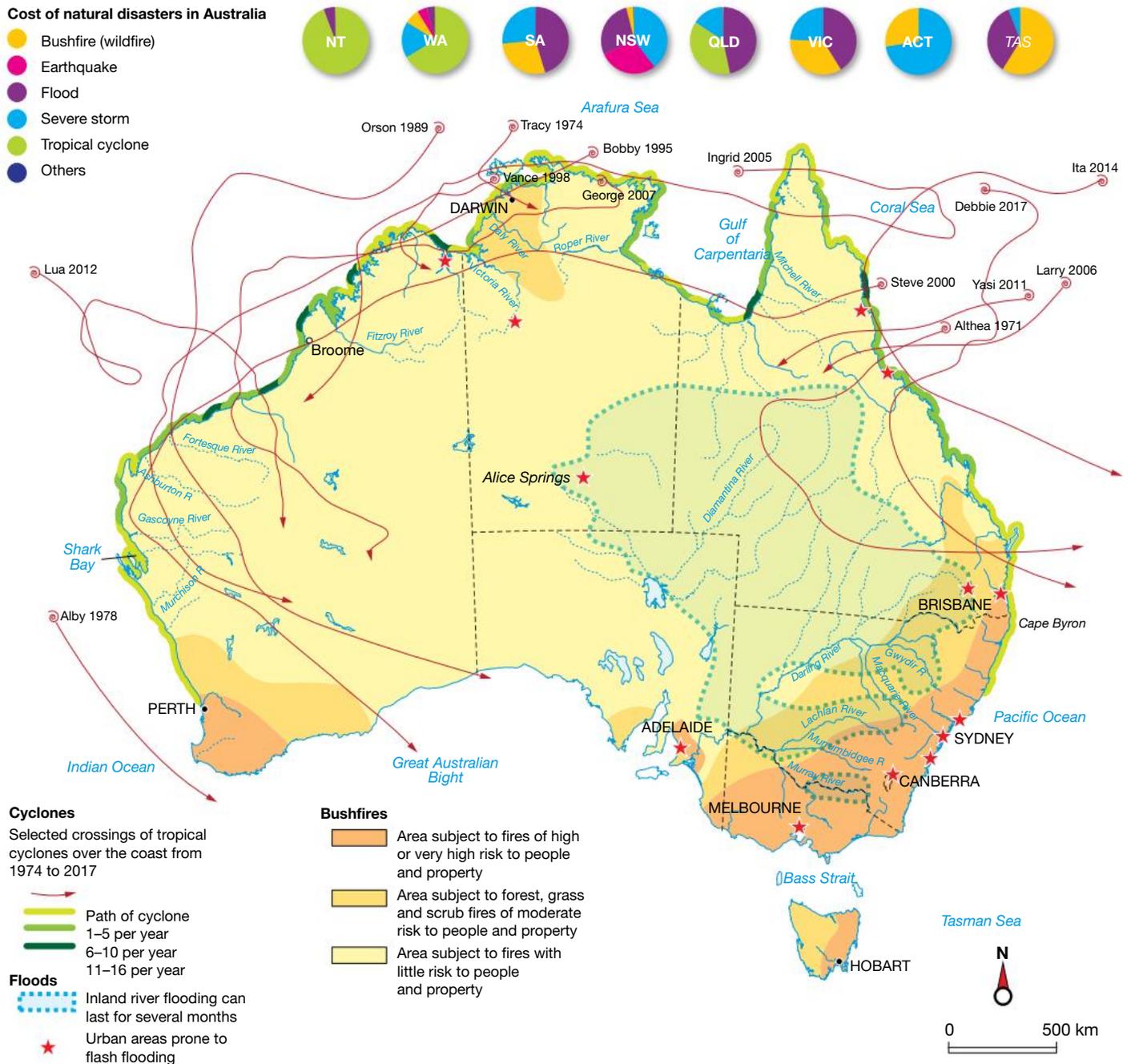


10.1.2 Weather-related hazards and disasters include (a) storms, (b) floods, (c) heatwaves, (d) bushfires and (e) droughts

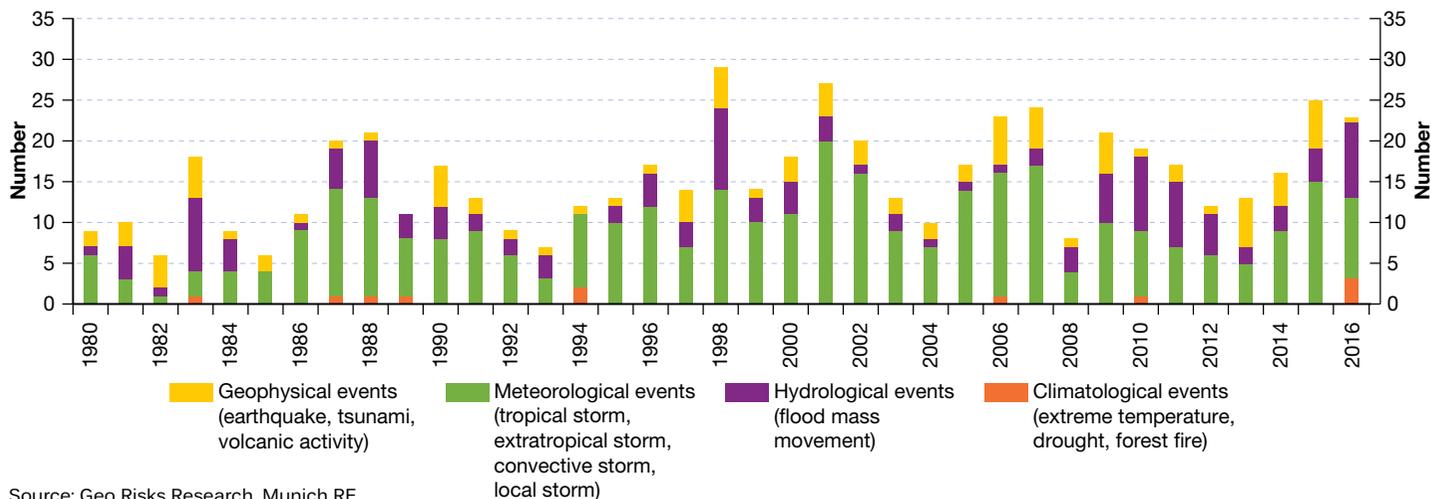
Natural hazards and disasters in Australia

Since European settlement of Australia, more people have died from heatwaves (short periods of well-above-average temperatures) than any other natural hazard. The types of natural disasters and their distribution are shown on the map in Figure 10.1.3. The natural hazards that cost the most in economic terms have been drought (lengthy periods of below-average rainfall) and flood (when land that is normally dry becomes covered by water).

However, the single events that have cost the most have been Darwin's Cyclone Tracy (1974), the Newcastle earthquake (1989), the Sydney hailstorm (1991), the Canberra bushfires (2003), Cyclone Larry (2006), the Newcastle storm (2007), the Gippsland floods (2007), Victoria's Black Saturday bushfires (2009), and the Queensland floods and Cyclone Yasi (2011). The graph in Figure 10.1.4 shows the frequency of natural disasters between 1980 and 2016.



10.1.3 Australia's most common natural hazards are storms, floods, droughts and bushfires



Source: Geo Risks Research, Munich RE

10.1.4 The incidence of natural disasters in Australia, 1980–2016

Impacts of natural hazards

Natural hazards have a range of environmental, economic and social impacts:

- *environmental impacts*: destruction of natural and human environments; the death of wildlife either directly (during the event) or indirectly (for example, due to starvation)
- *economic impacts*: the destruction of property, crops and livestock, infrastructure, and plant and equipment; the loss of income for those affected
- *social impacts*: loss of life and the stress placed on people, as well as the disruption to community life and the destruction of community-based infrastructure (such as roads, bridges, schools, shops and power lines).

Nature's deadly toll

Natural disasters killed approximately 9200 people worldwide in 2016 and caused a total damage of US\$175 billion. This makes 2016 the least costly in recent years. Overall, there were 750 identified disasters (up from an average of 590 events in the past 10 years). The number of people killed was lower than in 2015, when approximately 25 400 people were killed. This number is also lower than the 10-year average of 60 600 deaths. The deadliest events in the period were the Cyclone Nargis in Myanmar in 2008 (138 366 deaths) and the earthquake in Haiti in 2010 (225 570 deaths).

In March 2011, a magnitude 9.0 earthquake, now known as the Great East Japan Earthquake, struck off the coast of Japan's largest island, Honshu. The accompanying tsunami killed more than 25 000 people. The economic cost of this disaster exceeded \$300 billion, making it the most expensive natural disaster in history.

Recent natural disasters in Australia include widespread flooding in Queensland, New South Wales and Victoria in 2011 and Tropical Cyclone Yasi.

In New Zealand, the city of Christchurch was devastated in February 2011 by a magnitude 6.3 earthquake. More than 180 people were killed.

Spotlight

Impacts of climate change

Scientists predict that climate change will increase the frequency and severity of some natural disasters. The number of bushfires (such as the one shown in Figure 10.1.5) is likely to increase in many parts of the world as temperatures rise and rainfall becomes less reliable or consistent (see Figure 10.1.4). The frequency of severe storms and coastal flooding will increase, and low-lying coastal communities will be at greater risk because of rising sea levels. Droughts will be more common and last longer.



10.1.5 A bushfire in Bunyip State Park in February 2009 threatened towns just east of Melbourne

Skills builder

Pie graphs

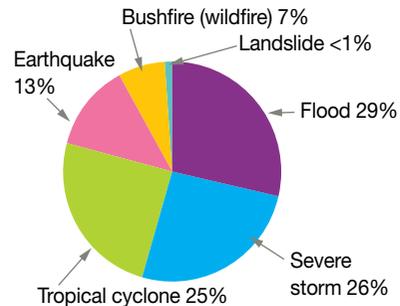
Pie graphs are circles divided into segments radiating out from the centre (see, for example, Figure 10.1.6). The size of each segment of the graph is proportional (related) to the value it represents.

A complete pie graph (360°) represents 100 per cent. Therefore, each percentage point is represented by 3.6° . Knowing this statistic will help you to construct and interpret pie graphs.

To construct a pie graph, follow these steps.

- 1 Draw a circle and then extend a line from its centre to the 12 o'clock position.
- 2 Convert the percentage value of each value or variable to degrees by multiplying it by 3.6.
- 3 List your converted values from the largest to the smallest. Place categories such as 'others' at the end of your list.

- 4 Starting at 12 o'clock, mark each segment on the graph using a protractor. Work in a clockwise direction, starting with the largest segment.
- 5 Shade and label each segment. It may be useful to provide a legend or key. If a legend is included it is not necessary to label the segments.
- 6 Add a title when required.



10.1.6 Average proportional cost of natural disasters in Australia, by type

Activities

Remembering and understanding

- 1 Explain the difference between a natural hazard and a natural disaster.
- 2 List the main natural hazards affecting Australia.
- 3 Outline the impacts of natural hazards and disasters.

Applying and analysing

- 4 Study Figure 10.1.3.
 - a Identify the natural hazards that have the potential to affect where you live.
 - b Discuss ways to reduce the impact of the hazards identified.
- 5 Using Figure 10.1.3 and an atlas, describe the areas of Australia most seriously affected by the following natural hazards:
 - a tropical cyclones
 - b floods
 - c bushfires
 - d earthquakes.

- 6 Study Figure 10.1.4. What trend is evident in the number of natural disasters in Australia? Think about the reasons for this trend. What are the most common types of natural disasters? Which are the least common?
- 7 Using the instructions in the Skills builder box 'Pie graphs', create two pie graphs to display the following data.

Location	2012	2016
Africa	123	90
Asia	210	315
Europe	91	75
Americas	115	232
Australia and Oceania	14	38

10.2 Severe storms

Effects of severe storms

Severe storms are the most common natural hazard. They are a local disturbance in the atmosphere and are accompanied by thunder, lightning, rain, hail and sometimes snow. They can occur anywhere and are responsible for more damage than any other natural hazard.

Environmental

Storms usually only affect a small area compared with floods and tropical cyclones (intense stormy weather over tropical waters). Environmental damage caused by severe storms includes fallen trees and branches, and damage from hailstones and rain.

Social

In Australia severe storms on average kill between five and ten people a year, mostly due to lightning strikes (see Figure 10.2.1). More deaths occur when strong winds cause power lines and tree limbs to fall, and debris (such as roofing iron) to become airborne. People may be left homeless after a severe storm.

Did you know?

The atmosphere is said to be stable or unstable because of air temperature. Imagine a section of air (called a parcel). In unstable conditions, this air parcel will be warmer than the air surrounding it, causing it to move. This leads to changes in weather conditions. In stable conditions, this air parcel will be the same temperature as the air surrounding it and the weather is likely to remain calm.



10.2.1 Storms are among nature's most spectacular and most dangerous natural hazards

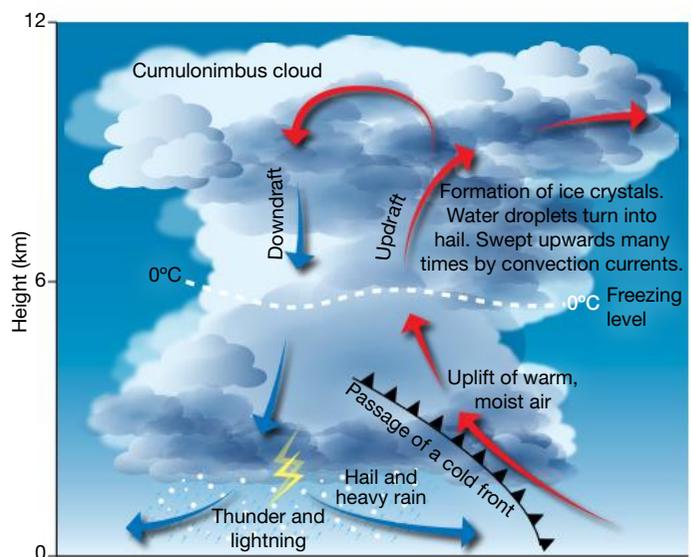
Economic

Severe storms can be very expensive. Infrastructure that is damaged or destroyed needs to be repaired or rebuilt. This can include power lines, homes and businesses. A major economic cost is the damage caused to cars by large hailstones smashing windows and denting panels.

How storms develop

Storms develop when warm, moist air rises rapidly in an unstable atmosphere. (In an unstable atmosphere, weather might change quickly with very little warning, which causes sudden storms.) Sometimes this upward movement is caused by the path of a cold front. A cold front is a movement of cold air moving into an area where the air is warmer. The cold front is heavier than the warm air, forcing the warm air to rise.

At other times (often in summer), the heating of the Earth's surface is enough to bring about the rapid upward movement of moist air (see Figure 10.2.2). Most of these storms do not reach the level of intensity needed to produce widespread damage. However, they do all produce lightning, which can cause death, injury and damage. Sometimes they are accompanied by hail, wind gusts and flash floods (unexpected floods resulting from intense storms).



10.2.2 The development of a thunderstorm associated with the passage of a cold front

Skills builder

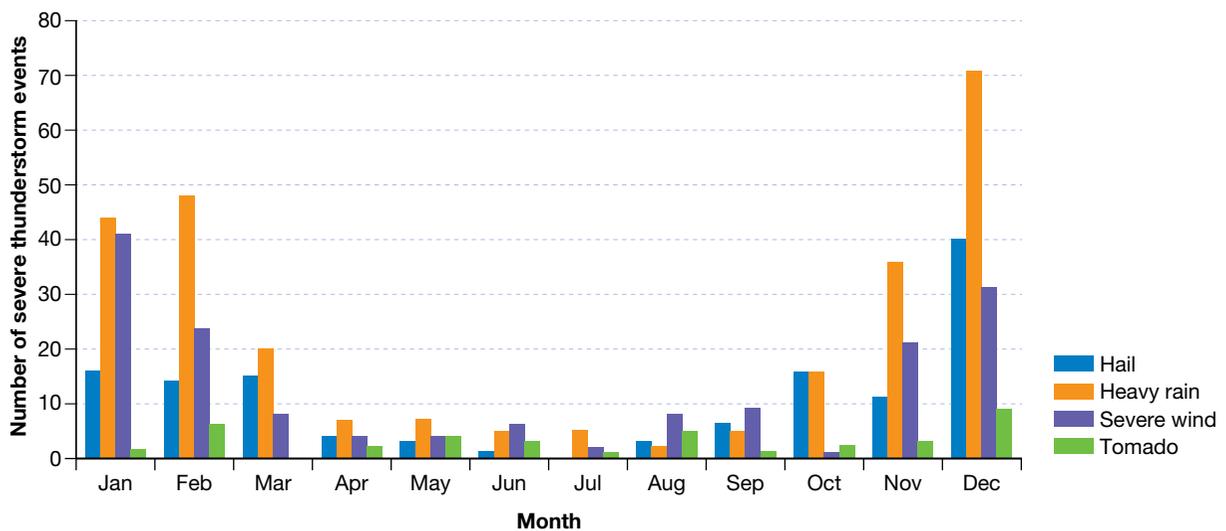
Reading a column graph

A column graph (see Figure 10.2.3) uses vertical columns to present information. The height of the column indicates the value of the data. The values on the horizontal axis represent the different times or places the data was collected. This information can be compared. Note that bar graphs are similar to column graphs, but use horizontal bars.

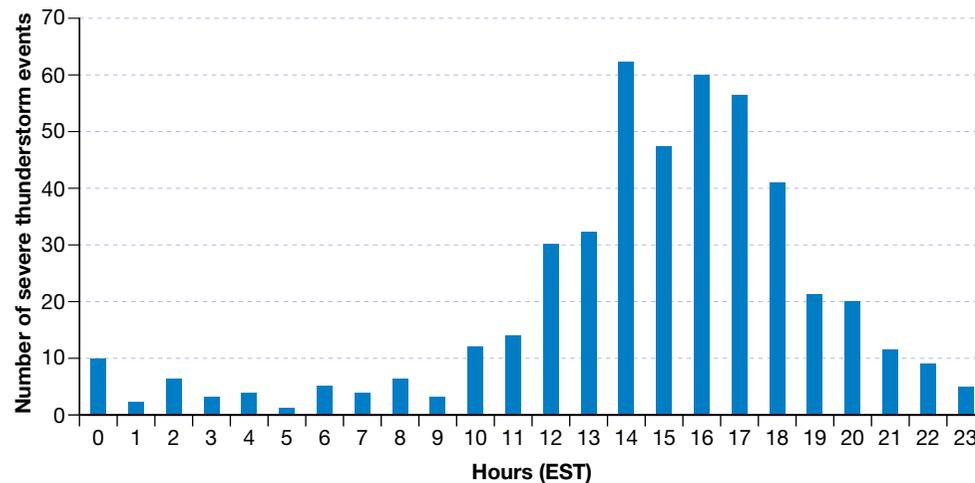
To interpret a column graph, follow steps 1–5.

- 1 Study the graph's title or caption to see what the graph represents.
- 2 Read the vertical and horizontal axes.

- 3 Read the legend or key to see what extra information it contains.
- 4 Look at the data. Can you observe a pattern in the data? If so, describe the pattern and suggest reasons for it.
- 5 Discuss the implications of the trends or patterns identified in the graphed data.



10.2.3 Monthly distribution of days of severe weather in Victoria



10.2.4 Hourly distribution of days of severe storms in Victoria

Lightning and thunder

Lightning is caused by the discharge of electricity during thunderstorms. It is accompanied by thunder. The cause of lightning is not fully understood. However, it is thought that ice inside a cumulonimbus cloud (a dense, vertical cloud) is a key element in lightning development.

The distance of lightning from an observer can be calculated using the amount of time between when the lightning is seen and when the sound of thunder is heard. Lightning is approximately 1 kilometre in distance for every 2.9 seconds there is between the visible flash and the first sound of thunder.

The 2007 Newcastle storm

On 8 June 2007, severe thunderstorms and gale-force winds lashed the Newcastle area in New South Wales. There was very heavy rain (164.6 millimetres in 6 hours, from 3.00 p.m. to 9.00 p.m.). The storms resulted in severe flooding in the city's central business district and nearby suburbs. Hundreds of cars were stranded or swept away. Many shops and businesses were flooded. Winds averaged up to 105 kilometres per hour, with gusts up to 124 kilometres per hour. The 76 000-tonne bulk ore carrier *Pasha Bulker* was blown onto Nobbys Beach (see Figure 10.2.5) and was not refloated until 2 July. There were 20 000 calls for assistance to the State Emergency Service.



10.2.5 The bulk carrier *Pasha Bulker* was stranded on Nobbys Beach after running aground during a severe storm

Spotlight

Storm survival guide

There are many precautions you can take to make sure you don't become a victim of a severe storm. Some are listed in Table 10.2.6.

10.2.6 Guide to surviving a storm

Indoors

- 1 Keep clear of windows, electrical appliances, pipes and other metal fixtures.
- 2 Avoid using telephones. If an emergency call is required, make it brief!
- 3 Disconnect external aerial and power leads to radio and television sets.
- 4 Disconnect computers at their power sources.

Outdoors

- 1 Seek shelter in a building or 'hard top' vehicle.
- 2 Avoid taking shelter under an isolated tree or small stand of trees.
- 3 If out in the open, crouch down, preferably in a hollow, with feet together, and remove metal objects from the head and body. Do not lie down.
- 4 If your hair stands on end or you hear buzzing from nearby rocks, fences etc., move away to a new position immediately.
- 5 Don't fly kites or model aircraft with control wires.
- 6 Don't handle long or metallic objects such as umbrellas, golf clubs or fishing rods in the open.
- 7 Avoid standing close to or touching metal structures, wire fences or metal clothes lines.
- 8 Don't ride horses or bicycles or drive in open vehicles.
- 9 If driving, park your car away from trees, power lines etc. Stay inside but avoid touching or leaning on metal body parts.
- 10 Leave the water immediately and seek shelter if you are swimming or surfing.
- 11 If boating, go ashore as soon as possible or seek protection beneath a high structure such as a bridge or jetty.
- 12 Ensure that the mast and stays of sailing boats are adequately 'grounded' to the water.



10.2.7 A red flag warning during a storm

Activities

Remembering and understanding

- 1 Explain what 'severe storms' means and identify what often accompanies them.
- 2 Outline the conditions under which severe storms develop.
- 3 Describe how people are killed during severe storms in Australia.

Applying and analysing

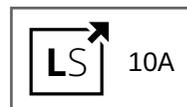
- 4 Study Figure 10.2.2. Write an explanation of how thunderstorms develop and explain why they are often associated with gusty winds, hail, lightning, thunder and flash flooding.

Geographical skills

- 5 Study Figures 10.2.3 and 10.2.4 and answer the following questions.
 - a In which months are thunderstorms most likely to occur in Melbourne?
 - b At what time of the day does severe storm activity peak in Melbourne?
 - c You have been asked to plan an outdoor activity in Victoria that requires fine weather. In which month would you plan the event and at what time of day? Explain your response.

Evaluating and creating

- 6 Investigate storms in Australia over the previous 12 months. Use the Bureau of Meteorology severe storms website and the media (newspapers, magazines, television and so on) to gather information.
 - a Include a definition of a severe storm and the causes of a severe storm.
 - b On a blank outline map of Australia, locate and mark each storm. Annotate the map and include the following information:
 - the date the storm occurred
 - the impacts of the storm
 - the agencies involved in meeting the needs of the people affected
 - the types of assistance available to victims of the disaster
 - precautions to take during a severe storm.



10.3 Tropical cyclones

Cyclones explained

Tropical cyclones are known as hurricanes and typhoons in other parts of the world. They are intense low-pressure systems (when air is heated by the sun and rises) that form over warm tropical waters. They are usually accompanied by gale-force winds and torrential rainfall.

Tropical cyclones begin as tropical depressions (strong low-pressure systems that form in the low latitudes near the Equator). They become cyclones when the systems intensify and wind speeds increase, especially towards the centre (or vortex) of the storm. In severe cyclones, wind speeds can exceed 200 kilometres per hour. In the Southern Hemisphere, winds circulate clockwise around the calm eye of the storm. Tropical cyclones can vary in diameter, from about 150 kilometres to over 1000 kilometres.

Cyclones move at speeds of up to 25 kilometres per hour along an unpredictable path. The life of an average cyclone is about 7 days, but some last longer.

The life cycle of a cyclone

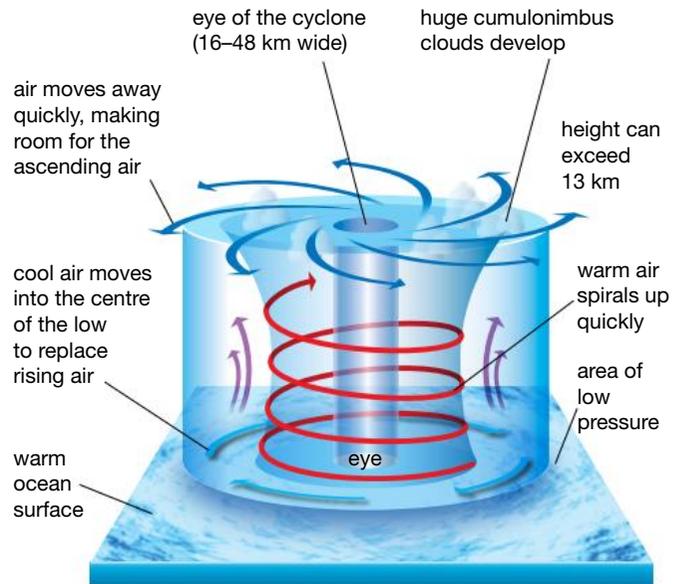
For tropical cyclones to develop, certain conditions need to be present. These include:

- ▶ a warm ocean surface (above 26°C) and very humid air; this means that they usually only occur between 5 degrees and 30 degrees latitude on both sides of the Equator
- ▶ low-pressure systems.

The process of cyclone formation is shown in Figure 10.3.1. It begins when an area of low pressure develops at the same time as the vigorous upward movement of air and the formation of cumulonimbus clouds. This is the type of cloud normally associated with thunderstorms. Three phases follow: pre-maturity, maturity and decay.

Pre-maturity

As the rate of uplift (or convection) increases, winds begin to spiral in towards the system's centre. This is because air moves away from areas of high pressure towards areas of low pressure, which are formed when air is drawn upwards by convection currents. Eventually, the surface winds reach gale force and the distinctive spiral pattern of cloud begins to develop.



10.3.1 Structure of a tropical cyclone

Maturity

If the warm ocean surface and low atmospheric pressure remain, the cyclone will continue to increase in strength and power. As it does, the cloud system becomes more circular in shape and develops a distinct eye. This is the severe cyclone stage, at which the cyclone is most destructive. Of all the cyclones that form, about half progress to this stage.

Decay

Tropical cyclones normally decay, or lose their intensity, when they move over land or over the cooler oceans in higher latitudes away from the Equator. A cyclone moving over land normally weakens rapidly due to loss of its energy source, namely, the warm ocean surface. However, in northern Australia, when cyclones move inland they often continue as rain depressions for several days, bringing widespread flooding rain. The cyclone may even redevelop if the storm moves over the ocean once more.

Spotlight

Cyclone Winston devastates Fiji

Late on the evening of Saturday 20 February 2016, one of the most powerful storms ever recorded in the Southern Hemisphere tore through the Pacific Island nation of Fiji (see Figure 10.3.2). It killed forty-four people, flattened whole villages and cut communications.

Infra-red satellite data shows that sea surface temperatures in the region were close to 31°C. This was warm enough to keep fuelling and strengthening the storm. Tropical cyclones need sea surface temperatures of at least 26.6°C to maintain intensity. Temperatures at the top of the cyclone's cloud mass dropped to -62°C.

Cyclone Winston was the first Category 5 storm to make landfall in Fiji. Wind gusts reached up to 325 kilometres per hour. This unroofed homes, uprooted trees, damaged infrastructure and destroyed crops. In Rakiraki, a major town on the north coast of Fiji's main island Viti Levu, more than 1000 homes were destroyed and 500 were partially damaged. Residents described the town as looking as though a bomb had gone off, with barely a building left unscathed. Most of the fatalities were along the

western coast, and were caused mainly by flying debris and drowning in storm surges. Seven fishermen were lost at sea.

Relief agencies struggled to reinstate communications, distribute supplies and respond to a widespread health crisis after water supplies were contaminated. This was particularly so in low-lying areas where thousands of Fiji's 900 000 people live in tin shacks.

The challenge of responding to the disaster was made more difficult by the country's geography. Authorities had to assess the needs of people living in the more remote parts of the archipelago of about 300 islands.

It is not unusual for Fiji to experience severe cyclones. In the past 30 years or so, several severe tropical cyclones have affected the country. Planning helped to minimise the number of lives lost during Cyclone Winston. In advance of this storm's arrival, storm shelters were opened, and a nationwide curfew was announced.



10.3.2 Cyclone Winston hit Fiji in February 2016

10.3.3 Cyclone categories

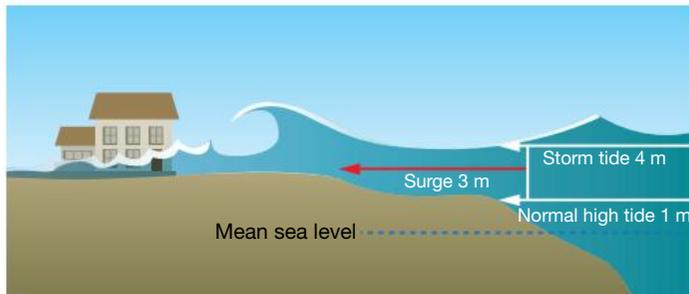
Rating	Wind speed	Wave height	Damage
1	up to 125 km/h Gales	1.2–1.6 m	slight damage; damage to some crops, trees and caravans; craft may drag moorings
2	126–169 km/h Destructive	1.7–2.5 m	significant damage; minor house damage; significant damage to signs, trees and caravans; heavy damage to some crops; risk of power failure; small craft may break moorings
3	170–224 km/h Very destructive	2.6–3.7 m	structural damage; some caravans destroyed; power failures likely
4	225–279 km/h Very destructive	3.8–5.4 m	significant roofing loss and structural damage; many caravans destroyed and blown away; dangerous airborne debris; widespread power failures
5	above 280 km/h Very destructive	more than 5.5 m	almost total destruction and extreme danger; houses flattened, cars overturned

Cyclone categories

Cyclones are categorised according to their strength. There are five categories: Category 1 is the weakest and Category 5 is the strongest (see Table 10.3.3).

Storm surges

A **storm surge** is a large mound of seawater that accompanies a tropical cyclone as it comes ashore (see Figure 10.3.4). The intense winds of the cyclone cause a dome of water to form in the ocean. This is pushed onshore as the cyclone strikes the coast. The low **air pressure** (weight of the air pressing down on the Earth's surface) of the cyclone adds to the height of the mound of water, though this is a secondary effect.



10.3.4 Storm surges can cause widespread damage in low-lying coastal areas

Cyclone warning systems

The Bureau of Meteorology identifies cyclones when they develop and tracks their courses. Each cyclone is given a name from an alphabetical list.

The Bureau also has a cyclone warning system. As soon as gales are expected within 24 hours, it issues a cyclone warning to areas that are in danger, predicting wind speeds and other weather conditions. The warnings are issued from three tropical cyclone warning centres (TCWCs) in Brisbane,

Darwin and Perth. Information about a cyclone is sent to the TCWCs by computer-controlled instruments located at weather stations around the coast. Automatic weather stations on remote islands, as well as radio links with ships and aircraft, also provide information. Satellite images can be received every hour from a Japanese weather satellite.

Tropical Cyclone Yasi, 2011

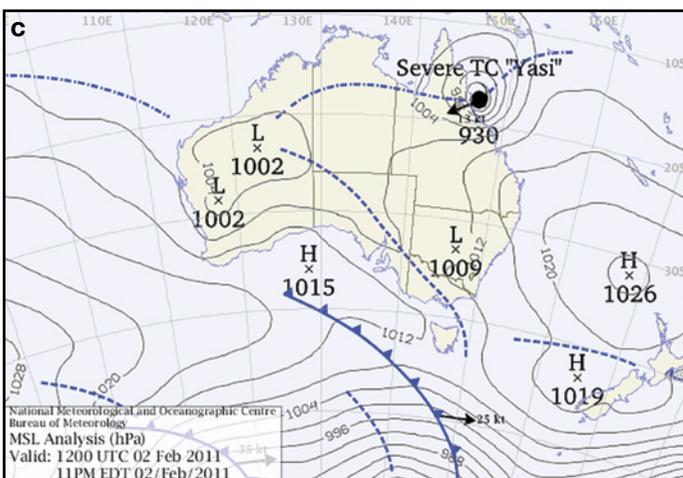
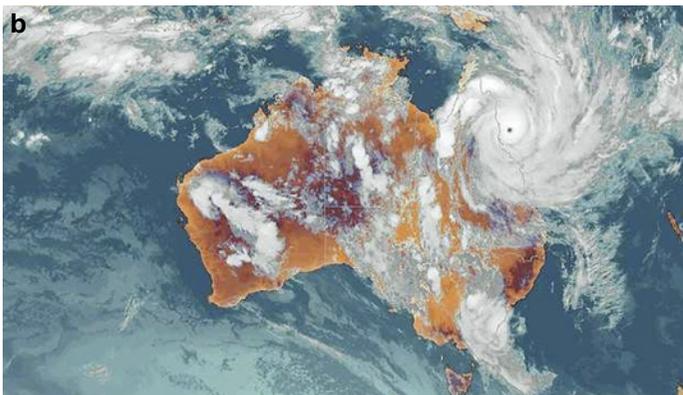
Tropical Cyclone Yasi originated from a tropical low near Fiji in late January 2011. It then increased in strength and moved towards Australia, as outlined below and shown in Figure 10.3.5:

- *31 January*: intensifies to a Category 3 cyclone late in the afternoon
- *1 February*: intensifies to a Category 4 cyclone
- *2 February*: intensifies to a Category 5 cyclone
- *3 February*: makes landfall in Queensland early in the morning.

The destructive core of the cyclone crossed the Queensland coast between Cardwell and Innisfail. The maximum sustained wind speed reached 205 kilometres per hour, with wind gusts exceeding 285 kilometres per hour.

A storm surge, estimated at 7 metres high, **inundated** (covered with water) low-lying coastal areas. The winds carried water as far as 300 metres inland in some places. The cyclone's destructive winds were accompanied by heavy rainfall and flooding. The highest 24 hour rainfall total recorded was 471 millimetres at South Mission Beach (see Figure 10.3.5a).

The worst affected communities were Tully, Innisfail, Ingham, Cardwell, Mission Beach, El Arish, Silkwood and Silky Oak. Dozens of homes, businesses and other property were destroyed or severely damaged. Vegetation was stripped of its leaves and crops were destroyed. The cost of the disaster exceeded \$800 million.



10.3.5 (a) Radar image showing rainfall intensity as Yasi crossed the Queensland coast; (b) satellite image of Yasi's swirling cloud mass; (c) weather map showing Severe Tropical Cyclone Yasi

Activities

Remembering and understanding

- 1 Define what a tropical cyclone is. Explain how cyclones form and outline the type of weather associated with them.
- 2 Describe how storm surges contribute to the damage caused by cyclones.
- 3 Identify the parts of Australia that are affected by cyclones.
- 4 Explain how the Bureau of Meteorology monitors the development of cyclones.

Geographical skills

- 5 Refer to Figure 10.3.5 and answer the following questions.
 - a Describe where rainfall intensity was located during Cyclone Yasi.
 - b In what direction is the cyclone heading?
 - c Name the towns that received heavy, moderate and light rainfall during the cyclone's run.

Evaluating and creating

- 6 Create a timeline of what occurs and what to do before, during and after a tropical cyclone. Your timeline should mention all the following stages:
 - the build-up (including preparing your home)
 - during the cyclone (including the eye)
 - immediately after the cyclone
 - after the cyclone (including the damage caused by the cyclone)

Note: Photographs, diagrams and/or videos can be included with your timeline.

- 7 Access the Bureau of Meteorology cyclone website. Using information found on this site and elsewhere, prepare an appropriate multimedia presentation. The following questions will help you to structure your presentation.
 - a What are cyclones?
 - b Where and how do they develop?
 - c In what ways do cyclones pose a threat to life and property?
 - d What precautions can be taken to protect life and property?

10.4 Tornadoes

What is a tornado?

A **tornado** (or ‘twister’, as it is sometimes called) is a violently rotating column of air extending from the base of a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction.

Tornadoes come in many shapes and sizes, but are typically in the form of a visible funnel. The narrow end of the funnel touches the Earth and is often encircled by a cloud of swirling debris and dust. The funnel of the tornado is called the vortex.

What causes tornadoes?

For a tornado to form, two main factors are needed. The first of these is an unstable atmosphere with rapidly rising air. As warm, moist air rises, it cools and condenses. This forms the cumulus and cumulonimbus clouds typically associated with thunderstorms.

The second important factor is wind shear. This is the difference between wind speed on the ground and wind speed higher up in the atmosphere. A thunderstorm cell can develop if there is a speed difference of 30–40 kilometres per hour between winds found at the surface and those found at about 3000 metres.

This wind shear causes air to spin in a tube-like fashion along a horizontal axis. The updraft of the thunderstorm then sucks this rolling air upwards so that the axis of its spin is vertical. This gives the tornado its funnel-like appearance (see Figure 10.4.1).

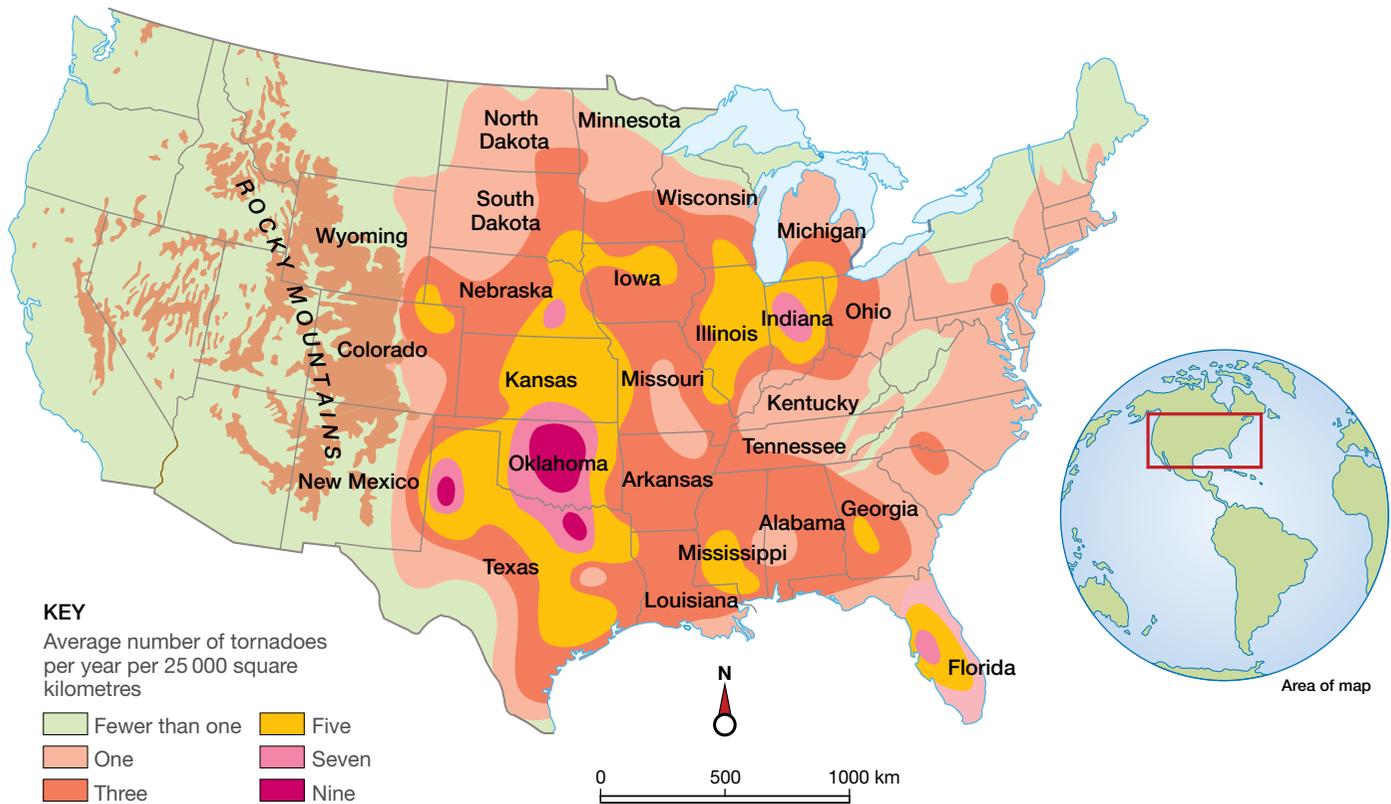
The power of a tornado

Most tornadoes have wind speeds of less than 180 kilometres per hour, measure about 80 metres across, and travel several kilometres before subsiding. The most destructive tornadoes can have wind speeds of more than 480 kilometres per hour, develop a width of up to 3 kilometres, and stay in contact with the ground for more than 100 kilometres.

Some tornadoes are so powerful and destructive that they can tear buildings off their foundations and smash them into small pieces. They can flip large trucks and farm machinery, and reduce them to mangled pieces of metal. Strong tornadoes can pick up and dump cars kilometres away from where they were parked, snap trees off at their base and strip the asphalt from roads.

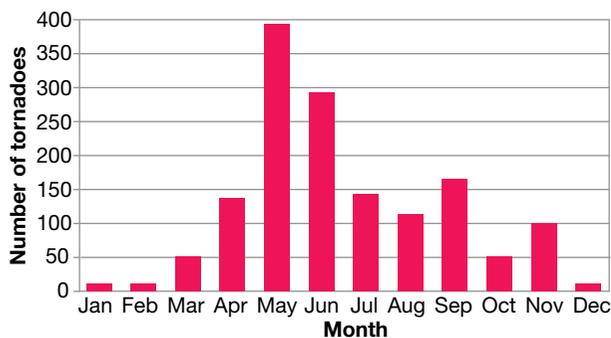


10.4.1 Tornadoes are violently rotating columns of air extending from the base of a thunderstorm to the ground



Source: Oklahoma Climatological Survey

10.4.2 Tornado risk in the US



Source: NOAA

10.4.3 The number of tornadoes in the US in 1 year

Where tornadoes occur

Tornadoes can occur in many parts of the world. However, they occur most frequently in the US, east of the Rocky Mountains, in a region known as ‘Tornado Alley’ (see Figure 10.4.2). Thunderstorms develop throughout the region during the spring and summer months. This is because warm, moist air is forced to rise rapidly by eastward-moving cold fronts. As the updraft increases in velocity (speed), a spinning vortex can develop. The low air pressure created at the centre of the funnel sucks in surrounding air. If the vortex touches the ground, the updraft and difference in pressure can cause great damage.

The deadliest tornado on record occurred in 1925. Up to 747 people died as twisters swept across Missouri, Illinois and Indiana. Since records began in 1875, more than 19 000 people have been killed by tornadoes in the US. In an average year, more than 1200 tornadoes are reported across the US (see Figure 10.4.3). However, Australia might have more tornadoes than the US because many tornadoes in Australia occur in regions where few people live. It is possible that many of these are unreported.

Australian tornadoes

Australia has about sixteen tornadoes a year. They most commonly occur on the south-western coast of Western Australia, in south-eastern South Australia and the nearby border region of Victoria, in the area around south-eastern Queensland, and on the far north coast of New South Wales.

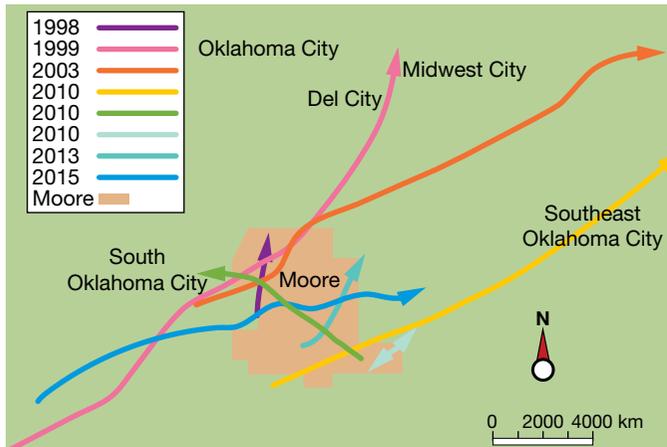
The Bureau of Meteorology will issue a severe warning when it predicts there will be a tornado. The Bureau advises that there is no defined tornado season in Australia and they can occur at any time of the year. Tornadoes, however, are more frequent during late spring to early summer. In winter tornadoes are more likely to occur along the southern coastline.

Spotlight

Tornado target: Moore, Oklahoma, US

The City of Moore, part of the Oklahoma City metropolitan area, has been hit by eight devastating tornadoes since 1998. The most recent occurred in late March 2015. Two of these tornadoes (on 3 May 1999 and 20 May 2013) are considered by meteorologists to be among the most intense ever recorded. The tornado in 1999 carved a path of destruction 61 kilometres long and 1.6 kilometres wide. It killed 36 people and injured a further 295. The 2013 tornado killed 24 people and injured 212. The damage bill exceeded US\$1.4 billion.

Figure 10.4.4 shows the paths of the eight tornadoes that have hit Moore since 1998. Figure 10.4.5 illustrates the destructive force of the 2013 tornado.



10.4.4 Tornadoes in Moore, Oklahoma, US, 1998–2015



10.4.5 Aerial view of tornado damage in Moore, Oklahoma

Spotlight

December 2015 Kurnell tornado

On 16 December 2015, a tornado swept along a section of the New South Wales coast, with high rainfall, hail and unusually strong winds. A wind gust of 213 kilometres per hour was recorded at Kurnell at 10.33 a.m. This was the fastest wind speed ever recorded in the state. Suburban Kurnell was especially hard hit. Homes and businesses were unroofed, sewerage and electricity were cut, and trucks were tipped on their sides. Fortunately, injuries were only minor.



10.4.6 Damage caused by the Kurnell tornado

Waterspouts

Waterspouts develop when a rapidly rotating column of air links the base of a thunderstorm to a water body such as a lake or an ocean (see Figure 10.4.7). Waterspouts do not suck up water. The water seen in the main funnel cloud is actually water droplets formed when water vapour condenses.



10.4.7 A waterspout off Batemans Bay, New South Wales, in November 2012

Activities

Remembering and understanding

- 1 State the name given to the funnel of a tornado.
- 2 Outline the two factors necessary for the formation of tornadoes.
- 3 Explain why the US experiences so many destructive tornadoes.
- 4 Explain what a waterspout is.

Applying and analysing

- 5 Using Figure 10.4.2, describe the location of the US states that experience the greatest number of tornadoes per year.
- 6 Use Figure 10.4.3 to answer the following questions.
 - a In which months do most tornadoes occur?
 - b Explain why these months might have the highest number of tornadoes. (Hint: the seasons are opposite in the Northern Hemisphere.)

- 7 Describe the damage observed in Figure 10.4.5.
- 8 Write a newspaper report outlining the impacts of a tornado on Moore, Oklahoma.

Evaluating and creating

- 9 The Enhanced Fujita (EF) scale is used to rate tornado intensity. The EF scale is based on the damage tornadoes inflict on human-built structures and vegetation. Investigate the scale and use it to classify the intensity of the tornado responsible for the damage shown in Figure 10.4.5.
- 10 Investigate the safety procedures people can put in place to minimise the impact of tornadoes. Structure your findings using the following headings: Before, During and After.

10.5 Flooding

The costs of floods

Environmental costs

Floods can have positive and negative effects on the environment. The movement of water can remove trees and vegetation, and kill wildlife. Floodwater can also deposit rich sediment that is ideal for growing crops.

Economic costs

Floods are among Australia's most costly natural disasters. On average, each year flooding costs the nation between \$300 million to 400 million. Since 1790 there have been more than 2360 flood-related deaths. Today, most of the deaths from flooding are a result of people trying to drive, walk or swim through floodwaters. Some people are killed by flash flooding while camping on dry riverbeds.

Social costs

Short-term social costs of floods include the time and effort required by people to clean up after floods, as seen in Figure 10.5.1. The long-term social costs include people losing their homes and businesses, and having to rebuild.

Types of floods

Flooding occurs when a waterway overflows its natural banks onto normally dry land. Floods can result from prolonged (lengthy) heavy rain, rapid winter snowmelt or sudden, heavy downpours.

There are three types of floods: slow-onset floods, rapid-onset floods and flash floods.

Slow-onset floods

Slow-onset floods build up over time and may last for a week or more, sometimes even months. They are often the result of a long period of above-average rainfall. Slow-onset floods can lead to loss of stock, damage to crops, and extensive damage to road and rail links. Rivers in central and western New South Wales and Queensland, as well as parts of Western Australia, can flood in this way.

Rapid-onset floods

Floods that occur more quickly are called **rapid-onset floods**. They are more common in mountain areas of larger rivers and in rivers draining to the coast. These floods may last only 1 or 2 days. They are potentially more damaging, since there is often less time to move livestock and farm machinery, and to prepare homes and properties.

Did you know?

Just 15 centimetres of rapidly moving floodwater can knock a person down. A mere 60 centimetres of water can float a vehicle as large as a bus.



10.5.1 Clean Up Day in Brisbane after the 2011 flood

Flash floods

Flash floods occur when intense storms drop large amounts of rain within a brief period. They can occur with little or no warning and can reach their peak within only a few minutes. Flash floods can be extremely dangerous. Sometimes they are caused by heavy rainfall many kilometres away. The resulting floodwaters surge down rivers or creeks, sweeping away all in their path. They can move boulders, tear out trees and destroy buildings and bridges.

Almost all parts of Australia can experience flash floods. These floods pose the greatest threat to life and result in significant damage to property. They are a serious problem in urban areas where drainage systems are unable to cope.

Factors influencing floods

The main factors that influence whether flooding will occur are:

- the amount and distribution of rainfall
- the capacity of the watercourse or stream network to transport run-off
- water catchment and weather conditions leading up to a rainfall event
- the type of ground cover
- topography (the shape of the land)
- tidal influences.

Human impacts

Human activities in water catchment areas have contributed to the frequency and severity of flooding. People increase the likelihood of flooding by removing water-absorbing vegetation, especially on hillsides. Not only does this increase run-off, it also exposes the soil to erosion, especially by running water. Valuable soil is washed into rivers, where it clogs the channels. The rivers are then less able to cope with the increased volumes of water.

Urban areas do not absorb water because of their hard surfaces, such as roads and buildings. These areas often experience flash flooding. Heavy downpours can overwhelm stormwater drains and cause water to spill across roadways and footpaths. Figure 10.5.2 shows these human impacts.

Flood warnings

With the exception of flash floods, there is usually a warning period before flooding occurs. Some river systems have quite sophisticated warning systems. For example, they may have an electronic data collection system that automatically and continuously transmits rainfall and river heights from selected locations within the catchment. In Australia, warnings are issued through the Bureau of Meteorology.



10.5.2 Human impacts on flooding

Spotlight

Victorian floods, 2011

Record-breaking rainfall between 12 and 14 January 2011 caused major flooding across much of the western and central parts of Victoria. The river systems affected by the floods included the Wimmera, Loddon, Campaspe and Avoca. The floodwaters inundated the city of Horsham and the towns of Charlton (see Figure 10.5.3), Rochester and Carisbrook. Other settlements seriously affected were the city of Ballarat and the towns of Beaufort, Bridgewater on Loddon, Clunes, Creswick, Echuca, Kerang, Skipton and Warracknabeal.

The floods devastated farms, with 51 700 hectares of pasture and 41 200 hectares of crops flooded, and 6106 sheep killed. Victoria's Department of Primary Industries later calculated a damage bill of up to \$2 billion.



10.5.3 A flooded street in Charlton, Victoria



10.5.4 Map of the record-breaking floods in Victoria, January 2011

Flood management

The construction of expensive levee banks (long ridges built up along river banks) provides some protection from flooding. The best way to protect property and reduce the risk of loss of life is to restrict the types of activities allowed on flood plains. Too many people still choose to live in flood-prone areas.

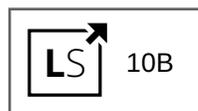
The risk of flooding increases as more clearing of vegetation takes place in upper catchment areas. Some ways of managing floods are shown in Table 10.5.5 and Figure 10.5.6. These may help to reduce the impact of flooding.

10.5.5 Reducing the impact of floods

Flood control
<ul style="list-style-type: none">• dams and reservoirs• levees• river diversion• barrages and locks• whole catchment management
Reducing the risk of flood damage
<ul style="list-style-type: none">• flood plain land-use zoning• relocation of flood-prone property• flood-proofing of buildings• flood forecasting• being prepared
Minimising the effect of losses
<ul style="list-style-type: none">• flood insurance• evacuation• post-disaster relief• public information and education



10.5.6 Pumps to help deal with floodwater, Cairns, Queensland



Activities

Remembering and understanding

- 1 Write your own definition of the term 'flood'.
- 2 Outline the causes of flooding.
- 3 Describe the differences between slow-onset floods, rapid-onset floods and flash floods.
- 4 Outline how the activities of people can increase the frequency and intensity of flooding.

Applying and analysing

- 5 Identify the flood type that is potentially the most dangerous for human life. Give reasons for your answer.
- 6 Study the list of factors that influence whether a flood will occur and do the following tasks.
 - a List how each of the factors alters the likelihood of flooding.
 - b Discuss ways of managing or preventing the factors that increase the likelihood of flooding.
- 7 Create a concept map to present the information from Table 10.5.5.
 - a Describe what you see, and the possible damage caused.
 - b Identify ways in which flood damage could be reduced in the future.

Evaluating and creating

- 8 Investigate a flood that has occurred in recent years in your region, or a region of your choice.
 - a Identify the type of flood.
 - b Outline the reasons for the flooding.
 - c Describe how the flood developed over time.
 - d Describe the damage the flood caused and how people responded.
- 9 You are a television reporter who has been assigned the task of reporting on the flooding shown in either Figure 10.5.1, or Figures 10.5.3 and 10.5.4. You are required to present a 5-minute report for the evening news bulletin. In your report you should outline the possible causes of the flood, describe its impact on the community and outline how the community is coping with the disaster.

10.6 Heatwaves

Causes of heatwaves

Heatwaves occur during summer in warm climates. They develop in one of two ways. First, in areas dominated by high pressure with little or no rain or clouds, the air and ground can heat up to excess. A stationary, or very slow-moving, high-pressure system can result in a persistent heatwave. Second, winds can direct hot, dry air from arid regions towards areas that are normally cooler.

Heatwaves in Australia

Recent heatwaves in Australia have included the following:

- ▶ *March 2008:* Adelaide experiences 15 days in a row above 35°C (previous record: 7 days)
- ▶ *January 2009:* Adelaide experiences 7 days in a row above 40°C
- ▶ *March 2011:* Perth experiences 26 days in a row above 30°C
- ▶ *January 2013:* Perth experiences 7 days in a row above 39°C
- ▶ *March 2013:* Melbourne experiences 9 days in a row above 30°C.

Impacts of heatwaves

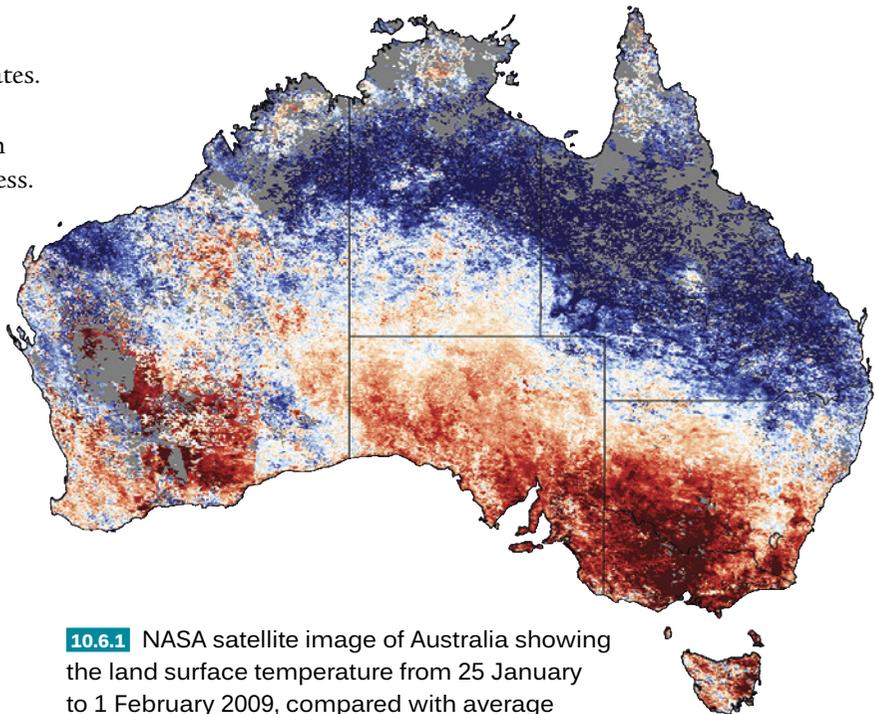
Health and wellbeing

Hyperthermia is the overheating of the body. It becomes an important health issue in times of sustained high temperatures, especially when heat is combined with high humidity. Perspiration (the body's way to regulate its temperature) is absent in 84 to 100 per cent of those affected. The people most affected by heat-related illness are older adults, very young children, and those who are sick or overweight.

During the 2003 European heatwave, up to 35 000 people died from heat-related illnesses. Much of the heat was concentrated in France, where nearly 15 000 people died. In Portugal, the temperature reached 48°C. In addition to physical impacts, excessive heat can cause psychological stress.

Bushfires

Heatwaves combined with drought can increase the likelihood of bushfires. In 2009, for example, the south-eastern Australian heatwave that started in late January led to record-breaking prolonged high temperatures across Victoria (see Figure 10.6.1).



10.6.1 NASA satellite image of Australia showing the land surface temperature from 25 January to 1 February 2009, compared with average midsummer temperatures. Places where temperatures were warmer than average are red, places experiencing near-normal temperatures are white, and places with cooler than average temperatures are blue.

During the heatwave Melbourne recorded its highest ever temperature, 46.4°C. The heatwave produced extreme fire conditions. On 7 February, now known as Black Saturday, raging bushfires claimed 173 lives and destroyed 2500 homes.

Infrastructure failures

Heatwaves can be very disruptive to the economy and the day-to-day activities of people. Increased use of air conditioning can lead to power outages. Rail lines can buckle, disrupting public transport, and breakdowns can cause traffic chaos.

Did you know?

The summer of 2016–17 was dubbed the 'angry summer' because of its extremes. Sydney had its hottest summer on record, and the New South Wales town of Moree had more than 50 days in a row of 35°C or above.

Wildlife

A long heatwave can have a serious impact on wildlife. For example, in 2008, hundreds of thousands of dead fish washed up on the shore in Quanzhou, China, after the temperature rose and the fish were starved of oxygen (see Figure 10.6.3).



10.6.3 Many thousands of dead fish float on the surface of the sea in Quanzhou after a heatwave

Spotlight

Cold waves

A cold wave occurs when there is a rapid and continued drop in temperatures to very low levels within a 24-hour period. Such cold snaps can have a devastating effect on crops and livestock. They can also damage infrastructure, and disrupt economic activity and social activities.

The European Cold Wave of 2009–10 brought record low temperatures and heavy snowfalls across Europe (see Figure 10.6.2). Ninety people died. Temperatures as low as -47°C were recorded in the Italian Alps.



10.6.2 People walk in snow in Milan, Italy

Activities

Remembering and understanding

- 1 State where and when heatwaves develop.
- 2 Outline the causes of heatwaves.
- 3 State what a cold wave is.
- 4 Copy and complete the following table.

	Impact upon people's health and wellbeing	Other impacts
Heatwave		
Cold wave		

Applying and analysing

- 5 Study Figure 10.6.1 and locate the regions in Australia that experienced higher than average midsummer temperatures in 2009.
- 6 Working in groups, discuss and list the ways in which heatwaves can increase the risk of bushfires. Share your findings with the rest of the class.

Evaluating and creating

- 7 Investigate the effects of heat stress on:
 - a people
 - b plants
 - c animals.
 Prepare a digital presentation of your findings and present it to the class.
- 8 Investigate the ways people can avoid heat stress during heatwaves. Present your findings as a mind map.
- 9 Investigate a recent example of a cold wave and prepare a short report. Include where the cold wave occurred, the temperatures that were experienced, and the damage and destruction it caused.

10.7 Drought

Defining drought

Drought occurs when there is a prolonged period of below-average rainfall in an area. Drought is also said to occur when the supply of water is not sufficient to meet the needs of people.

Meteorological drought

A meteorological drought occurs after an extended period of below-average precipitation (rainfall, snow, hail, sleet). Official declarations of drought vary between regions. For example, in the United Kingdom, where rainfall is higher and more regular than in Australia, a drought is a period of 15 days without rain.

In Australia, there are two definitions of a drought:

- when, for three or more months, rainfall in an area is between the lowest 5 and 10 per cent recorded in that area over the long term
- when, for three or more months, the rainfall is less than the lowest 5 per cent of recorded rainfall in that area over the long term.

In arid regions, a drought might be said to occur when there is a series of unusually dry years.

Hydrological drought

Hydrological drought occurs when water storages such as reservoirs, rivers and groundwater reach critically low levels (see Figure 10.7.1).

Agricultural drought

Agricultural drought occurs when there is not enough soil moisture for crop production. This affects plant growth.

Socio-economic drought

Socio-economic drought occurs when the supply of a good declines because of a shortage of water. The supply of hydro-electric power and water-demanding crops such as cotton depend on the availability of water.

Impacts of drought

During a drought, rivers and dams dry up, plants wither and die, and the soil is dry and dusty. Droughts are a normal part of weather in most parts of the world.

The problem for farmers, and other water users, is not knowing when droughts will occur or for how long they will last.

Spotlight

Drought, Cape Town, South Africa

In 2018 Cape Town experienced its worst drought in a century. The drought was a combination of:

- a meteorological drought, which is a long period of below-average rainfall since 2015
- a hydrological drought which is when dams are below 13 per cent capacity.

The impact of the drought was great. People queued for water at the 200 distribution taps around the city (see Figure 10.7.1). Each person was limited to 25 litres per day.

In rural areas, farmers were not able to plant their crops. People who work in the farming sector lost their jobs.



10.7.1 People collecting drinking water in Cape Town, South Africa

Environmental impacts

During a drought, native grasses die off, leaving topsoil bare and vulnerable to wind erosion. The topsoil is blown away in dust storms and the land may become infertile. This process is called desertification. Drought and people's overuse of land contribute to land degradation (ruining the land).

Water quality in river systems is also affected. As flows decrease, rivers become stagnant and may suffer outbreaks of toxic algae. Other environmental impacts include the loss of biodiversity, increased risk of extinction for endangered plants and animals, increased chance of weed invasion, and increased frequency and intensity of bushfires.

Economic impacts

The worst effects of drought are crop failures and the death of livestock due to lack of water and feed. Farmers are sometimes forced to sell their livestock at reduced prices. They suffer loss of earnings and may face crippling debt. In extreme cases, they are forced to sell their farms. The rural economy (especially those businesses selling goods and services to farmers) and export earnings are also affected. This can affect a country's rate of economic growth.

Social impacts

Droughts can have a terrible social impact on rural communities. The loss of a farmer's crops and livestock can be the cause of anxiety and stress. Financial stress can contribute to difficulties in marriages and an increase in the suicide rate. Inequalities (imbalances) between rural and urban sectors of society are often increased by prolonged droughts. Droughts can also increase the farmers' workload. For example, livestock may need to be handfed.

Long-lasting droughts have contributed to the decline of the rural population and small rural towns. Dam-based recreational activities are often banned as water levels fall. People in urban centres suffer indirectly through increased food prices and (sometimes) a reduction in quality.

Famine

When crops fail and livestock die, food availability is severely reduced. This can lead to famine, and the effects can be catastrophic. People suffer malnutrition as their dietary intake is reduced. The outcome for many, especially the old and the young, is death.

Responses to drought

Preventing droughts is not possible, but people can reduce their impact. Responses to drought are outlined in Table 10.7.2.

10.7.2 Responses to drought

Farmers
<ul style="list-style-type: none">• develop a drought management plan• stock/crop the property at a sustainable rate• install water-saving forms of irrigation• store grain and/or feed for use in times of drought• move stock to areas with feed (this is called agistment)• sell all non-breeding stock• increase water storage capacity (bores, tanks and dams)
Urban dwellers
<ul style="list-style-type: none">• reduce the amount of water used in the home and business• mulch gardens• install rainwater tanks• obey any restrictions imposed by state government• install water saving appliances such as shower heads and dual-flush toilets• plant trees and vegetation that require less water

Activities

Remembering and understanding

- 1 Define the term 'drought'.
- 2 Explain why official declarations of drought vary between the UK and Australia.
- 3 Outline the differences between meteorological, hydrological, agricultural and socio-economic droughts.

Applying and analysing

- 4 Research the drought in Cape Town, South Africa. Is it a meteorological, hydrological, agricultural or socio-economic drought, or a combination of two or more? Explain.
- 5 Study Table 10.7.2 and complete the following tasks.
 - a Rank the responses according to which would be most effective in reducing water demand in both the short term and the long term.
 - b Explain your ranking and identify those responses you think would reduce water demand.

Evaluating and creating

- 6 Investigate a recent drought outside of Australia. Find out about :
 - the drought's duration
 - the type of drought it was (meteorological, hydrological, agricultural or socio-economic)
 - the areas over which it extended
 - the impact it had on the communities affected
 - the response by government to reduce the impact of the drought and manage the water supply.Present this report as an annotated visual display and include a map of the area.

10.8 Drought in Australia

Drought

Australia has one of the most variable (inconsistent) rainfall climates in the world. As a result, it tends to experience severe droughts every 10–15 years on average. Droughts may last for extended periods and, in some cases, a decade or more.



10.8.1 Drought in Australia, Lake Wallace, New South Wales

Causes of drought

Droughts over eastern and northern Australia are usually associated with the weather event known as El Niño. El Niño is a reversal of the weather event known as La Niña. La Niña brings rainfall to eastern and northern Australia.

The main changes that occur in an El Niño period and result in low rainfall for Australia are:

- weaker easterly trade winds from South America
- cool water off the east coast of Australia
- higher air pressure over eastern and northern Australia (see Figure 10.8.2b).

The main changes that occur in a La Niña period and result in high rainfall for Australia are:

- stronger easterly trade winds from South America
- warm water off the east coast of Australia
- low air pressure over eastern and northern Australia (see Figure 10.8.2c).

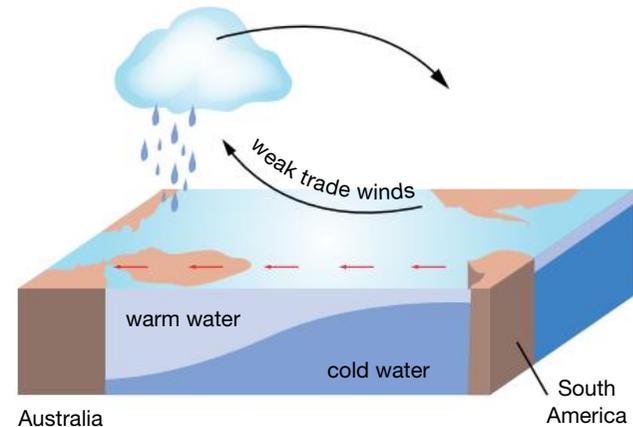
Predicting droughts

In Australia there is widespread risk of drought (see Figure 10.8.3). Because of this, scientists monitor changes in the surface temperature of the Pacific Ocean. Changes in ocean surface temperature can provide us with an advance warning of an El Niño or a La Niña period. With an advance warning, farmers can reduce their stock numbers to conserve feed. They may also be able to adjust their crop-planting program to avoid crop losses and soil erosion.

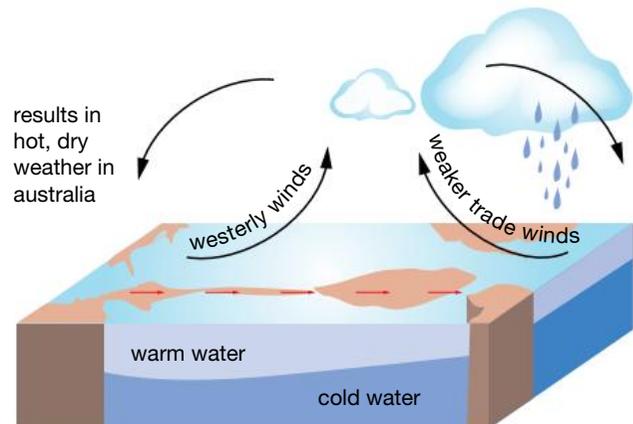
History of droughts

Major Australian droughts have included the 'Federation Drought' (1895–1902), the 1914–15 drought, the World War II drought (1937–45), the 1965–68 drought, the drought of 1982–83, and the long El Niño drought of 1991–95.

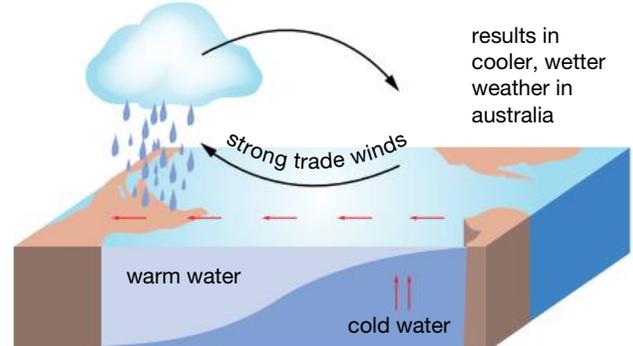
a Normal year



b El Niño year



c La Niña year



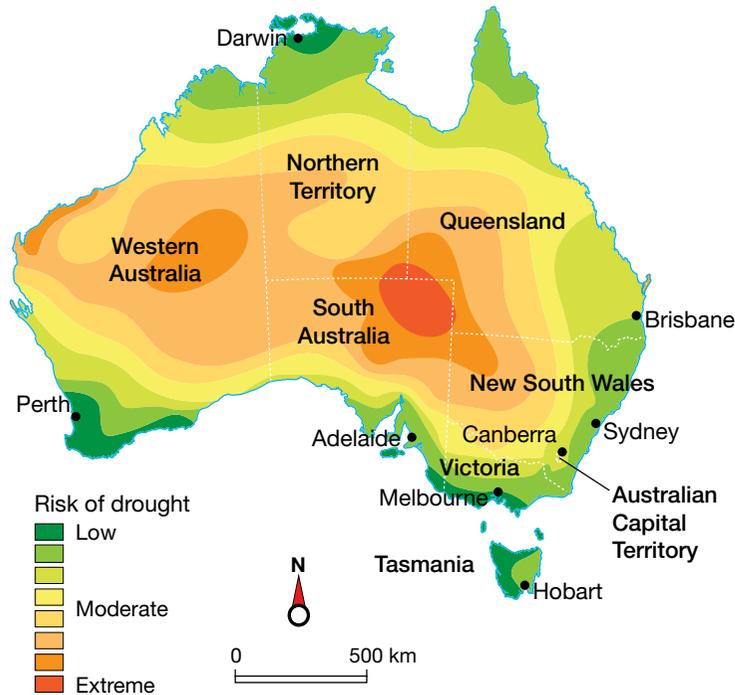
10.8.2 A normal period, an El Niño period and a La Niña period

Recent Australian droughts

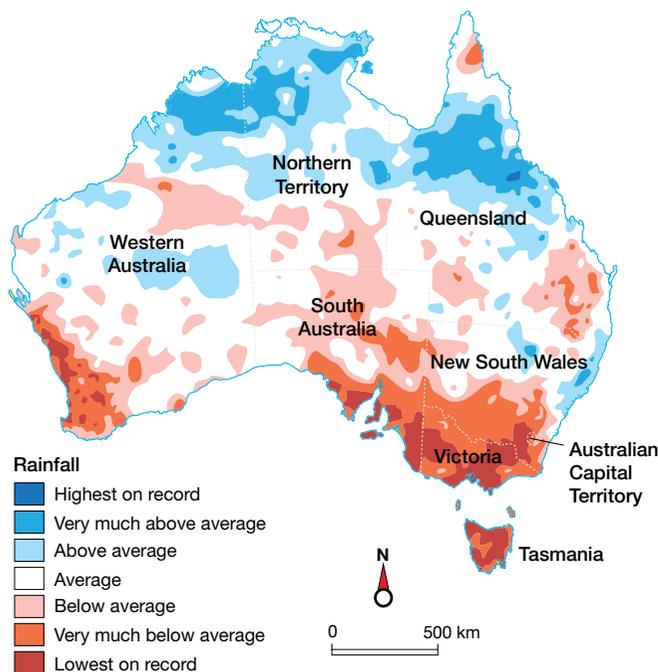
Between 2002 and 2003, and again in 2006–09, Australia experienced some of the worst drought conditions on record. Figure 10.8.4 shows the extent and severity of the 2006–09 drought. Much of southern Australia experienced either a serious or a severe water deficiency. Parts of Western Australia, South Australia, New South Wales, the Australian

Capital Territory, Victoria and Tasmania received the lowest rainfall on record. Australia's farmers experienced great economic hardship as crops failed and livestock either were sold or died. People living in major urban centres (including Sydney, Melbourne and Canberra) were forced to reduce their use of water.

In 2018, southern Australia experienced the second lowest rainfall on record for autumn. This followed 2016–17's hot summer, which was characterised by record-breaking temperatures, and 2017's record-breaking dry winter. Meanwhile, in Queensland 57.6 per cent of the state has been declared in drought, while 16.4 per cent of New South Wales is in drought.



10.8.3 Areas at risk of drought in Australia



10.8.4 Areas of rainfall deficiency show up clearly in this map of rainfall distribution in 2006–09

Activities

Remembering and understanding

- 1 Outline the effects of drought.
- 2 Copy and complete the following table.

	El Niño	La Niña
Type of air pressure on the east coast of Australia		
Water temperature off the east coast of Australia		
Influence on Australia's weather		

- 3 Identify the data used to predict droughts. Explain the ways in which farmers can respond to these predictions.

Geographical skills

- 4 Study Figures 10.8.3 and 10.8.4. Were all areas that experienced rainfall deficiency between 2006 and 2009 located in areas of high drought risk? Explain.

Evaluating and creating

- 5 Investigate a recent drought in Australia. Present your findings as an annotated visual display. Include in your response the following information:
 - a a map of the area investigated, with information about natural features, climate type, average temperatures and annual rainfall
 - b the drought's duration, the areas over which it extended and the impact it had on the communities affected
 - c suggestions for drought-proofing the region and/or reducing the impacts of drought in Australia.

10.9 Responding to hazards

Climate change

Climate change is predicted to affect the extent and number of atmospheric natural hazards in the world. The Intergovernmental Panel on Climate Change predicts that an increase of greenhouse gases in the atmosphere will increase temperatures over most land surfaces. This means that there will be a higher risk of drought and an increased intensity of storms, including tropical cyclones.

Early warning systems

Developments in the science of meteorology have greatly increased the accuracy of weather forecasting. Meteorologists are now better able to predict extreme weather events. Warnings can be issued via a range of technologies, such as television, radio and mobile phones. Having warning about such events enables people to undertake necessary preparations to minimise the loss of life and damage to property. They can secure their homes and businesses, and take shelter in a secure, safe place.

Cyclones and tornadoes

Early cyclone or tornado warning systems allow people to secure their property and act to reduce the threat to their physical wellbeing.

Floods

Early flood warning systems enable people to sandbag premises and build temporary levee banks. They also provide people with time to remove valuables from their homes and businesses, and move themselves, their livestock and vehicles to higher and safer ground.

Drought

The onset of drought occurs more slowly. In urban areas, water use can be reduced through water restrictions and education campaigns. Farmers can adapt to the drier conditions by reducing stock levels and using feed that was grown and stored in better times.

Building laws

Local governments can regulate the activities and the types of buildings that are permitted on flood plains and in areas affected by storm surges. For example, by banning the construction of new homes and commercial buildings in such areas, authorities can minimise property damage and the disruption that flooding and storm surges cause to people's lives.



10.9.1 A cyclone warning sign is seen outside the city of Townsville, Queensland

Where communities are already well established on a flood plain, engineering measures can be used to minimise the impacts of flooding and storm surges. Homes can also be designed in ways that reduce the effects of flooding (see Figure 10.9.1).

In built-up areas, authorities can take a range of measures to minimise flash flooding. These include:

- using porous (absorbent) paving, or replacing sealed surfaces with grass and gardens to allow more water to soak into the ground
- keeping street drains clear of blockages
- constructing onsite systems to hold stormwater
- controlling erosion from building sites.

Building codes and standards can also minimise damage to property. In Australia's cyclone-prone areas, new buildings must be built to a standard that:

- enables them to remain stable and not collapse
- prevents progressive collapse
- minimises local damage and loss of amenity
- avoids causing damage to other properties.

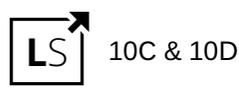
Engineering responses

In the case of flooding, responses that involve engineering can reduce peak flood levels and potential damage. Such responses include:

- using dams and water retention basins to capture floodwaters
- building pipelines to move captured water from place to place
- building levee banks and floodgates to divert water (see Figure 10.9.2)
- erecting barriers such as sea walls to deflect storm surges from coastal communities
- widening and deepening channels of rivers and creeks.



10.9.2 Do-it-yourself flood prevention Mississippi, US



Emergency responses

It is the role of governments to help people in emergencies. Assistance can be supplied through various government departments and agencies. Governments also provide emergency funding to help communities recover from disasters.

Volunteer-based emergency services are quick to respond when disasters occur, as are organisations such as the Red Cross. Community-based groups also play an important role in emergencies.

Activities

Remembering and understanding

- 1 Explain how developments in meteorological science have helped people manage and adapt to extreme weather events.
- 2 Give one example of how planning measures implemented by local government can help reduce the impact of floods and storm surges.
- 3 Outline how engineering responses have been used to manage the impacts of extreme weather events.
- 4 How can governments and volunteer organisations provide help and support in the period following an extreme weather event?

Evaluating and creating

- 5 Construct a mind map summarising the ways in which communities manage and adapt to extreme weather events.
- 6 Using the internet, investigate the early warning systems of the Australian Bureau of Meteorology. Write a short report summarising your findings.
- 7 Research one of the volunteer-based organisations that assist in response to an extreme weather event. Find out:
 - a what the organisation's role is
 - b who its members are
 - c what the source of its funds is
 - d what types of assistance it provides.
- 8 As a class, discuss how you might assist in response to a weather-related natural disaster affecting:
 - a a local community
 - b a community in another part of the world.



Liveability

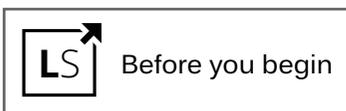
11

The term 'liveability' is used to describe the qualities of a place (a city, town, suburb or neighbourhood) that contribute to and enhance the wellbeing of those who live or visit there. For people who are able to choose where they live, liveability of places is important.

Place is one of the key concepts in geography. In geography, we often say that a town, suburb or neighbourhood has a 'sense of place'. This refers to the distinctive characteristics or features that make it unique. In a sense, every place has its own identity.

OVERVIEW QUESTIONS

- 11A** What is meant by the concept of liveability and how can it be measured?
- 11B** How do perceptions of liveability vary from person to person according to age, education, income, cultural background and other factors?
- 11C** How might access to services and facilities affect people's perception of the liveability of a place?
- 11D** What environmental, economic and social measures influence people's perceptions of liveability?



11.0.1 The gardens around Melbourne improve liveability in the city

GLOSSARY

accessibility how many people have access to a product, device, service or environment

demographic profile relating to the characteristics of different groups of people who make up populations

good a tangible (actual or touchable) thing that meets a human need

human rights the basic rights that all people have, regardless of their citizenship, nationality, race, ethnicity, language, gender, sexuality or ability

liveability the qualities of a place (a city, town, suburb or neighbourhood) that contribute to and enhance the wellbeing of those who live or visit there

perceptions how something is seen or regarded by someone

quality of life the happiness, wellbeing and satisfaction a person experiences. Many factors influence this, including a person's family circumstances, income and access to services

relative location the location of a place in relation to other places

sea changes a lifestyle-related change that involves moving from an urban settlement to a coastal community

sense of place the distinctive characteristics or features of a place that make it unique

service something you pay someone to do for you (such as having a haircut or going to the doctor) that cannot be touched, held, handled, looked at, smelt or tasted

site an area of land where one or more buildings are constructed

social connectedness the relationships people have with others

spatial inequalities the differences between where poor and wealthy people live

spatial patterns the way features of a place are arranged and connected, which influences what a place is like

tree changes a lifestyle-related change that involves moving from an urban settlement to a rural or semirural community

11.1 Deciding where to live

The decision

People think about many factors before choosing where to live. Some of these are emotional choices and some are responses to circumstance at a particular time. Because the decision-making process is such a personal one, there is no complete list of factors. Some of the most common factors affecting the choices people make about where to live are outlined below.

Attachment to place

We all develop an attachment to places that are special to us. It may be the place where we were born and grew up. It may be a place we visited on holidays. It may be somewhere we have always wanted to live. These are powerful forces that influence the choices we make.

Distance from family and friends

Being close to family and friends is another factor that influences people's decisions about where to live. Family and friends provide emotional and practical support. They also meet one of our most basic social needs, which is the need for companionship.

Employment opportunities

Earning an income to support yourself and your family is an important factor in deciding where to live.

Affordability

The greater a person's income and/or wealth, the wider their range of options for where to live. The wealthy can afford to buy or rent housing in the most desirable and expensive suburbs. The choices of people on lower incomes are limited to areas where housing is more affordable. This accounts for the **spatial inequalities** (the geographical divisions between poor and wealthy populations) we see in Australia's large cities.

Stage of life

Factors that influence people's decisions about where to live change at different stages of the life cycle. This is because a person's needs change at different times of their life. For example, when you are young, you generally live where your parents decide to buy or rent a home. In your 20s, you may live in rented group housing with friends.



11.1.1 (a) Some people opt to live in country towns; (b) some find the rural lifestyle more appealing; (c) others like the buzz of the inner city

Did you know?

- The Boomerang generation or Boomerang children is a new term used to describe young adults who leave home but then return, usually for financial reasons.

Lifestyle considerations

The way of life a person desires is another important influence. Some people like areas that are diverse, crowded and colourful. Others seek out places that are quiet, isolated and natural. For many, especially older people, access to quality health care is important. For young families, access to good schools may be important. Some people will buy a house in a particular suburb so their children can attend a well-regarded school nearby.

Personal safety

Perceptions (how something is regarded by someone) about the level of crime in an area influence people's decisions. People avoid areas with high crime rates if they can afford to live elsewhere.

Environmental factors

People's decisions about where to live are sometimes influenced by climate, aesthetics (the beauty or attractiveness of the place) and environment. For example, many people have moved to south-eastern Queensland because they are attracted to the climate and beaches.

Did you know?

- Of all Australians aged 15 years and over, 27 per cent have been living in their current home for 15 years or more, 30 per cent have been there for 5–14 years, and 43 per cent have moved within the past 5 years.

Culture and ethnicity

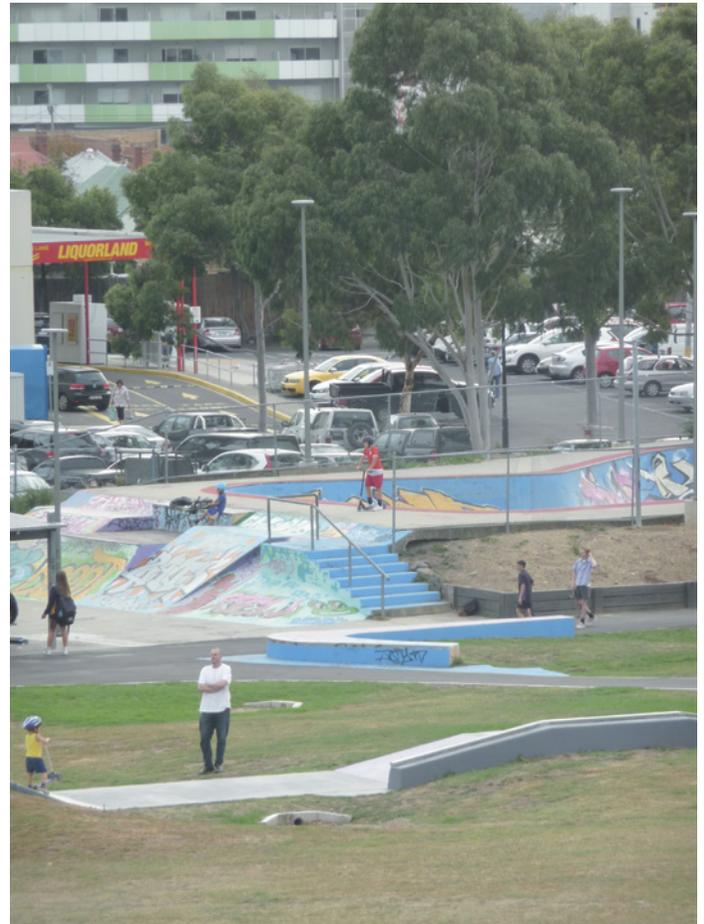
New immigrants often settle in suburbs with an established community of people from a common cultural or ethnic background. This provides them with a support network that makes settling into their new homeland easier.

Travel time and transport options

Some people choose to live close to where they work. Others are willing to travel, sometimes over long distances, to live in a place that is more affordable or appealing. Access to public transport is an important factor for many people living in large, congested cities.

The choices people enjoy

For most of the world's population, the choice of where to live is restricted by issues such as poverty, culture, individual freedoms and **human rights** (the basic rights to which all people are entitled). For many people, there is little choice. This is because life is a daily battle for survival. In rural areas people are often forced to move to big cities to find jobs.



11.1.2 A local park with skating opportunities for all ages

Activities

Applying and analysing

- 1 Draw a mind map to model the factors that influence people's decisions about where to live.
- 2 Write each of the factors affecting where people choose to live on a piece of paper. Classify these from the most important to the least important. Compare your ranking with those of others in the class. Explain your reasoning.

Evaluating and creating

- 3 Interview your parents or guardian. What factors did they take into account when selecting the place in which you live?

11.2 Liveability of places

Perceptions of liveability

The **liveability** (the qualities of a place that enhance wellbeing) of a city, town or neighbourhood depends on the environmental and social quality of the area. Some places are seen as being better places to live than others. These perceptions differ from person to person, depending on what they consider important. The way a person sees the world around them is influenced by many factors.

Age

Age is one of the most important factors affecting perceptions of liveability. For example, adults are likely to focus on factors such as good transport links, and access to work and shops. Teenagers are more likely to value access to entertainment, sporting facilities and shopping centres. While some factors appeal to all age groups, others are considered more or less important at different times in life.

Household type

Household type (who lives in a house) is also important. People without children may have different liveability preferences from families with children. Access to childcare, playgrounds, good schools and detached houses with gardens are often important considerations for parents. People without children might prefer inner-city living with access to work, restaurants and entertainment.

Income and education

Income is another important consideration. The higher someone's income, the greater the choices they have of where to live. People often choose to live in the most liveable area they can afford. People with the lowest incomes often have to live in areas perceived to be the least liveable.



11.2.1 Christmas markets are important community events. Some people enjoy attending them and this improves their perception of liveability.

Cultural background

Cultural background can also influence perceptions of liveability. Immigrants, for example, often see ethnic-based community networks as important. It is not unusual to find people with a common ethnic background living in a particular neighbourhood.

Factors affecting liveability

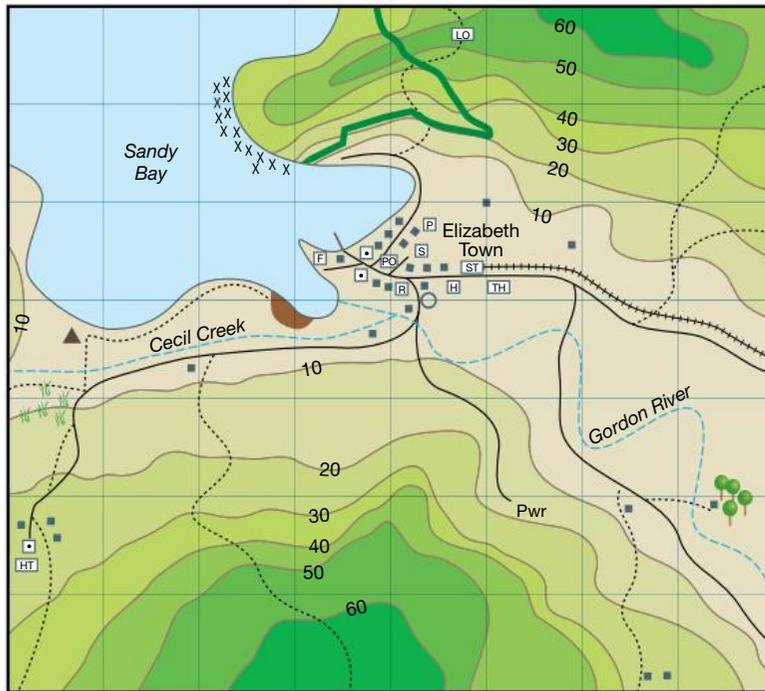
The liveability of places is largely affected by public places where people interact with each other. Public places include streets, parks, sporting facilities, shopping centres, public transport interchanges and other public facilities.

The liveability of a place has a direct impact on the people who live, work or visit there. In areas considered to be 'nice' places in which to live and work (that is, as having high liveability), property values and levels of business activity are higher. In neighbourhoods that are perceived to have low levels of liveability, housing is cheaper because people are less likely to choose to live there.

Liveability ratings

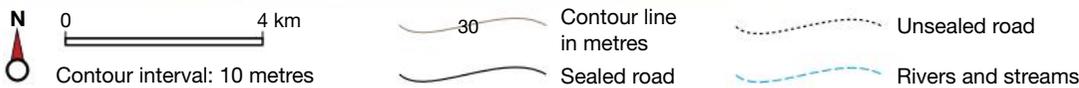
Some general categories that can be used to assess liveability are:

- perception of public safety
- housing affordability
- friendliness and sense of community (how residents cooperate and interact)
- attractive and well-maintained public spaces
- how easy it is to walk around and its impact on how people experience their neighbourhood
- **accessibility** (the availability of services to as many people as possible) and transport choices that improve this and reduce commuting times
- quality of transport options for children, the elderly and people with special needs (for example, special buses)
- recreational facilities (sportsgrounds, restaurants, cinemas)
- utilities (electricity, water, sewerage systems)
- educational facilities
- health services and facilities
- environmental factors (climate, open space, air and water quality)
- telecommunications infrastructure (broadband and mobile phone coverage).



- Building
- Ⓢ School
- Ⓜ Post office
- Ⓜ Shop
- Pier
- x Dangerous rocks
- ++++ Railway
- Ⓢ Station
- Ⓜ Fish processing plant
- Ⓜ Lookout
- Ⓜ Restaurant
- Ⓜ Hospital
- Ⓜ Town hall
- Ⓜ Police station
- Sportsground
- ▲ Camping ground
- 🌱 Farm
- 🌳 Orchard
- Ⓜ Historic town
- Pwr Power generation plant
- Mangrove
- ▬ National park boundary

11.2.2 A topographic map of Elizabeth Town (population 10 000), showing some factors that can influence people's perception of the liveability of a place



City versus country

Many people have a strong preference for living in either the city or the country. City dwellers might say they prefer living there because of:

- the greater range of jobs available
- access to a wide range of shops and service providers
- greater choice of schools
- more entertainment choices
- the excitement of a faster pace of life
- access to a wide range of medical facilities.

Those in the country might say they prefer living there because of:

- the space around them and the lack of crowds
- cleaner air and less pollution
- safer and friendlier neighbourhoods
- cheaper housing
- more opportunities for outdoor activities.

Some of these preferences are influenced by the spread of technologies such as the National Broadband Network (NBN). Using the internet for work, educational, medical and social needs is changing the reasons why some people need or want to live in a particular place. For example, it is making telework possible. Telework involves using telecommunications technologies to work from home instead of going to an office. Thanks to telework, many people can work from a home office. This can help improve liveability by reducing traffic congestion.

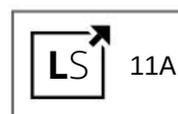
Activities

Remembering and understanding

- 1 Define 'liveability'.
- 2 Outline the factors that affect people's perceptions of liveability.

Applying and analysing

- 3 Examine Figure 11.2.2.
 - a Identify the community facilities in Elizabeth Town and the surrounding area.
 - b Would you describe Elizabeth Town as a liveable place? Explain.
- 4 Write two short statements discussing the liveability of the place you live in, from:
 - a your parents' perspective
 - b your perspective.
 Compare your answers with the class. What factors do the answers to Part A have in common with the answers to Part B? What differences are there? Why might this be?



11.3 Sense of place

Characteristics of place

Geographers often refer to a particular location as having a **sense of place**. This means that the place has distinctive characteristics or features that make it unique. A number of factors contribute to a sense of place. The following are some of the most common of these.

Relative location and site

Relative location is a term used to describe the location of a place in relation to other places. It can have a range of meanings, and can influence a place in different ways. Examples of relative location include:

- a place's latitude: the constructed features of places close to the Equator are quite different from those of places closer to the poles
- distance from the sea: inland towns are quite different from places located on the coast
- distance from larger urban centres: places close to larger urban centres might have more entertainment choices.

Site

The nature of the **site** (the land on which buildings are constructed) is also an important influence. The shape of the land (topography), the aspect (or direction it faces), the presence of a river (and whether it is navigable) or the nature of a coastline might all be important factors. For example, a town could be located next to a river, wrap around the base of a mountain or spread along a coastline to take advantage of views and provide access to beaches.



11.3.1 Site is a big influence on sense of place: (a) this chalet in the Victorian Alps has a steep roof to allow snow to fall off; (b) this Queenslander house in the tropics has a wide verandah and open windows to let in breezes

Functions

Places can differ in the functions they perform. Some places produce food. This results in features and characteristics that will be different from a place that has a residential function. Other common examples of places with a specific function are:

- ports
- resort destinations
- educational centres
- administrative centres (offices)
- commercial centres (shops)
- industrial centres (factories).

Most places are multifunctional (they have different purposes or functions). While one function may dominate, others are also evident. Canberra is Australia's administrative and political capital, but it is also a commercial centre and a tourist destination. Furthermore, it supplies all the goods and services a city of 358 000 people needs.

The functions that a place performs contribute to its character and distinctiveness. Canberra's Parliament House, public service office complexes, museums, parklands, galleries, monuments and memorials all contribute to the city's uniqueness, or sense of place.





11.3.2 Melbourne's sports precinct includes the Melbourne Cricket Ground (MCG), Melbourne Park (venue for the Australian Open tennis tournament) and the Melbourne Rectangular Stadium (AAMI Park)

Spatial patterns

The **spatial patterns** (the way that features in the landscape are arranged and connected) influence what a place is like. This will vary from one place to another. For example, the number of trees or buildings per square kilometre can vary from one place to another. Or the density of objects may be the same, but they may be arranged differently by being clustered or scattered. How the objects are clustered can be a further difference between places. The pattern of clustering could follow a major road or be focused on a central point, such as a town square.

The Melbourne sports precinct shown in Figure 11.3.2 is an example of a clustered pattern. A number of sports facilities are located together in an area that is well served by public transport.

Social, cultural and economic characteristics

A variety of social, economic and cultural factors also contribute to the ways in which one place differs from another. These include population density (the number of people per unit of area), the age and ancestry (background) of the people, and their religious beliefs, education and income. These factors are evident in the way that open spaces are used or the range of goods and services that are provided.

Population density

Population density refers to the number of people living within a given area, usually 1 square kilometre. Some places have a very high population density (such as city centres), while others have a low population density (for example, rural areas). One of the most densely populated cities on Earth is Tokyo, Japan. There, the average population density is 6000 people per square kilometre. Even within densely populated cities such as Tokyo, there are often places that are more densely populated than others.

Age

The **demographic profile** (the characteristics of different groups that make up populations) of the population can influence what a particular place is like. A place dominated by families with young children will be quite different in character from a place where older people or singles are in the majority. While most places have a mix of ages, some, such as retirement villages, may exclude people on the basis of age.

Ancestry

A person's ancestry is their family background, including their ethnic or racial background. Ancestry can have a significant influence on place. This is because a large number of people with a common ancestry living in one place will give that neighbourhood or suburb a particular sense of place. It creates what are termed cultural landscapes, where the environment is a reflection of the practices, traditions and beliefs of a culture. For example, an area with a lot of Chinese people living nearby might have a number of Chinese restaurants and community centres. Sometimes these cultural landscapes are so distinct or strong that they can be identified with particular ethnic groups. Most ethnic enclaves are vibrant and rich places. The 'Little India' district in Singapore, for example, is a place where the Indian, Sri Lankan and Bangladeshi cultures are shared with a wider community. Think about any of the culturally distinctive neighbourhoods in a large Australian city you know.

Did you know?

- Melbourne is influenced by a great variety of ancestry. One-quarter of the city's population were born overseas.
- In all, 180 countries are represented and 233 languages are spoken within Melbourne.

Religious beliefs

Religion can be seen in the buildings and festivals in a place. Places of worship have traditionally been among the most visible buildings in a town or city. For example, Jerusalem, a holy city for Christians, Jews and Muslims, is dominated by places of worship (see Figure 11.3.4). The Cathedral of Notre Dame in Paris is an important element of the city's landscape, as are St Paul's Cathedral and Westminster Abbey in London.

Education, occupation and income

There is a clear link between education, occupation and income in almost all places in the world. If people have a better education, they can usually get a better job and earn more money, which leads to a higher income. This also means that people will tend to live in locations that match their income.

In Australia, areas close to the centre of the city were once seen as dirty and harsh places. Increasingly, most of these inner-city areas are being renovated and occupied by people employed in highly skilled occupations, with higher incomes and higher levels of education. We call this process 'gentrification'.

Some places have a unique concentration of one group of occupations. People working in the creative arts industry, for example, often benefit from living near each other, where they can share and develop ideas. An example is the artists' colony of Montsalvat in Eltham, Victoria. Twelve buildings, set amid established gardens, are home to a number of artists.

Spotlight

Shinjuku

Shinjuku is a major centre for business within Tokyo. Its population density is an enormous 17 140 people per square kilometre. However, because of the large number of people who visit for work or shopping, the number of people in the location at one time can appear much greater. Shinjuku can get very crowded.

Shinjuku's train station is the busiest in the world. Over 3.5 million people use this train station each day (see Figure 11.3.3). In order to deal with the huge volumes of people, Shinjuku, like many other areas in Tokyo, has extensive underground pedestrian areas. On the street, movement for people can become quite difficult.



11.3.3 The crowded Shinjuku train station



11.3.4 Jerusalem contains many religious buildings, which strongly influences its sense of place

Activities

Remembering and understanding

- 1** Name the factors that contribute to a sense of place.
- 2** Outline how relative location and site affect places.
- 3** Explain what is meant by the term 'multifunctional'.
- 4** State how places differ spatially.
- 5** Outline how social, cultural and economic characteristics influence sense of place.
- 6** Explain what an ethnic enclave is.
- 7** Explain how a place can be affected by the ancestry of its inhabitants.
- 8** State how religion can affect places.
- 9** Describe the links between education, occupation and income.

Applying and analysing

- 10** Study Figure 11.3.1. Identify the ways in which climate has influenced the architectural style of the homes shown.
- 11** List at least three benefits of living in places where many different ethnic groups are represented in the population.

Evaluating and creating

- 12** Select one of the factors that shape sense of place. Think about this in relation to the neighbourhood in which you live. Investigate how it has been shaped by its relative location, site, climate, demographic profile, or economic, cultural or social characteristics.

11.4 Attachment to Country

The importance of land

Land means different things to people of different backgrounds. People who are not from an Aboriginal and Torres Strait Islander background tend to regard land as a resource. They see it as something to be bought, sold and owned, or simply as 'home'. For indigenous peoples worldwide, the relationship is generally much deeper than this. They see land as having spiritual, physical, social and cultural value.

Aboriginal and Torres Strait Islander peoples

The Aboriginal and Torres Strait Islander peoples have a very strong spiritual connection to the land. Their traditions reflect their beliefs and every aspect of their lives is connected to it. In these societies, law and life come from, and are governed by, the land. The traditional owners are responsible for caring for the land in particular ways that are determined by their rich and ancient cultures.

The connection to land contributes significantly to the identity of Aboriginal and Torres Strait Islander peoples and their sense of belonging. In other cultural groups in Australia, a person's home is the structure in which they live, but for Aboriginal and Torres Strait Islander peoples 'home' means their traditional lands. These are the lands on which their ancestors (those who came before them) hunted and gathered food, farmed, and met and held ceremonies. Many Indigenous peoples are connected to and regularly visit their traditional lands, which they refer to as their Country. Returning to Country, even just to visit, brings a sense of wellbeing. This is something people who are not from an Aboriginal or Torres Strait Islander background may find difficult to understand.

Stewardship of Country

The health of the land is central to Aboriginal and Torres Strait Islander cultures. Traditionally, these peoples saw themselves as being part of the land, not separate from it. As a consequence of this, many still feel strongly that they have a responsibility to care for their traditional lands, or Country.

Plants, animals and ecosystems are at the core of Aboriginal and Torres Strait Islander peoples' attachment to the land and the sea. Plants and animals are valued as part of Country. The continued use of wild foods (bush tucker) and traditional medicines allows Indigenous peoples to pass on their cultural knowledge, and to use and preserve places of cultural value.

Care of cultural sites

This spiritual and cultural connection to the land also obliges Aboriginal and Torres Strait Islander peoples to look after cultural sites. These include Dreaming sites, archaeological sites, waterholes and burial grounds. The land and the sea are also central to Aboriginal and Torres Strait Islander art, such as theatre, dance, music and painting.

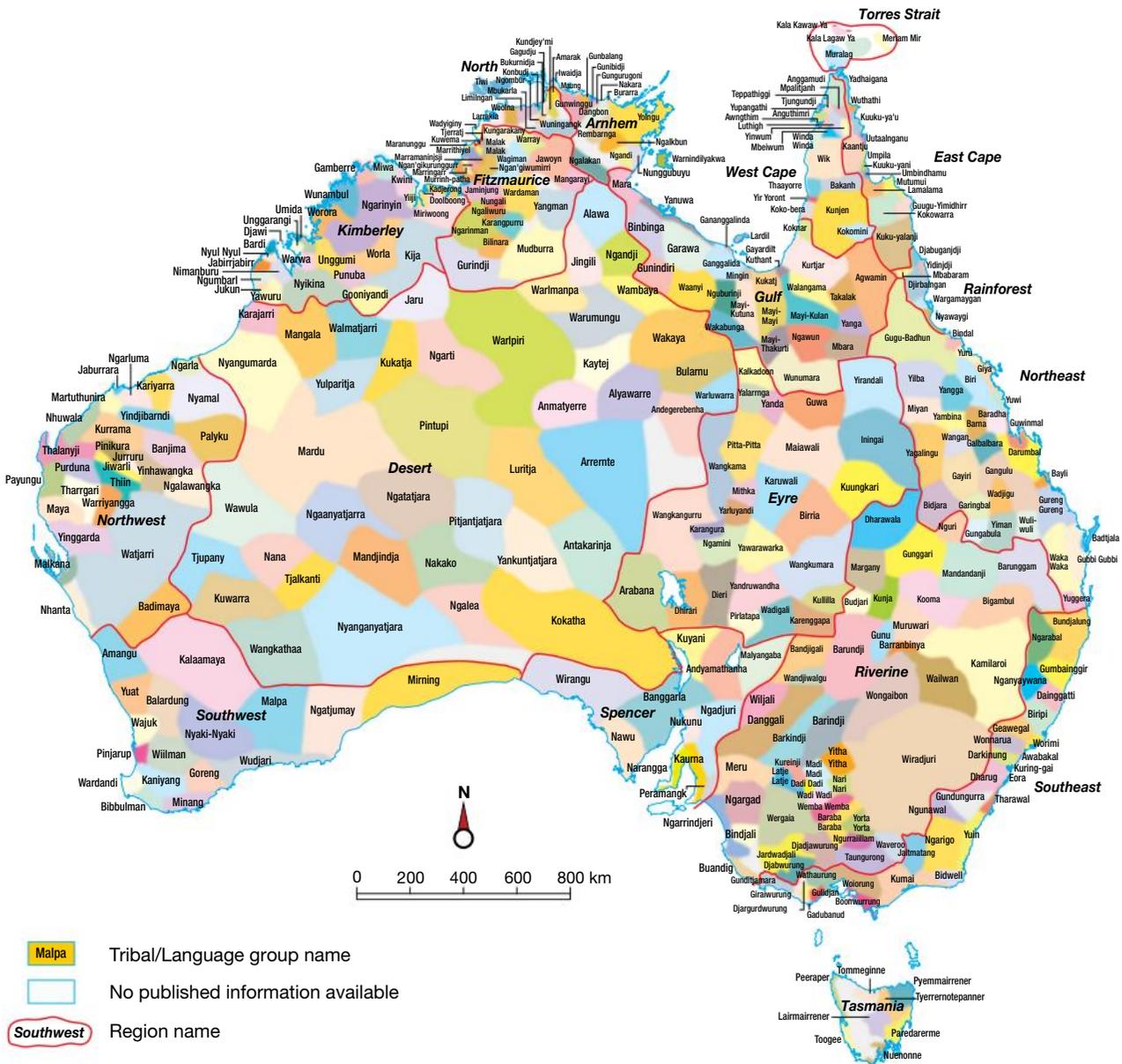
The Dreaming and Country

Central to Aboriginal and Torres Strait Islander culture, along with the connection to Country, is the idea of the Ancestral Spirits or Beings that created the land and forever remain within it. The time when Ancestral Spirits or Beings were creating the landscape, and human groups and their societies, is known as the Dreaming. The cultural values of the Dreaming were embedded in the traditional lands or Country of each group. Different cultural and language groups have their own words for this concept. For example, the Anangu of the Central Desert is known as Tjukurpa or Wapar, depending on the particular language group they belong to.

Cultural diversity

Australia has always been rich in cultural diversity. Each language group has its own Country. Each has also developed its own culture, including customs, beliefs, totems and relationships with the land. Yet, Australians of European descent have not always acknowledged this fact, or even been aware of it. When Europeans first arrived, they applied the name 'Aborigines'. This term refers to the original inhabitants of any country, to all Indigenous Australians. There was little or no recognition of the hundreds of different language and kin groups that had existed for tens of thousands of years across the continent (see Figure 11.4.1).

Aboriginal people today call themselves by the name of the language or territory group to which they belong, such as Wurundjeri, Pitjantjatjara or Wathaurong. Some use terms such as Murri or Koorie, which refer to collections of tribes in a particular area. In Victoria the Kulin nation is a group of five united tribes. Torres Strait Islander people use the name of their own island community, such as Yam or Boigo.



11.4.1 Map of Aboriginal Australia's language groups

This map attempts to represent the language, social or nation groups of Aboriginal Australia. It shows only the general locations of larger groupings of people, which may include clans or individual languages in a group. It used published resources from 1988 to 1994 and is not intended to be exact, nor the boundaries fixed. It is not suitable for native title or other land claims. David. R Horton (creator), © Aboriginal Studies Press, AIATSIS, 1996. No reproduction without permission.

Acknowledgement of Country

An acknowledgement of Country is a way that all people can show respect for Aboriginal and Torres Strait Islander heritage, and the ongoing relationship of traditional owners with the land.

Acknowledgement can take many forms. Most commonly, it involves spoken or written recognition of the traditional owners of the land where people are gathered. Alternatively, more specific recognition can be given to the language group of the land where an event takes place. A person from the language group may perform a welcome to Country.

Aboriginal rock art

Aboriginal rock art is found all around Australia. It forms a rich record of the long history of Aboriginal life and culture. Rock engravings near Olary, in South Australia, are more than 35 000 years old. Some paintings found in north-western Arnhem Land, in the Northern Territory, show Macassan traders from Sulawesi in Indonesia and their boats. The Macassans are believed to have been the first people from outside Australia to have made contact with Aboriginal peoples.

Rock art of Kakadu

For more than 50 000 years, or more than 2000 generations, the Bininj/Mungguy people have been the custodians of an area that today forms part of Kakadu National Park. Kakadu contains 5000 identified rock art sites, and there are thought to be many more sites that have not been catalogued. Some of the paintings are believed to be more than 20 000 years old.

The subjects depicted in Kakadu's rock art include the day-to-day activities of the Bininj/Mungguy people, and the animals they hunted. Animals were a common subject. This is because it was thought that painting them would ensure they remained plentiful, and that it would bring success in hunting. Many paintings show ceremonies. Some of these paintings are considered sacred and can only be viewed by certain Aboriginal elders.

The paintings at Ubirr and Nourlangie Rock (see Figure 11.4.4) are some of the most famous in Kakadu. Among them are excellent examples of X-ray art, which depicts the internal organs of people and animals as if viewed using X-rays. The thylacine, or Tasmanian tiger, appears in a painting at Ubirr, though it has been extinct on the Australian mainland for at least 2000 years.



11.4.4 The rock paintings at Nourlangie Rock are some of the most famous in Kakadu National Park

Activities

Remembering and understanding

- 1 Explain, in your own words, the relationship between Aboriginal and Torres Strait Islander peoples and the land.
- 2 Describe how Europeans viewed Aboriginal and Torres Strait Islander peoples when they settled in Australia.
- 3 Explain the importance of an acknowledgement of Country.

Geographical skills

- 4 Study Figure 11.4.1.
 - a List the regions where each language group is placed.
 - b Language groups are larger in the desert region than in the south-east region. Explain why this might be the case.
 - c List other regions in which language groups are smaller than in the desert region.

11.5 Environmental quality and liveability

The positive and negative

A useful way of thinking about the ways in which environmental factors affect liveability is to classify them as either pull or push factors. Places in which the pull factors outweigh the push factors are normally regarded as being the more liveable. As a result, people compete to buy homes in these areas and houses become more expensive. Areas in which the push factors dominate are often seen as less desirable places to live. Housing therefore tends to be more affordable (relatively low-cost).

Pull factors

Lifestyle

Some people rank lifestyle-related factors above all others when they judge the liveability of places. While some are attracted by the lifestyle of the coast, others prefer the mountains, the bush or a rural lifestyle. Common to all these places is the attraction of the biophysical (mostly natural) environment and the often quieter, slower-paced lifestyle these places offer.

Aesthetics

For some, the visual beauty, or an aesthetic appreciation of the biophysical and constructed environments is a major factor in rating the liveability of places. Many people feel that their **quality of life** (their happiness, wellbeing and satisfaction) is made better by what they see and how they interact with a place. Often, aesthetic considerations are closely related to people's lifestyle considerations. Winter sports enthusiasts, for example, may find the beauty of mountain landscapes inspiring and a key to their emotional wellbeing.

Urban design

Good-quality urban design contributes to the liveability of cities. A well-designed city, town or suburb will attract people to visit, live and work. Good urban design can have a positive influence on physical and mental health by providing opportunities for better lifestyles and community interaction. Darwin's Wave Lagoon, shown in Figure 11.5.1, is an example of a community facility that attracts people to an area.



11.5.1 Darwin's Wave Lagoon is a safe wave and swimming lagoon that is free from stingers and crocodiles, and attracts people to the area

Special places

People often have places that are special to them. Aboriginal and Torres Strait Islander peoples, for example, have a strong spiritual attachment to the place in which they were born; in other words, their Country. Others have places they associate with enjoyable times in their past, perhaps a place where they spent holidays when they were young, or where they grew up.

Climate

Many people have a preferred climate that influences their perceptions of the liveability of places. Places with warm summers and mild winters are popular with many people, especially retirees. However, most people will seek to avoid places with extreme climates. These are places that are either very hot or very cold; or very dry or very wet.

Recreational spaces

A lot of people rate a place's recreational spaces highly in terms of liveability. These are places where people can engage in sporting and leisure activities. The range and quality of these places are important, and are closely related to people's preferred lifestyle choices.

Heritage

Protecting the unique heritage (historical) values of an area is important for some people's perceptions of liveability. For example, in some suburbs planning laws ensure that the architectural heritage of the constructed environment is maintained. In others, whole streetscapes, street plantings and long-established parks and gardens are protected to retain an area's 'leafy' and historical character.

Push factors

Pollution

Air and water pollution affect not only people's health, but also their perceptions of a place's liveability. Air pollution is associated with large cities and industrial complexes. The quality of air in Western cities has improved because of the shift away from heavy industry and manufacturing, and advances in fuel and engine technologies. However, air pollution remains a major environmental issue in the cities of the developing world.

Congestion

Traffic congestion (crowding) robs people of time with their families, or participation in sport and leisure activities. Congestion also has an economic cost because the time taken up by being in traffic adds to the expense of doing business. Traffic congestion has a negative impact on people's perceptions of the liveability of places.



11.5.2 Traffic congestion is often a result of not having enough public transport

Climatic extremes

People normally avoid living in places with extremes of climate. Many people find hot and humid climates unpleasant to live and work in. Others find very cold climates affect their ability to engage in a range of day-to-day activities, especially in winter.

Vulnerability to natural disasters

Whenever possible, most people avoid living in places that are vulnerable to, or likely to experience, natural disasters. This is because they are aware of the risks associated with living there. If they do choose to live in such places, they will seek to reduce the risk. They can, for example, live in homes designed to resist the forces of nature.

Water shortages

A shortage of water limits the number of people a place can support. It also affects lifestyle-related activities such as gardening and water-based recreation.

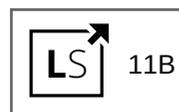
Activities

Remembering and understanding

- 1 Discuss the difference between pull and push factors.

Applying and analysing

- 2 Identify any additional environmental factors that affect people's perceptions of the liveability of places.
- 3 Rank pull and push factors from the most to the least important. Explain why you ranked them in this order.



11.6 Access to services and facilities

Services

A **good** is a tangible (or touchable) thing that meets a human need, while a service is a non-tangible thing. A **service** cannot be touched, held, handled, looked at, smelt or tasted (see Figure 11.6.1). A service is usually something that you pay someone else to do for you, such as going to the hairdresser to have a haircut. Having access to the services needed to support an acceptable standard of living is an important factor in determining the liveability of places. It is also an important consideration in where people choose to live.

Accessibility refers to the extent that a service is available to as many people as possible. Accessible services include:

- childcare facilities and schools
- cultural and entertainment venues
- healthcare services
- public transport
- aged care facilities and residential care services
- recreational and sporting facilities
- service stations and motor mechanics
- clubs, restaurants and cafes
- banks and other financial institutions

- high-speed broadband
- legal advice
- shopping centres and other retail outlets
- road systems
- places of worship
- sporting and leisure venues
- police, ambulance and fire services.

Changing needs

People's needs change throughout their lives. An important marker of liveability is how well cities support the wellbeing of people at different life stages. There are some services that all people need access to, such as shops. There are others that relate to a person's stage of life or circumstances. For young families, childcare, schools and healthcare services are important. For retirees, healthcare services, aged care and other support services are an important consideration. For young people, access to public transport, shopping centres and entertainment venues might be important. For those with a disability, accessible public transport and buildings, and the support services they need, are important. For those in the workforce, access to public transport or an uncongested road network is important.



11.6.1 Newport Lakes Reserve, Melbourne, is an example of a recreational facility (a service) that helps improve liveability and makes the area a desirable place to live



11.6.2 Those who live in public housing estates in Melbourne's inner city can experience hardships, but people who live in poor neighbourhoods away from the city often experience greater disadvantages because they are further away from services

Older Australians

The number of older Australians is increasing in proportion and number. As they age, the needs of these people will change. They will require different housing, better access to health and transport services, more accessible public transport, and pedestrian areas that are easier for people with poor mobility or disabilities to manage.

Locational disadvantage

Locational disadvantage results when households find it difficult to access the goods and services that enable them to improve their wellbeing over time. Those living in the poor neighbourhoods of large cities are most at risk of experiencing locational disadvantage. Most of these neighbourhoods are found on outer edges of cities, where housing is more affordable. These suburbs are the most likely to be isolated from a lot of the services which people depend on. These services include health care, child-support agencies, counselling, public transport and legal aid.

Having large numbers of economically and socially disadvantaged people in such neighbourhoods can affect that place's liveability. These areas often become associated with high rates of crime, drug dependency, domestic violence, urban decay and vandalism. In some neighbourhoods the problem becomes so bad that they become known as 'no-go' areas.

Did you know?

- The proportion of the population that reported a disability in Australia in 2009 was 18.5 per cent, or just more than 4 million people.

Activities

Remembering and understanding

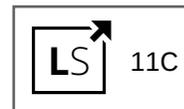
- 1 Explain why accessibility to services is an important element of liveability. How does the concept vary from person to person depending on their age or life circumstances?
- 2 Explain what is meant by the term 'locational disadvantage'.

Applying and analysing

- 3 Working in groups, brainstorm a list of the services you have consumed in the past 2 weeks.
 - a Create a mind map of the services you have used.
 - b How well serviced is the place in which you live in terms of the services you listed? For how many of these services did you have to leave the place you live?

Evaluating and creating

- 4 Interview an aged person or a person with a disability. Ask them to:
 - outline the types of services they use regularly and whether they are available in the place in which they live
 - assess the accessibility of the services.
 Present your findings in a short report.



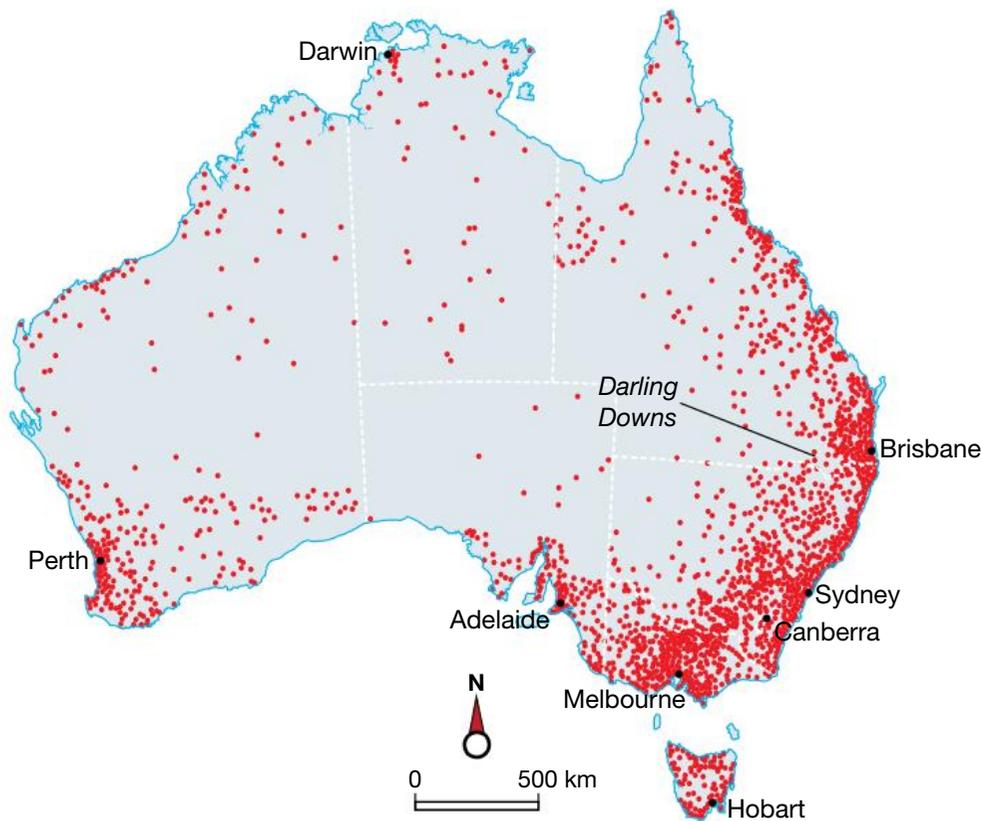
11.7 Urban, rural and remote

Where Australians live

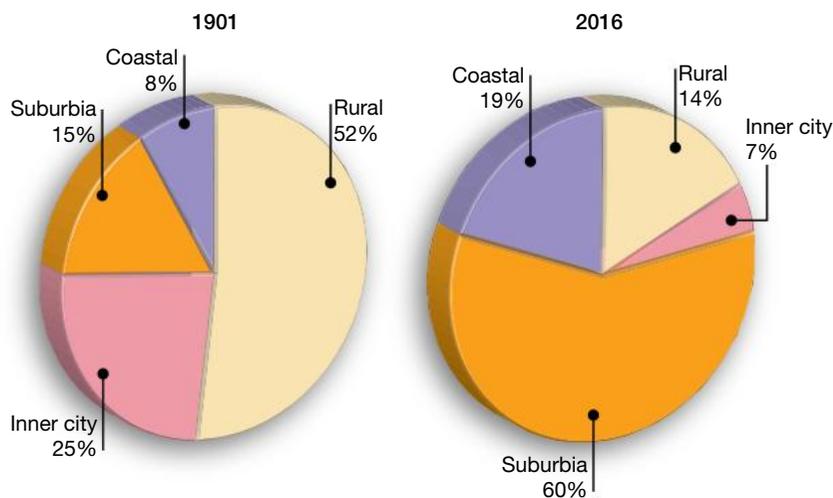
Most Australians live along the eastern, south-eastern and south-west coastlines as shown in map 11.7.1. Since 1901 where people live has changed. Now more people live in the city and its suburbs compared to rural areas as shown in Figure 11.7.2.

Urban areas

Cities have large populations and are able to provide a wide variety of services. For example, the largest hospitals are all located in big cities because that is where the need is greatest. Large cities also provide a range of entertainment and recreational activities not found in smaller centres. Urban areas also have better employment opportunities. This is one of the key advantages of living in an urban area.



11.7.1 Distribution of the Australian population; each dot represents 1000 people



11.7.2 Distribution of the Australian population, 1901 and 2016



11.7.3 People living in remote Australia live so far from health services that they rely on the Royal Flying Doctor Service for their health care

Some Australians dislike living in cities. As a result, **tree changes** (moving from an urban to a rural or semirural community) and **sea changes** (moving from an urban to a coastal community) have become popular forms of escape.

Overcrowding is one of the main disadvantages of city living. A large population means that there is higher demand for housing, and this causes prices to rise. Traffic and public transport congestion is another problem. Heavy traffic also leads to increased air pollution. There is also a perception that crime is more common in cities. These are some of the reasons why people might want to make a sea change or tree change.

Rural and remote areas

The environment is one of the key advantages of living in rural and remote areas. There are fewer people, cars and factories. As a result, rural areas tend to be cleaner. Fewer people means more space. The demand for housing is often lower, resulting in cheaper house prices and more affordable rent.

The key disadvantage of living in rural and remote areas is that access to services declines as the distance from the city increases. Australians living in very remote regions, such as far northern Western Australia, may have to travel hundreds of kilometres to the nearest shop. Health care can be so far away that doctors fly to their patients (see Figure 11.7.3).

Activities

Remembering and understanding

- 1 Outline the advantages of living in large cities and other urban areas.
- 2 List the disadvantages of city living.
- 3 Describe what attracts people to a rural lifestyle.

Applying and analysing

- 4 Think about the location in which you live. Is it urban, rural or remote? Identify the advantages and disadvantages of living where you do.
- 5 Study Figure 11.7.2. Describe how Australia's population has changed between 1901 and 2016.

11.8 Social connectedness

Defining social connectedness

Social connectedness is the extent to which people come together and interact. At an individual level, social connectedness involves the quality and number of connections a person has with other people. These people might be in a social circle of family, friends or acquaintances. The connections develop in response to a person's interests and participation in cultural or leisure-based activities. A person's social connectedness can change over time and connections can be built to different places. Social connectedness can also extend from the local to the global, often due to the influence of technology.

Role of technology

Traditionally, social connectedness developed mostly between known family, friends and community members. It occurred through regular face-to-face interaction at events in local or familiar places. Nowadays, most social connections are developed and maintained through the use of technologies. Such technology includes Skype and Facetime, email and instant messaging systems like Snapchat, and social media platforms such as Twitter, Facebook and Instagram.

The increased availability and use of technology has led to a change in the nature and locations of social connection. Research indicates that a range of age groups now conduct most of their social interaction through technology rather than meeting face to face. On average, each Australian owns three internet-enabled devices, such as laptops, smart phones, tablets and gaming consoles.



11.8.1 Students broaden their social connectedness and enhance their learning using technology



11.8.2 Sporting activities enable people to increase their social connectedness

It is now estimated that 79 per cent of Australia's population connect daily with others via social networking sites such as Facebook®, Snapchat® and Instagram®. An increased level of access to technology in metropolitan, regional and remote areas of Australia is encouraging the development of online social connectedness for a significant proportion of the population.

Changing connections

The Australian Bureau of Statistics reports that there is a growing appreciation of the importance of individuals being connected with, and valued by, people beyond their immediate family and close friends. An increased number of connections can occur through online and/or face-to-face participation in cultural, community, educational and sporting activities (see Figure 11.8.2). When social connections occur through frequent, sustained (continued) and meaningful interactions, a person's sense of belonging and shared identity with a range of people and places are enhanced. This contributes to improved wellbeing and enriching society as a whole.

Activities

Remembering and understanding

- 1 Define social connectedness.
- 2 Outline the main cause and effect of change in people's social connections.
- 3 Describe the importance of maintaining social connections.

Applying and analysing

- 4 Analyse how your social connections developed. Identify some of the places you are now connected to as a result of these interactions.
- 5 Find a photograph (it can be one of your own) that demonstrates social connectedness. Annotate this photograph with information about location, type of social connection, number of people involved and why this social connection is important to you.
- 6 Demonstrate how you use technology to develop and maintain your social connections.
- 7 Construct a mind map to show the types of social connections occurring between you and others.

11.9 Measuring liveability

Liveability surveys

There are a number of liveability rankings published each year that compare cities around the world.

Economist Intelligence Unit's Global Liveability Report

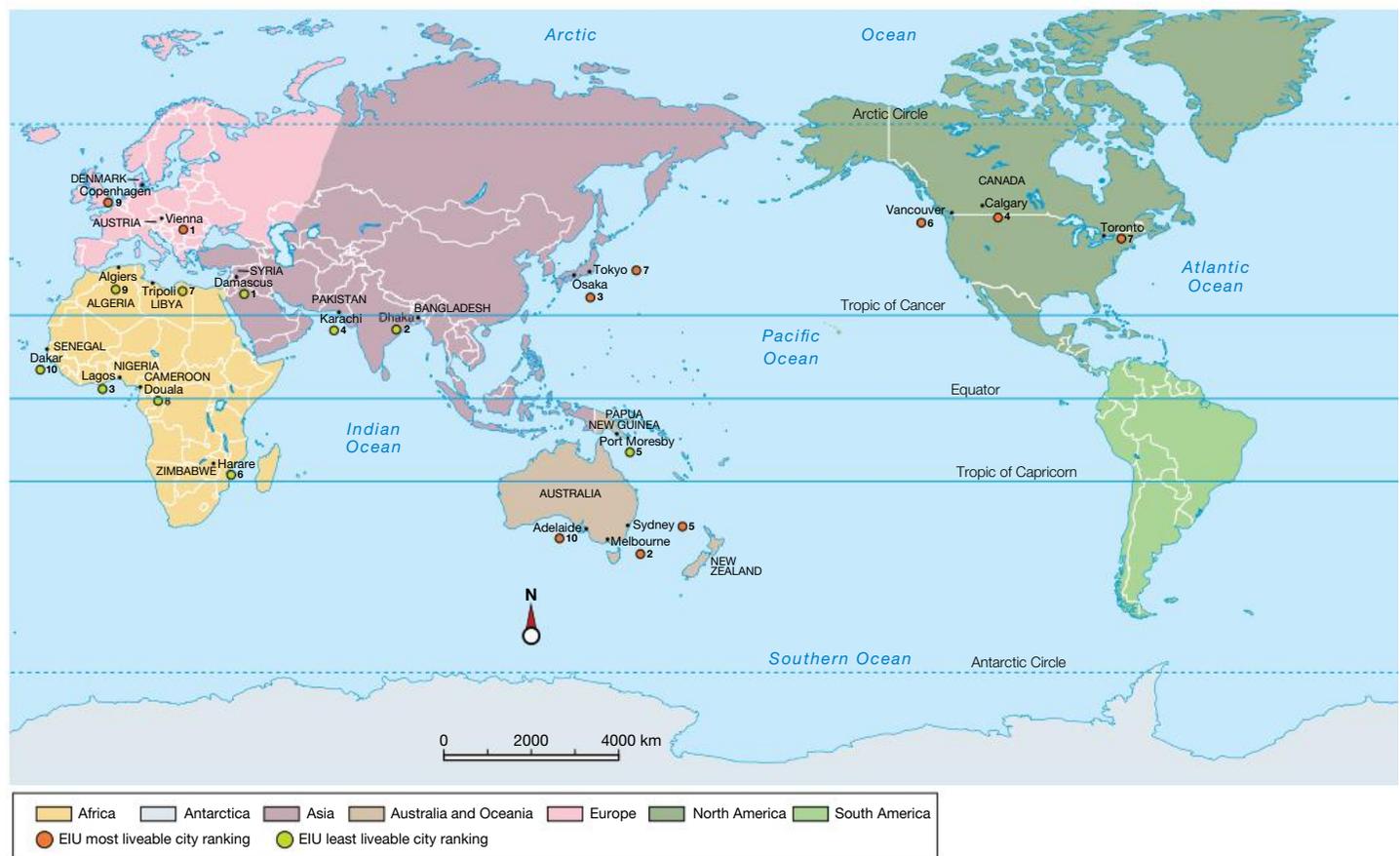
The London-based Economist Intelligence Unit® (EIU) publishes a liveability survey. Each city is given a rating on thirty criteria across five broad categories. These are:

- *stability*: the city and country are free from war and conflict, crime rates are low and the government is stable
- *health care*: access to hospitals and doctors is good
- *culture and environment*: air pollution and water pollution are low, and there are green spaces, restaurants and entertainment facilities

- *education*: there is good access to high-quality schools and universities, and high levels of literacy for both males and females
- *infrastructure*: roads, public transport, telecommunications and power sources are accessible and reliable, and there is access to good sanitation (toilets) and a safe water supply.

The ratings are then totalled to give each city a score.

The EIU's 2018 liveability report ranked cities in Australia, Austria, Canada, Japan and Denmark as the top ten most liveable cities in the world. Of the 140 cities surveyed, Vienna, Austria was listed as the most liveable urban centre. It was closely followed by Melbourne. Cities in the North Africa, sub-Saharan Africa, Pakistan, Papua New Guinea, Bangladesh and Syria were ranked among the least liveable cities (see Figure 11.9.1).



11.9.1 The world's ten most liveable and least liveable cities, as ranked by the EIU in 2018

$$\text{Happy Planet Index} = \frac{(\text{Life expectancy} \times \text{Experienced wellbeing}) \times \text{Inequality of outcomes}}{\text{Ecological footprint}}$$

11.9.2 The Happy Planet Index is calculated using the formula above

11.9.3 Happy Planet Index rankings, 2016

HPI Rank	Country	Life Expectancy (years)	Wellbeing (0–10)	Inequality of outcomes (%)	Ecological Footprint	Happy Planet Index
1	Costa Rica	79.1	7.3	15	2.8	44.7
2	Mexico	76.4	7.3	19	2.9	40.7
3	Colombia	73.7	6.4	24	1.9	40.7
4	Vanuatu	71.3	6.5	22	1.9	40.6
5	Vietnam	75.5	5.5	19	1.7	40.3
6	Panama	77.2	6.9	19	2.8	39.5
7	Nicaragua	74.3	5.4	25	1.4	38.7
8	Bangladesh	70.8	4.7	27	0.7	38.4
9	Thailand	74.1	6.3	15	2.7	37.3
10	Ecuador	75.4	6.0	22	2.2	37.0

Happy Planet Index

The Happy Planet Index (HPI) is another measure of liveability (see Figure 11.9.2). It considers sustainable wellbeing, or wellbeing that can be supported and maintained. This index compares how efficiently different countries use natural resources to have long lives and high levels of wellbeing.

‘Life expectancy’ is the average number of years a baby born in a country is expected to live if conditions there stay the same. ‘Experienced wellbeing’ measures how people’s lives in a country are going overall. ‘Inequality of outcomes’ refers to how unequal the distribution (spread) of life expectancy and experienced wellbeing are in a country. ‘Ecological footprint’ is the average amount of land that is needed, per person, to continue a country’s levels of consumption, or use.

The results of the HPI are colour-coded like traffic lights (see Table 11.9.3). Green means good, yellow is middling and red equals poor. This colour coding gives a visual representation of how each country scores against different criteria, such as wellbeing and ecological footprint.

Mercer’s Quality of Living Ranking

Another annual survey is the quality of living survey conducted by Mercer®. This New York-based organisation is the world’s largest human resource consulting firm. European cities dominate Mercer’s ranking, with cities in Australia, New Zealand and Canada also ranked highly. Vienna, the capital of Austria, was Mercer’s top-ranked city in 2017. In the same year, Auckland, New Zealand (3rd), and Vancouver, Canada (5th), were the only non-European cities in the top ten. The highest-ranking Asian city was Singapore (25th).

Monocle’s Quality of Life Survey

The London-based lifestyle magazine *Monocle* has published an annual list of the most liveable cities since 2007. Tokyo, Japan, was ranked the most liveable city in 2017, for the third time in a row. Vienna, Austria, was ranked second. Melbourne was ranked fifth and Sydney seventh. The criteria used in this survey include personal safety and crime, climate, environmental issues, urban design and architecture, health care, public transport, and international connectivity (links to other countries).

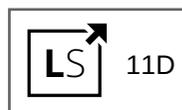
Activities

Remembering and understanding

- 1 Describe the criteria used to determine the liveability of a city, town, suburb or neighbourhood.

Applying and analysing

- 2 Why do you think Australian cities rank highly on all the liveability rankings?
- 3 Rank the seven categories used by the lifestyle magazine *Monocle* from 1 (the most important) to 7 (the least important). Justify your response.
- 4 Study Figure 11.9.1 and do these tasks.
 - a List the continents where the top ten most liveable cities are located.
 - b List the continents where the Global Liveability Report locates the ten least liveable cities.
- 5 Study Table 11.9.3 and answer the following questions.
 - a According to the index, people are the happiest in which country?
 - b List three countries that have a high wellbeing index (with a ranking between 1 and 10). Give two reasons to explain why you think each of these countries might have achieved a high ranking in the index.
 - c How do you think liveability should be measured?





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Enhancing liveability

12

We now know that some places are perceived (seen) as being more liveable than others. We also know that liveability can be used as a measure of the quality of life, wellbeing and happiness experienced by people living in a neighbourhood or town. Enhancing (improving) the liveability of places is the role of governments, planners, groups and individuals. Plans and initiatives to enhance liveability may be local and small-scale; for example, a Neighbourhood Watch program or

the establishment of a community garden. They may also be large-scale; for example, public transport infrastructure, urban renewal building projects, or community services such as education, health care and recreational facilities.

In this chapter we focus on liveability and how it can be improved, particularly the ways that the quality of life can be enhanced for people who live in our large cities.

OVERVIEW QUESTIONS

- 12A** How can the liveability of places be enhanced, specifically inner-city neighbourhoods, shopping centres, recreational spaces and schools?
- 12B** What are the criteria for enhancing the liveability of a neighbourhood?
- 12C** How does increasing housing density impact on the liveability of places?
- 12D** What methods of improving liveability have been used in Australia and other parts of the world, and how might they be applied in your neighbourhood?



Before you begin

12.0.1 Melbourne's well-known tram network improves liveability by reducing traffic congestion

GLOSSARY

accessible easily entered into, especially in the context of giving elderly people and those with disabilities easy access to places and services

housing density the number of dwellings (houses, apartments, town houses) in a specific area

infrastructure the physical structures that allow a society to function; includes buildings, roads, water pipelines, sewers, electricity, internet, railways and airports

master-planned housing estate a settlement that is carefully planned and is usually constructed in a previously undeveloped area

suburbanisation the process by which people and businesses move out from central areas of cities and into the suburbs

urban consolidation increasing population densities in existing built-up areas, usually by replacing low-density housing with medium-density housing

urban sprawl the outward spread of a city and its suburbs

12.1 Methods of enhancing liveability

How to improve liveability

There are many ways in which the liveability of a city, suburb or town can be improved. Enhancing liveability benefits people who live in, work in or visit an area. It increases property values and business activity, and it can improve public health and safety.

Transport options

Liveability is improved when planners and governments develop safe, reliable and affordable transport choices that decrease people's dependence on cars. Other benefits include reduced traffic congestion, improved air quality, reduced greenhouse gas emissions and improvements in public health.

Affordable housing

Another way to enhance liveability is to expand housing choices for people of all ages, incomes, and racial and ethnic backgrounds. Building medium- and high-density housing (such as apartment blocks) close to major transport and activity centres increases mobility. It also lowers the combined cost of housing and transportation.

Public and social places

Liveability is greatly influenced by the type and condition of public spaces. These are the places where people naturally interact with each other and their community. Public spaces include streets, parks and transportation terminals.

They also include public facilities such as aquatic centres, libraries, indoor and outdoor sporting facilities, town squares, playgrounds and skate parks. These are affected by public policy and planning decisions.

Open space

Open space helps people to interact with the natural environment. Open spaces need to include passive and active places. Passive places are those where people participate in recreational activities such as walking and picnicking. Active places are where people can participate in sport and children can play.

Biophysical environment

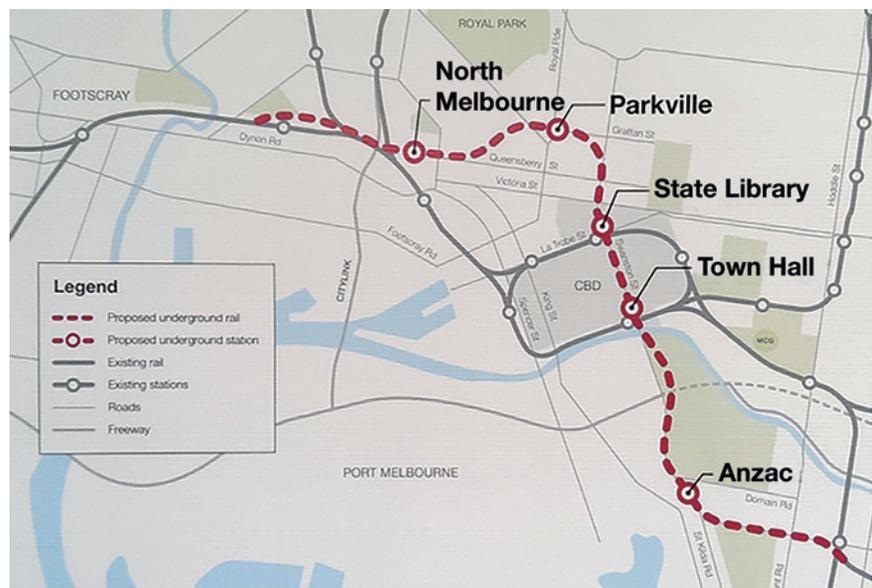
Environmental impact can be reduced through energy efficiency and recycling programs. Degraded land can be rehabilitated by planting native vegetation, and rural landscapes can be protected by slowing the rate of **urban sprawl** (the outward spread of a city). Vacant land near transport, activity and employment centres provides opportunities to promote urban consolidation (increasing population densities in existing built-up areas).

Support for communities

Existing communities can be improved by investing in public transport-focused and mixed-use developments. One example is combining residential and commercial places. The community can be involved in important planning decisions.

Spotlight

A large new Melbourne metro tunnel is being built. This new public transport project will provide three of Melbourne's busiest train lines with 9 kilometres of new tunnel to use. The **infrastructure**, physical structures that enable a society to function, will include five new railway stations, and have dual lines to and from Melbourne. The tunnels will greatly increase the number of people the Melbourne train network can carry; in fact, the capacity will be an extra 39 000 people. This tunnel will reduce commuting times and therefore enhance people's quality of life.



12.1.1 An artist's representation of the Melbourne Metro Tunnel

Facilities and activities

People's lives can be enriched by participating in cultural and community activities such as theatre groups, choirs, bands and orchestras.

Celebrating diversity

Celebrating the ethnic and cultural diversity of a community can enrich people's lives, and promote social harmony and personal wellbeing. Examples of this include community festivals, celebrations and events.

Accessibility

All public and commercial spaces should be **accessible** (easily entered) to people with limited mobility, especially the elderly and those with disabilities.

Economic wellbeing

Promoting selected economic activities can create employment close to where people live. Providing the right educational opportunities enables people to develop the skills needed to gain secure, rewarding work.

Healthy lifestyles

Good health and personal wellbeing can be promoted by providing facilities and services such as sporting venues, fitness trails, medical services, clinics and hospitals.

Coordinating government activities

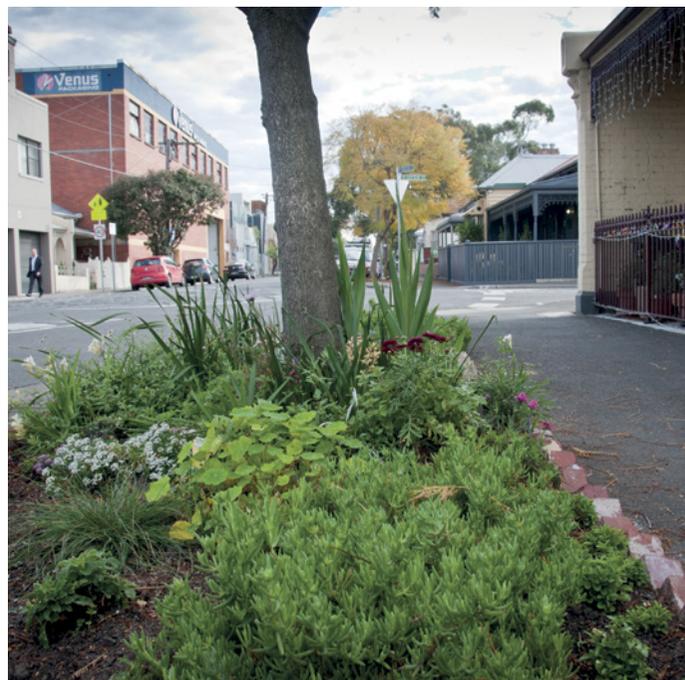
Governments at different levels can build on the unique characteristics that define places by investing in healthy, safe and walkable neighbourhoods. Planning for the future can include things like increasing access to smart energy choices such as locally generated renewable energy.

Enhanced streetscapes

The liveability of places can be improved by enhancing streetscapes, which are the visual elements of a place's streets. These include the road, adjoining buildings, street furniture, fences, trees, nature strips and open spaces. Pedestrian-friendly streets create opportunities for people to meet and interact, helping to create community networks.

Calming traffic

Traffic calming involves the construction of roadway design features that lower vehicle speeds. This can reduce traffic volumes, noise and air pollution, and improve safety, especially for residents.



12.1.2 Enhancing streetscapes with attractive plants can improve liveability of a neighbourhood

Activities

Remembering and understanding

- 1 List the benefits of affordable transport.
- 2 State the benefits of open spaces.

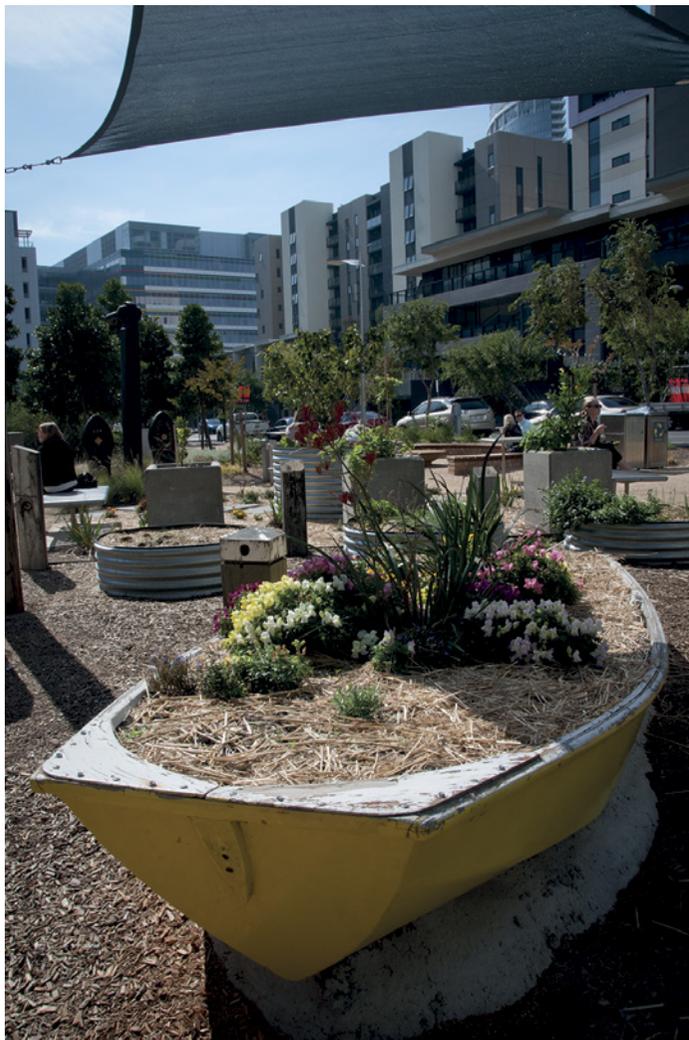
Applying and analysing

- 3 Identify four strategies for improving liveability that you would implement in your suburb or town.
 - a Explain why you chose those particular strategies.
 - b Describe how these strategies would improve the liveability of your town or suburb.
- 4 Individually rank the strategies for enhancing the liveability of places. Explain the reasons for your ranking.
- 5 Examine Figure 12.1.1. Assess whether the Australian Metro development meets any of the strategies for improving liveability discussed in this unit. Explain your answer.

12.2 Taking action

Improving liveability

The liveability of a place directly impacts on the people who live and work there, or choose to visit. While many aspects of liveability are controlled by the planning decisions of governments, individuals and groups can also act to improve the liveability of their neighbourhood.



12.2.1 A community garden in Docklands, Melbourne

Did you know?

Cities are making people sick and good urban design can help improve people's health. For example, people will walk more if streets are safe and shops are close to them.

Enhancing public spaces

The liveability of a neighbourhood is largely determined by the condition of shared public spaces, which are the places where people interact with each other. These include streets, footpaths, parks, transport terminals and other public facilities. Even though state and local governments carry out the planning, construction and maintenance of these spaces, there is a growing trend for community-based groups to set up projects to improve public spaces.

'Farming (or gardening) the footpath' has been happening for some time in cities around the world. In programs of this kind, local residents plant fruit trees, vegetables and herbs, as well as flowers and native plants, on nature strips, next to the footpath and in community gardens. Not only does this beautify neighbourhoods, but it also provides food for the residents. Residents are drawn closer together through their involvement in such projects, which have been especially popular with young people. There has been an increase in interest in Australian cities, with community gardens being established in many suburbs.

In Totnes, in the United Kingdom, volunteers have been planting young chestnut and walnut trees along streets, and in parks and other green spaces since 2007. In time, these trees will be harvested and will provide an important food source for local communities. A similar project has been undertaken in Glandore, a suburb of Adelaide, where citrus trees have been planted along the nature strips, underneath taller eucalypts.

Protecting liveability

The responsibility for approving developments within neighbourhoods rests with government. However, local residents are able to influence decision-making processes by either supporting or opposing proposals. When issues relating to development arise, activists have a range of strategies available to them to encourage public opinion and influence decision makers.

Assessing liveability

An individual's perception of the quality of their community is a combination of many factors that influence their day-to-day living. From their personal experiences, they build a perception of their neighbourhood's worth. One way to assess liveability is to survey and score a neighbourhood or town (see Table 12.2.2).

12.2.2 Form for conducting a neighbourhood liveability survey

Criteria		Score				
		Poor				Good
Law and order	• amount of petty crime	1	2	3	4	5
	• amount of violent crime	1	2	3	4	5
	• graffiti and vandalism	1	2	3	4	5
	• personal safety	1	2	3	4	5
Economics	• employment opportunities	1	2	3	4	5
	• affordable housing	1	2	3	4	5
	• access to consumer goods and services	1	2	3	4	5
Environment	• humidity and temperature	1	2	3	4	5
	• urban design	1	2	3	4	5
	• architecture	1	2	3	4	5
	• parks and gardens	1	2	3	4	5
	• streetscapes	1	2	3	4	5
	• maintenance of public spaces	1	2	3	4	5
Culture	• community recreational facilities	1	2	3	4	5
	• places of worship	1	2	3	4	5
	• restaurants	1	2	3	4	5
	• public libraries	1	2	3	4	5
	• entertainment centres	1	2	3	4	5
Education	• availability of private schools	1	2	3	4	5
	• availability of public schools	1	2	3	4	5
	• quality of educational institutions	1	2	3	4	5
Health care	• quality of private health care	1	2	3	4	5
	• quality of public health care	1	2	3	4	5
	• aged care facilities	1	2	3	4	5
Infrastructure	• quality of road network	1	2	3	4	5
	• quality of public transport	1	2	3	4	5
	• quality of telecommunications infrastructure	1	2	3	4	5
	• availability of good-quality housing	1	2	3	4	5
	• provision of utilities: water, electricity, sewerage	1	2	3	4	5
	• cycle ways	1	2	3	4	5

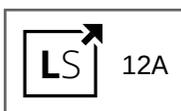
Activities

Remembering and understanding

- 1 List the types of public spaces where people interact with each other.
- 2 State the role of government in managing public spaces.
- 3 Describe the concept of farming the footpath.

Applying and analysing

- 4 Rank your local neighbourhood on each of the criteria listed in Table 12.2.2, using the scale from 1 to 5. Tally the total score out of 150.
- 5 Repeat Activity 4 for a nearby neighbourhood. Develop a class ranking of neighbourhoods.



12.3 Better cities

Central business districts

At the heart of the modern city is the central business district (CBD). CBDs are important places for work and many are now also becoming popular places to live. A key question is how the liveability of such places can be enhanced.

The need for open space

A city's CBD is where the main commercial and business-related functions, and major public institutions, such as town halls, libraries, museums and theatres, are located. In modern cities, large buildings dominate the urban landscape, and there is little open space.

Spotlight

Pixel Building, Melbourne: A sustainable building

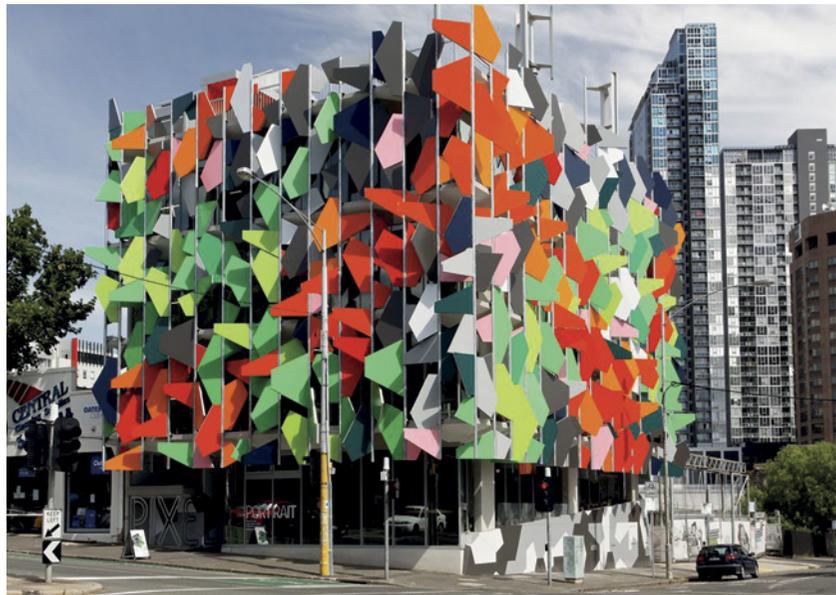
The Pixel Building in Melbourne might look a little unusual, but it has been labelled Australia's greenest building and one of the most environmentally sustainable structures in the world. The innovative building achieved the highest possible green rating and has received many architectural and environmental awards.

What makes the four-storey building so green is a combination of construction materials and design features. The building was built using a new type of concrete called 'Pixelcrete'. Compared with standard concrete, the manufacture of Pixelcrete produces only about half the amount of carbon dioxide, a major cause of global warming. The roof is covered with native grasses, which help to insulate the building against summer heat and winter cold, thereby reducing energy use. Solar cells on the roof generate power.

Another energy-saving device is found in the windows, which have a special feature called 'night purging'. Concrete and glass absorb heat during the day and can retain heat overnight in an enclosed building. In the Pixel Building, computer technology is used to open the windows on cool nights, allowing air to flow through the building and cool the structure. Cooling the building at night in this way reduces the need for air conditioning during the day.

The building contains reed beds, through which grey water flows from showers, sinks and hand basins. These beds filter the water before it enters the stormwater system; they also act as a natural form of air conditioning. Sunshades on the windows help to reduce the amount of heat in summer and can be opened to allow natural light into the building, further reducing energy needs.

The vacuum toilets that minimise water use, and onsite water collection and storage make the building water neutral. This means that the building captures and stores the same amount of water as it uses.



12.3.1 The Pixel Building in Melbourne is one of the greenest buildings in the world

This lack of open public spaces, such as plazas and parklands, is one of the criticisms of many CBDs around the world. Such places are important for environmental reasons, and as places for relaxation and recreation. In recent years, there has been a trend towards redesigning inner cities to make room for public spaces and to create green zones within cities.

Greener buildings

While CBDs are being redesigned, the buildings in them are also being transformed to make them better places to live and work in. New technologies mean that buildings can be more environmentally friendly.

‘Green’ buildings are structures that are efficient in their use of energy and other resources. The greenest buildings are those that minimise energy and water use, protect the health of their occupants, improve the productivity of workers, and reduce waste and pollution.

Among the greenest buildings are those with vertical gardens and roof gardens. Vertical gardens consist of special supporting frames, secured to the side of the building, that are planted with shrubs and other smaller plants. Automated watering systems sustain the plant life.

In addition to contributing to the beauty of CBDs, vertical gardens have important environmental benefits. The plants act as insulators, helping to reduce the amount of energy needed for cooling and heating.

Other strategies

Additional strategies to enhance the liveability of CBDs are:

- ▶ improving public spaces and streetscapes with quality paving and street furniture, plantings and outdoor dining options
- ▶ reducing traffic congestion by discouraging vehicle access, imposing parking restrictions, providing low-impact public transport options (such as trams), developing pedestrian-only areas and constructing dedicated cycleways
- ▶ encouraging a range of after-dark activities in places such as cafes, restaurants, wine bars, theatres and other entertainment venues
- ▶ enhancing public safety using surveillance cameras, street lighting and additional police patrols
- ▶ encouraging a mix of retailers, including convenience stores and supermarkets.



12.3.2 A shared path used by pedestrians and bicycle riders by the Maribyrnong River, Melbourne

Activities

Remembering and understanding

- 1 Outline the role and features of a typical CBD.
- 2 State the advantages of green buildings.
- 3 Explain what a vertical garden is. What are the advantages of vertical gardens?

Applying and analysing

- 4 Write a report outlining the various ways the liveability of CBDs can be enhanced.

Evaluating and creating

- 5 Create a plan for an open public space in a CBD. Think carefully about the facilities and features you would include.
- 6 Visit the Pixel Building website. Investigate the building's environmentally friendly features (including its use of Pixelcrete).
- 7 Investigate another example of a green building. What are its green features?

12.4 Urban housing densities

Density

Australian urban areas are often classified according to their **housing density** (the number of dwellings per unit of land). Housing density can be low, medium or high. Compared with other cities in the world, Australian cities have quite low housing densities, but this is beginning to change.

Low-density housing

Low-density housing refers to single- or two-storey houses that are detached (not attached to another house). Such houses have a front yard and a backyard. The low housing densities in Australian cities reflect Australians' preference for suburban living.

From the 1950s, private car ownership made it possible for many people to live some distance away from where they worked. As a result, many people moved from the crowded, older suburbs of the inner city to the new, low-density suburbs. These new suburbs were not well provided with public transport because people could drive their cars. Australia's suburbs are now dominated by low-density housing.

Over time, the average size of a house block has decreased and houses have become larger. The number of houses in low-density suburban areas ranges from eight to fifteen per hectare.

Medium-density housing

Medium-density housing developments typically feature between twenty-five and forty-five dwellings per hectare, but can hold up to eighty dwellings. Typical medium-density dwellings are semi-attached and attached (multi-unit) housing units. Examples include town houses, villas and three-storey walk-up apartments (see Figure 12.4.1). Many master-planned housing estates (carefully planned settlements) now feature a mix of medium-density housing types.

Did you know?

- **Master-planned housing estates** are large-scale housing developments built by a single developer. The physical and social infrastructure of the estate
- is planned by the developer. Master-planned estates include housing, shops, schools and community facilities. They are usually located on a city's urban-rural fringe (where a city's edge meets the country), but they are increasingly found on sizeable urban renewal sites.

Building new suburbs is expensive because of the infrastructure that is needed (roads, sewers, electricity poles, gas lines, schools, shops, parks and community services). In response to this and increasing populations, governments have encouraged the construction of medium-density housing, especially near major transport interchanges. Governments sometimes rezone land so that housing can be built on land that used to have a different function. This policy is known as urban consolidation. Its aim is to increase population densities in existing urban areas. In this way, governments hope to slow the rate of urban sprawl.

Urban consolidation is not always popular. It involves demolishing existing low-density housing in established residential suburbs, and replacing it with medium-density dwellings. Many people complain that this alters the look and feel of neighbourhoods.

Medium-density housing has existed for many years in Australian cities. Before the introduction of cars, most suburbs were dominated by housing of a similar density to modern medium-density housing. Terrace houses found in the inner suburbs of cities such as Melbourne and Sydney are an example of this.



12.4.1 Medium-density housing: three-storey apartment blocks

High-density housing

There is no clear definition of high-density housing. It is generally considered to refer to more than sixty or eighty dwellings per hectare and a height of five or more storeys. Australian cities now feature many such buildings. Apartment living is traditionally popular with ‘empty-nesters’ (older people whose children have left home) and single people or couples without children. However, it is now becoming increasingly popular for families who want to live closer to the city.

Spotlight

Australia’s suburban McMansions

The term ‘McMansion’ was first used in the United States of America in response to the increasing size of new homes there. Over time, the typical Australian home has grown as well. Houses have moved from having three bedrooms, one bathroom and separate living areas, to an open-plan, four-bedroom home with multiple bathrooms, including an ensuite. Popular extras, such as media rooms, walk-in wardrobes and kitchen pantries, add to the overall size of modern homes.

The average floor area of a newly built Australian home is 227.6 square metres. This is an increase of 40 per cent on the average in 1985 of 162.2 square metres. The average new home built in Australia is 10 per cent bigger than one built in the US and 9 per cent bigger than in New Zealand. On average, our homes are the biggest in the world.



12.4.3 Low-density suburban housing: Australian new homes are, on average, the world’s largest



12.4.2 High-density housing: apartment blocks in Docklands, Melbourne

Activities

Remembering and understanding

- 1 Define housing density.
- 2 Explain how increased car ownership led to the growth of low-density suburbs.
- 3 Outline how governments promote urban consolidation.
- 4 Explain what a master-planned estate is.

Applying and analysing

- 5 Distinguish between low-, medium- and high-density housing.
- 6 Copy and complete the following table, listing the advantages and disadvantages of each type of housing.

	Advantages	Disadvantages
Low-density		
Medium-density		
High-density		

12.5 Urban consolidation

Increasing population density

Since the 1990s, governments in Australia have attempted to encourage more people to live in established suburbs. Urban consolidation is designed to increase population densities in existing urban areas. This limits the loss of surrounding rural areas to urban sprawl.

Growth of urban sprawl

The **suburbanisation** (the process of people and businesses moving to the suburbs) of Australian cities really began with the introduction of trams and the development of suburban rail networks. New suburbs developed along railway lines. The railways were the dominant influence on city development from the 1860s until about 1920.

The arrival of the car meant that people had more choices of where to live and were no longer restricted to living near railway lines. This affected cities in two ways. First, spaces between major transport corridors were filled. People did not need to live close to public transport, so areas that were once empty of houses began to be developed. Second, urban areas grew outwards, a process often referred to as 'urban sprawl' (see Figure 12.5.1). Urban sprawl is very costly. New suburbs need expensive infrastructure, including utilities such as electricity, water and sewerage; schools and hospitals; commercial centres; roads and public transport.



12.5.1 Urban sprawl increases the demand for expensive new infrastructure

Urban consolidation

To slow the rate of urban sprawl, governments have introduced policies and programs to promote urban consolidation. **Urban consolidation** involves the construction of medium-density to high-density housing in areas that are already built up. This usually occurs in the inner and middle ring of suburbs (see Figure 12.5.2). It also increases the range of housing types available.

The signs of urban consolidation can be seen throughout Australia's cities. In more popular locations, where land is often much more expensive, multistorey apartment buildings are constructed. In inner-city locations, old industrial sites and land occupied by old port facilities are being redeveloped into high-density residential and commercial neighbourhoods.



12.5.2 An artist's impression of future medium-density urban consolidation in Maribyrnong, in Melbourne's inner west. How Maribyrnong looks today is shown in the photograph on the left.

Land use zoning

The main way in which governments encourage urban consolidation is through their control of the planning process. Governments identify neighbourhoods that are close to major transport nodes, and change the land use zoning rules in these areas to allow medium-density and high-density housing. Developers then buy up low-density housing or industrial/commercial sites and construct higher density housing units.

Did you know?

- In Melbourne, urban density in inner suburbs has increased from 3000 to 4000 per km² since the 1980s.

The urban consolidation debate

Policies promoting urban consolidation are often debated, especially by the residents of neighbourhoods that are affected. Those in favour of such policies see urban consolidation as a way of slowing urban sprawl, and of making greater use of existing infrastructure. Those opposed see it as a threat to the character and liveability of existing neighbourhoods (see Table 12.5.3).

12.5.3 The case for and against urban consolidation

The case for	The case against
<ul style="list-style-type: none"> Urban consolidation reduces our reliance on cars. This improves air quality and reduces greenhouse gas emissions. It also reduces the congestion, noise and accidents associated with cars in urban areas. Slowing urban sprawl protects agricultural land on the outskirts of cities. Low-density sprawl is very expensive, so urban consolidation reduces infrastructure costs. The social isolation and inequality experienced by those living in sprawling suburbia is reduced. In the outer suburbs there are limited local services and few transport alternatives to the car. The elderly, women and young teenagers are particularly disadvantaged. The priority given to private transport and private low-density housing in sprawling suburbia often results in neglect of public transport and public spaces, particularly in the inner city. 	<ul style="list-style-type: none"> The impacts of urban sprawl have already been reduced as building blocks have become smaller. The claim that existing inner-city infrastructure is not being used to capacity is exaggerated. Increasing population density in already crowded areas reduces the liveability of neighbourhoods. Traffic congestion increases, and parking becomes more difficult. Existing facilities such as sporting fields, schools, hospitals and public transport interchanges struggle to cope with the increased population density. 'We have lost our privacy. Our backyard is now overlooked by a five-storey apartment building. The building blocks out the sun in winter.' 'The heritage streetscapes of our neighbourhood are being destroyed. Beautiful old homes have been bulldozed to make way for apartment buildings.'

Activities

Remembering and understanding

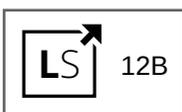
- Outline how changes in transport affected Australian cities.
- Define urban sprawl and urban consolidation.
- Outline the main arguments against allowing our cities to continue to spread outwards.
- Why do governments promote urban consolidation?

Applying and analysing

- Study Figures 12.5.1 and 12.5.2. Describe the contrast you see between the two images.

Evaluating and creating

- Construct a short response to the following statement: The advantages of urban consolidation outweigh the disadvantages.



12.6 Transport and cities

Car ownership and congestion

Traffic congestion (crowding) affects the liveability of a city. In many cities around the world, the number of cars is increasing and traffic congestion is getting worse.

Car ownership is a good indicator of transport use in cities. In Australia, only about 13 per cent of city-based households do not have a car, while nearly 50 per cent have two or more cars. In London, 43 per cent of households don't have a car. Rather than drive to work, most Londoners either walk, cycle or take public transport. In Shanghai, China, only 18 per cent of households have cars.

Population densities

Table 12.6.1 shows that the world's most densely settled countries are found in Asia, Africa and South America. The most densely populated region is Africa. European cities also have high population densities. Australian cities (and many of those in North America) have low population densities. This is because much of the growth of these cities occurred in the years after World War II, when private car ownership was becoming more common.

Density and sustainability

It is generally thought that high-density urban areas are more sustainable than low-density, car-dependent cities. As a general rule, the lower the urban density, the greater the amount of energy consumed (see Figure 12.6.2). The main reason for this is that high-density cities have a greater reliance on public transport. Low-density cities often do not have the public transport infrastructure needed to move large numbers of people. Residents must rely on their cars.

Urban population density is only one factor influencing the type of transport that people use. People living in cities with a concentration of economic activity in the central business district (CBD) are more likely to use public transport, ride bicycles or walk to work. In cities where economic activities are spread across the urban area, people are more likely to drive to work.

In Australia, the growth in the CBD-based financial services sector has led to a small but significant increase in public transport use. As well, more people are walking or cycling to work. This trend is reinforced by the growing preference for inner-city living.

12.6.1 Population densities of selected cities, 2017

Geography	Population estimate	Average population density (per km ²)
Africa	247 190 000	6500
Angola	9 100 000	6300
Congo (Dem. Rep.)	22 190 000	14 700
Morocco	11 770 000	11 600
Nigeria	49 620 000	5900
Asia	1 266 840 000	6300
Bangladesh	23 025 000	31 200
China	464 830 000	5100
India	232 630 000	10 600
Indonesia	67 275 000	8700
Japan	84 785 000	4000
Europe	217 665 000	3100
France	20 695 000	2000
Germany	25 405 000	2700
Italy	19 370 000	3400
Spain	18 320 000	4500
UK	25 270 000	4800
North America	274 825 000	1600
Canada	17 175 000	2500
Mexico	55 370 000	5100
US	179 355 000	1200
Australia	1 370 000	1400
Sydney	4 100 000	1900
Melbourne	4 010 000	1500
Brisbane	2 065 000	1000
Perth	1 815 000	1000
Adelaide	1 160 000	1300
Canberra	430 000	800
South America	176 125 000	5400
Argentina	21 865 000	4400
Brazil	85 315 000	4700
Colombia	22 560 000	14 300

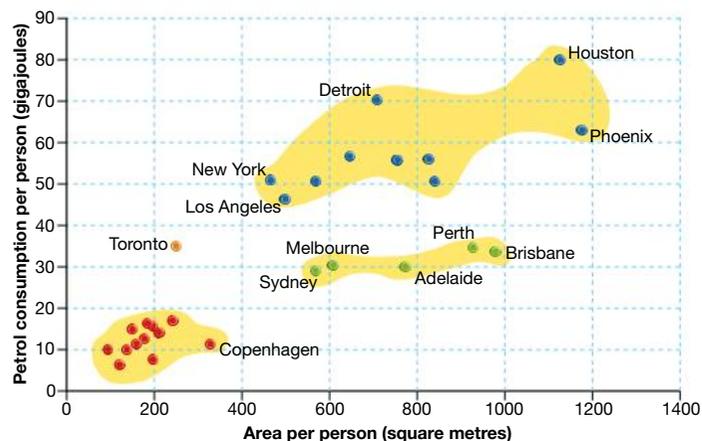
Source: Data taken from *Demographia World Urban Areas: 14th Annual Edition 2018*, Table 1, p. 21

Smart growth strategies

The smart growth initiative in North America is an approach to designing neighbourhoods. The program focuses on building:

- facilities that encourage people to walk
- bicycle lanes
- mixed-use buildings that include shops and housing.

In Europe, the terms ‘compact city’ and ‘urban intensification’ are used to describe similar planning models.



Source: P. Newman and J. Kenworthy, *Journal of the American Planning Association*

12.6.2 Relationship between urban population density and petrol consumption

Spotlight

Melbourne bicycle statistics

In Melbourne, more bike riders are male (82 per cent) than female (18 per cent). In bicycle-friendly cities like Amsterdam, nearly 35 per cent of cyclists are women. Over 22 000 people living in the City of Melbourne use their bikes at least once a week. The majority of people who ride their bikes into the city for work live within 5–10 kilometres of the city (38 per cent), and are 36–45 years old (37 per cent). To promote the riding of bikes, the City of Melbourne is building a bike network of dedicated bike paths separated from cars and pedestrians.



12.6.3 Bike paths separated from traffic and pedestrians are safer for cyclists and encourage more people to ride their bikes

Activities

Remembering and understanding

- 1 State where the world’s most densely settled countries are located.
- 2 Explain why European cities have population densities greater than those found in North America and Australia.
- 3 State why high-density cities are generally considered more sustainable than low-density cities.
- 4 Explain how the distribution of economic activity affects the sustainability of cities.
- 5 Outline the relationship between car ownership and urban population density.
- 6 Outline the aims of smart growth strategies.

Geographical skills

- 7 Study Figure 12.6.2. Write a paragraph comparing Australian cities with cities in Europe and the US.

Evaluating and creating

- 8 Conduct a class survey on the number of cars in each household. Include in the survey how often students use public transport. Using the data collected:
 - a calculate the average number of cars per household and the average number of times class members use public transport each week
 - b display the results in a column graph.
- 9 Consider the data collected above in relation to the view that decreased urban density can lead to increased reliance on cars. Evaluate the area in which your school is located to determine if it is a densely or sparsely populated area. Construct a conclusion outlining whether the correlation between decreased urban density and increased car reliance holds true in this instance.

12.7 Better shopping centres

Impact of shopping centres

Suburban shopping centres have a significant impact on the environment. Many visitors get to them by car and the centres themselves use great amounts of energy. But shopping centres are changing.

Chadstone (see Figure 12.7.1) is one of the oldest shopping centres in Melbourne. The centre opened in 1960 and since then has had numerous redevelopments. Chadstone is not near a major train or tram line and the only way to access the centre is via car, bus, cycling or walking.

Design of shopping centres

Shopping centres have huge carparks to encourage us to travel there by car rather than use public transport. They also consume vast amounts of energy. Think of the features of the typical large shopping mall. It has few, if any, windows, so a lot of artificial lighting is needed. It is climate-controlled by huge air conditioners to keep people comfortable so that they will stay longer and spend more money.

Architects and designers are looking at ways to reduce the environmental impact of shopping complexes. Now they are becoming more like traditional street-based shopping districts. Shops are laid out along open pedestrian malls. These areas are open, so they do not need to be lit or air conditioned, and this greatly reduces energy use.

The Rouse Hill Town Centre, in Sydney's north-west, was constructed in the mid 2000s. It won architectural acclaim

throughout the world for its innovative, energy-saving design. During its first full year of operation, the centre achieved an ecological footprint 32 per cent lower than that of a standard New South Wales regional shopping centre.

Shopping centres of the future

The Orion Springfield shopping centre in Ipswich, in south-east Queensland, has been designed to minimise its environmental impact. It is considered the most environmentally friendly shopping centre in Australia and has attained a six-star rating, the highest level possible, from the Green Building Council of Australia.

Like the Rouse Hill development, Orion Springfield has open pedestrian malls that link low-rise shopping areas. Sun-shading devices such as trees, shade sails and verandahs reduce the energy needed for climate control. Special features reduce water usage. Huge water tanks capable of holding 780 000 litres collect rainwater. This is then mixed with recycled water to flush toilets, clean bins, fill the centre's water features and water its gardens.

Designers have even planned for the centre's eventual demolition. The structure's steel frame has been designed for easy disassembly, allowing at least 95 per cent of the steel to be recycled.



12.7.1 Chadstone in Melbourne's south-eastern suburbs includes retail, entertainment and hotel facilities



12.7.2 Rouse Hill Town Centre makes use of an open-plan shopping mall, using natural light and ventilation to massively reduce energy usage

Integrated centres

Another important trend is to build integrated commercial-residential complexes. One example is the mixed-use development retail, commercial and residential complex University Hill, in suburban Bundoora, Melbourne. This massive complex is over 104 hectares. It is divided into precincts (different areas) such as a business park, a town centre and residential areas. There are over 130 retail outlets, including restaurants. Residential choices include multi-level homes and medium-density apartment buildings. The centre is a transit hub for buses and trams. In addition, there are wildlife and nature reserves.

Promoting sustainability

There are a variety of ways in which to reduce the environmental footprint of retail complexes. These include:

- design that considers the path of the sun and increases the effectiveness of sunshades and wall insulation
- double-glazing to reduce heat transfer
- high-efficiency air-conditioning systems
- energy-efficient lighting
- motion detectors for toilet and staircase lighting
- 'green roof' strategies such as solar panels and water-harvesting capabilities
- indoor gardens to reduce heat
- slow-down technologies for escalators and travelators
- recycling bins.

Traditional shopping strips

The liveability of neighbourhoods can be improved by upgrading existing local shopping strips. Many local shopping strips have adapted, and now thrive because they are more accessible and convenient than the big shopping centres. Some have become flourishing cafe and restaurant strips, and make an important contribution to the night-life of communities.

Activities

Remembering and understanding

- 1** List the environmental impacts of shopping malls.
- 2** Explain how, and why, the design of shopping centres is changing.
- 3** Explain how traditional shopping strips have adapted to the competition from big shopping malls. How does this change enhance the liveability of neighbourhoods?

Applying and analysing

- 4** Describe your local shopping centre; in your description include the:
 - size
 - features
 - types of shops
 - access (e.g. car, public transport).

Using this description, write a short response to the following statement, 'My local shopping centre improves the liveability of my neighbourhood.'

12.8 Better recreational spaces and schools

Better recreational spaces

In densely populated cities, there will always be competing demands for the limited supply of land. As the world's population becomes increasingly urbanised, there is a growing demand for recreational spaces. It is important to ensure that our recreational spaces are well designed and that they meet the varied needs of the community. It is also important that government authorities insist on recreational space being part of all future developments.

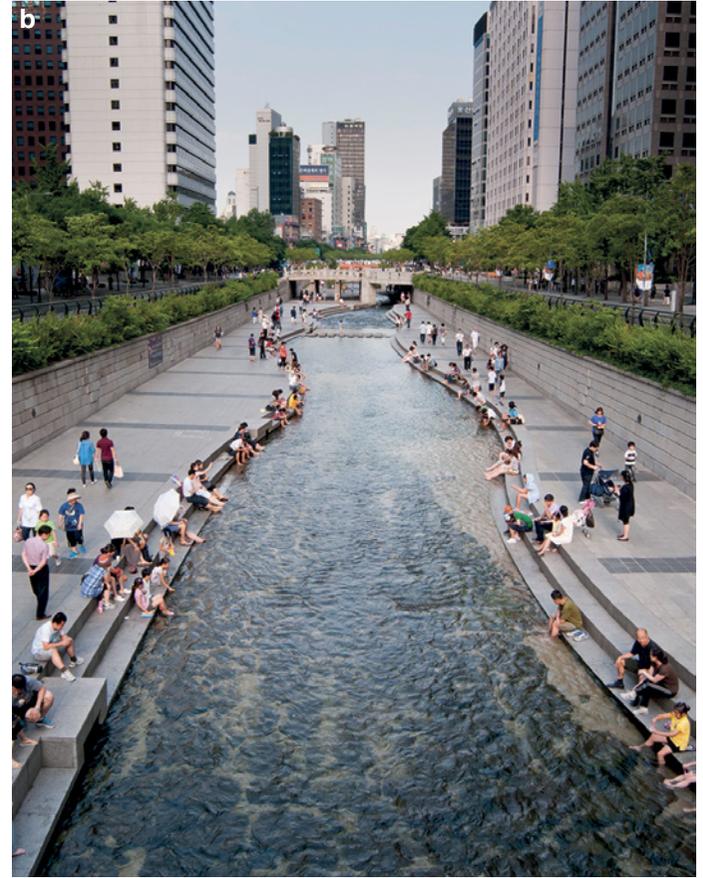
Recreational spaces provide important health benefits by giving people somewhere to exercise and somewhere to relax. Benefits of this kind are sometimes referred to as 'wellness'. Fresh air itself has numerous health benefits. A recent study from California, in the US, found that the outside air was on average 25 to 62 per cent cleaner than the air people breathe inside buildings.

In Australia, one of the best examples of a successful recreational space is the Geelong Youth Activities Area. The area has won several design awards, including the 2010 Australia Award for Urban Design. It caters for many different activities. There are outdoor areas for large events such as music festivals, and there are basketball courts and spaces for BMX and skateboarding. There is also wireless internet connection throughout.

Importantly, young people were involved in the design of the area. It is a place where popular activities among young people are not just tolerated, but promoted. For example, there are skateable surfaces where skateboarding tricks are encouraged.



12.8.1 The award-winning Geelong Youth Activities Area provides a range of activities for the city's young people



12.8.2 (a) Before 2002, a freeway ran through Seoul, South Korea, where once the Cheonggyecheon River had flowed. (b) The Cheonggyecheon River redevelopment saw the freeway demolished, the river returned and parklands built.

Reclaiming recreational space

Reclaiming Seoul's river

Seoul, the capital of South Korea, has a population of more than 10 million people. This huge city has a reputation for heavy traffic and high pollution levels, and for being a 'concrete jungle'. In 2005, however, the city hit international headlines for an amazing parkland project.

Running through the centre of Seoul is the Cheonggyecheon River, a name that means 'clear valley stream'. By the 1970s, the river was heavily polluted, and run-down buildings were found along its concrete-lined channel. It was very far from being a clear valley stream. As the average wealth of South Koreans grew, so did the number of cars they owned. The Cheonggyecheon River was filled in and converted into a road. Later, a six-lane elevated freeway was constructed.

In 2002, Lee Myung-bak, who was mayor of Seoul at that time, announced an extraordinary plan. He wanted to tear down the freeway and build a 12-kilometre-long park along the course of the old river. At the time, the freeway carried more than 160 000 cars a day and was considered crucial to Seoul's economy.

Within 2 years, the freeway was gone and so were the cars. The loss of the freeway forced people to rethink their travel habits. Public transport use increased. The Cheonggyecheon River was restored and began to flow again, and the people of Seoul were given a beautiful new park to enjoy. One amazing outcome of the project is that the average temperature around the park has fallen by up to 3 degrees Celsius. This is because the hard concrete surfaces that once absorbed heat have been replaced by grasses and water. The Seoul experience was so successful that similar projects are being planned in Shanghai, China.



12.8.3 Birrarung Marr in Melbourne's CBD has transformed the former rail yards and roadway into a recreational space

Reclaiming railways

Birrarung Marr is in the centre of Melbourne, next to Federation Square and the Yarra River. The area was opened in 2002 and is Melbourne's newest inner-city park. It is the first major park to be built in 100 years. This urban renewal project has transformed the former rail yards and roadway into a space that is used by the community for recreational activities.

Events and festivals are held at Birrarung Marr, including Moomba, food festivals and ice-skating. It also has a playground and a children's art centre and gallery. Birrarung Marr celebrates the area's Aboriginal culture in public artworks and in the name itself, which means 'river of mists' and 'river bank' in the Woiwurrung language of the local Wurundjeri people. Spaces such as this enhance liveability in inner-city Melbourne, and help to develop a sense of community.

Better schools

Until recently, the design of schools had not changed very much in hundreds of years. Most schools still have separate classrooms with desks in neat rows and a board at the front of the room. Learning is beginning to change, however, and the way we build schools is also beginning to change.

Today, there is much greater use of technology in classrooms. Even very young primary school students have access to computer-based learning. As well as working with others in their class, it is common for students to be working with students on the other side of the world; for example, when doing maths problems on the internet.

Did you know?

- In 2016 there were around 3 798 000 people enrolled in school around Australia. Sixty-five per cent of this number was at a government school. There were also around 309 000 teaching staff, 14 000 specialist support staff and 157 000 other staff.

Spotlight

Schools of the future

Hellerup School is in Copenhagen, Denmark, and caters for students aged six to sixteen. The school has had a significant role in regenerating the local area, and was built on an old factory site. At Hellerup, there are few physical classrooms. Instead, there are many rooms of different sizes that can be used for meetings between students and teachers. There are large open spaces where students can work by themselves or in small groups, as well as small rooms for quiet work.

Hellerup, and schools such as Dandenong High School in outer Melbourne, take a non-traditional approach to learning. As a result, they need buildings that serve different purposes and that are flexible. For example, a class may work together for part of a lesson and so need a larger space, then work in small groups on a research task and require a different type of space.

In Dandenong, web-based learning programs such as Moodle help students to stay connected with teachers and peers. Students access these



12.8.4 The gymnasium at Hellerup School in Denmark is used for art and cultural activities. There is a sloped sports field at the rear of the building.

online resources through a range of technologies. At Hellerup, students are encouraged to use their smartphones as a way of communicating with teachers and also to help with research tasks.

Activities

Remembering and understanding

- 1 Explain why it is important that authorities insist on the provision of recreational spaces in new urban developments.
- 2 Describe the benefits of well-designed recreational spaces.
- 3 Discuss why the Geelong Youth Activities Area is considered to be well designed.
- 4 List the reasons why schools need to be redesigned.
- 5 Explain why flexible spaces are important in modern school design.

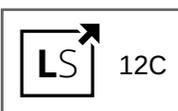
Applying and analysing

- 6 Read the text on reclaiming cities for recreational space, then do the following activities.
 - a Describe the impact of Seoul's growth on the Cheonggyecheon River.
 - b How has the river been transformed in recent years?

- c Outline the redevelopment of Birrarung Marr.
- d What do you think are likely benefits of the Birrarung Marr recreational space to that part of the city?
- e Why do you think the construction of the space has brought these benefits?

Evaluating and creating

- 7 Read the text on Hellerup School and visit the school's website to see photos of it (research 'Hellerup skole'). Investigate how a school can make a local area more liveable.
- 8 Propose ideas for transforming your local park or school playground into a better recreational space. Construct a sketch map showing the key features of your design. To accompany your map, prepare a short report outlining the key features and the reasons you have included them.
- 9 Write an extended response comparing the design of your school to that of Hellerup School.



12.9 Investigating neighbourhoods

Aim

The aim of this fieldwork activity is to investigate your local neighbourhood. You will need to undertake research online and in the field. After you collect your data, you will assess your neighbourhood and the facilities available.

Choosing a neighbourhood

People choose to live in a particular neighbourhood for a variety of reasons. These include:

- attachment to a place
- being close to family and friends
- employment opportunities
- affordability
- life-cycle stage
- lifestyle considerations
- personal safety
- environmental factors, including climate
- educational and healthcare facilities
- culture and ethnicity
- commuting time and public transport options.

Land use map

A land use map is a thematic map showing the distribution of different ways in which the land is used. The following steps explain how to construct a land use map of your neighbourhood.

Step 1

Access an outline map of your local neighbourhood. Local council websites usually provide these maps. You can also use an online digital map service such as Google Maps. Print a copy.

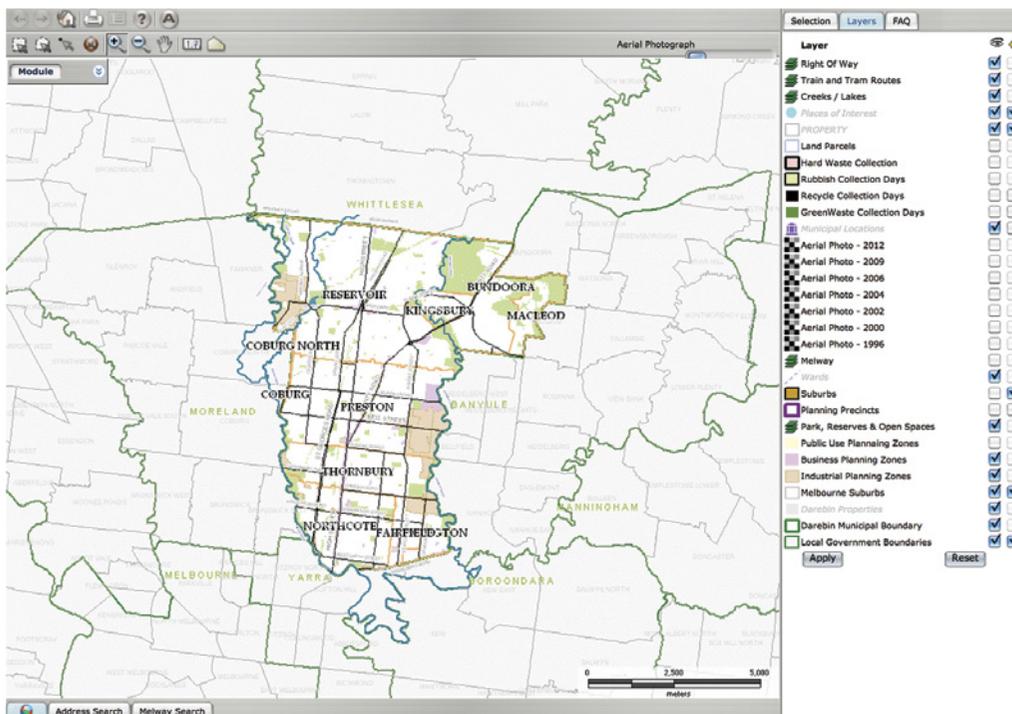
Step 2

Using your outline map, conduct a land use survey of your local neighbourhood. Make a legend, or key, for your map that contains the following land use categories. Colour-code each one on your map. Use Figure 12.9.1 as a guide.

- low-density residential
- high-density residential
- commercial
- recreational
- place of worship
- medium-density residential
- transport
- retail
- industrial
- educational
- bike paths.

Step 3

Take digital photographs of the diversity of land uses found in your local neighbourhood. Link these images to your land use map.



12.9.1 A map of a neighbourhood on a local council website

A multimedia presentation

Step 1

Use a digital recording device such as a flip camera to capture footage of your local area. Select scenes that are representative of your neighbourhood, such as:

- residential areas
- commercial areas
- educational and healthcare facilities
- religious sites
- transport services
- recreational sites (see Figure 12.9.2)
- special events/festivals/celebrations.

Step 2

Record interviews with members of your community. Ask them to reflect on what it is like to live in your neighbourhood. You may choose to select people who have lived in the area for varying lengths of time. This will help you to determine if things have changed over time, and, if so, in what ways they have changed.

Step 3

Combine your footage into a multimedia presentation by adding a commentary, music and text to highlight what is especially important in your neighbourhood.

Survey of retail businesses and services

Step 1

Access an outline map of your local neighbourhood, as described under 'Land use map'. Zoom in on a local retail centre. (If you live in a neighbourhood with more than one retail centre, just choose one to survey.) Print a copy of the map.

Step 2

Using the list below, conduct an audit of the number and type of retail and service providers found within your local retail centre.

- supermarket
- butcher
- hairdresser
- café
- restaurant
- hotel
- medical consulting rooms
- service station
- real estate agent
- solicitor's office
- shoe store
- fruit shop
- newsagent
- chemist
- takeaway food outlet
- post office
- club
- dentist
- bank or credit union
- travel agent
- spa
- clothing store.



12.9.2 People using a local park

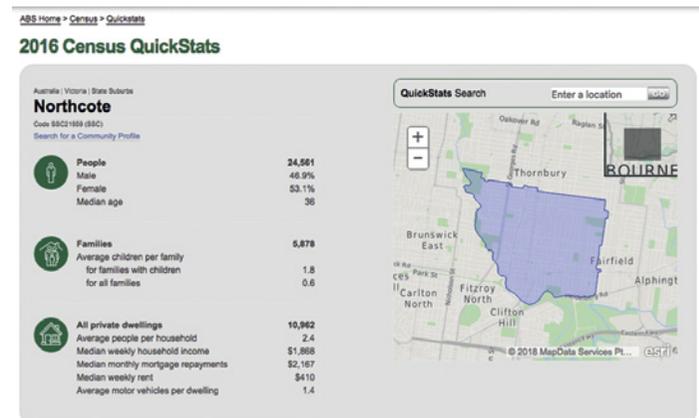
Step 3

On your map, locate and label the different types of shops and commercial businesses found in your local retail centre. Photos can be taken of examples of each. Make a record of any businesses that have closed, are up for sale or are vacant.

Statistical profile

Step 1

Access the QuickStats page on the Australian Bureau of Statistics (ABS) website. To do this, go to the ABS home page and select 'Census' from the list at the top. Then select 'QuickStats' from the column under the heading 'Data by products'. Type the name of your neighbourhood in the QuickStats search box and click 'Go' to access Census data related to your neighbourhood (see Figure 12.9.3).



12.9.3 Accessing QuickStats on the ABS website

Step 2

Use the Census data provided to develop a profile of your local neighbourhood. Include information related to:

- the total number of people
- age
- gender
- place of birth
- languages spoken at home
- marital status
- family type
- employment status and occupation.

Climate profile

Step 1

Go to the Bureau of Meteorology website. On the home page, click 'Climate and past weather'. Select 'Weather and climate data' from the drop-down menu to the left of the page to access the Climate Data Online page. You can choose the data you wish to access using either the 'Select using text' tab (see Figure 12.9.4) or 'Select using map' tab (see Figure 12.9.5).

The screenshot shows the 'Climate Data Online' page with the 'Select using text' tab selected. The interface includes a search bar, a dropdown menu for 'Data about' (set to 'Rainfall'), radio buttons for 'Type of data' (Daily, Monthly, Yearly), and a 'Find' button. Below the search bar, there are sections for 'Matching towns', 'Find a station near your position', and 'Nearest Bureau stations'. The page also features a sidebar with navigation options and a 'Data Services' section.

12.9.4 Selecting climate data using text

The screenshot shows the 'Climate Data Online' page with the 'Select using map' tab selected. The interface features a map of Australia with numerous weather station markers. A search bar is visible on the right side of the map. The page also includes a sidebar with navigation options and a 'Data Services' section.

12.9.5 Selecting climate data using a map

Step 2

Using 'Select using text':

In section 1 of the tab, select 'Weather and climate'. Under 'Statistics', check 'Monthly'.

In section 2, type the name of the location you want to investigate in the box, and click 'Find'. Click to select your chosen location from the list. Click the Bureau station closest to your location.

In section 3, click the 'Get data' button.

Using 'Select using map':

In the 'Data' tab to the right, under 'I would like', select 'Climate statistics'.

Under 'Zoom to', type the name of the location you want to investigate in the box, and click 'Search'. Under 'Select town', click to select your chosen location from the list.

On the map, click the symbol of the weather station closest to your chosen neighbourhood. Click 'Monthly climate stats'.

Step 3

Create a climate graph of your local neighbourhood.

Use the following statistics:

- mean maximum temperature
- mean minimum temperature
- mean rainfall.

Activities

Aim

To investigate the liveability of your local neighbourhood and assess the facilities available.

Method

- 1 Construct a land use map of your neighbourhood. Add to your land use map the photographs you have taken. Mount a wall display showing the diversity and location of various land uses in your local neighbourhood.
- 2 Complete a statistical profile of your local neighbourhood.
- 3 Audit the retail businesses and services located in your local neighbourhood.
- 4 Complete a climate profile of your local neighbourhood.

Option 1: A multimedia presentation

Use a digital recording device to record footage of your local area and interview residents.

Option 2: Local history

Investigate the historical background of your local neighbourhood. Include in your response:

- the origin of the name of your local neighbourhood
- Aboriginal and Torres Strait Islander history
- European history.

Option 3: Meeting special needs

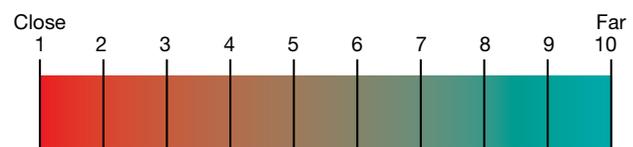
Using the data collected in Method steps 1–4 above, identify the groups within the local neighbourhood that have special needs (for example, the elderly, the disabled, young children, teenagers). Identify how the needs of one such group are being met or not met in the local neighbourhood.

Evaluation

- 5 Describe the mix of retail outlets and service providers located in your local neighbourhood centre.
- 6 Do the facilities provided match the statistical profile of the area, or are there types of retailing and services missing? Explain your answer.

- 7 Look at the climate profile of your neighbourhood. Are the types of services provided appropriate for the climate? Explain your answer.
- 8 Choose five features from the following list of neighbourhood facilities that you would value having in your local neighbourhood:
 - skateboard bowl
 - public housing
 - indoor sports complex
 - church
 - youth club
 - shopping mall
 - nursing home
 - aquatic centre
 - internet cafe
 - restaurant or takeaway food outlet
 - motorway interchange
 - railway station
 - primary school
 - secondary school
 - corner shop
 - factory
 - adventure playground
 - football field
 - cinema complex
 - service station.

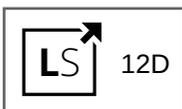
- a Refer to the rating scale below and rate how close to your home you would be happy to have each of these five features.



- b List those features that you would value in your local neighbourhood but would not want too close to your home. Explain your answer.
- c Suggest three different groups of people in your local neighbourhood who might disagree with your choices. How and why might their views differ?

Conclusion

If you could, would you make any changes to your local neighbourhood? Explain why, or why not.



Civics and citizenship toolkit 13

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. You will also investigate the role that the political and legal system 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

- 13A** What is civics and citizenship?
- 13B** What skills do you need to be an active citizen?
- 13C** How do active citizens build opinions based on evidence?

13.0.1 A man voting at a polling booth at Bondi Surf Bathers Life Saving Club, Sydney, Australia, in the federal election on 21 August 2010

GLOSSARY

active citizen a person who participates in their community to the best of their ability

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

evaluate (civics and citizenship) to make a judgement based on your research

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 a person elected by the people to represent their area in government

perspective (civics and citizenship) 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

stakeholders people or groups that are involved in an issue

13.1 What skills do you need to be an active citizen?

Being an active citizen

A **citizen** is a person who belongs to a country and has the rights of that country, as well as its protection. **Civics** is the study of the rights, responsibilities and duties of citizens, and how the government works. An **active citizen** is someone who participates in their community to the best of their ability.

As members of our democracy, we can all do our bit to ensure our society runs smoothly and safely. We can all contribute to making a cohesive society at a local, state and national level. This may seem like a daunting task for some people, but there are many ways that individuals can participate.

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 like fundraisers or working bees
- ▶ volunteering to help those in need
- ▶ being courteous and considerate of others in society
- ▶ recycling and maintaining a safe and clean environment.



13.1.1 Asking questions and brainstorming are key skills for students of civics and citizenship



13.1.2 Students of civics and citizenship will develop a toolkit of skills

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 a different **perspective** (point of view). 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.

Studying these topics 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.

Active citizen skills

Skill 1

Pose questions and conduct research to investigate issues about Australia’s citizenship, diversity and identity.

Skill 2

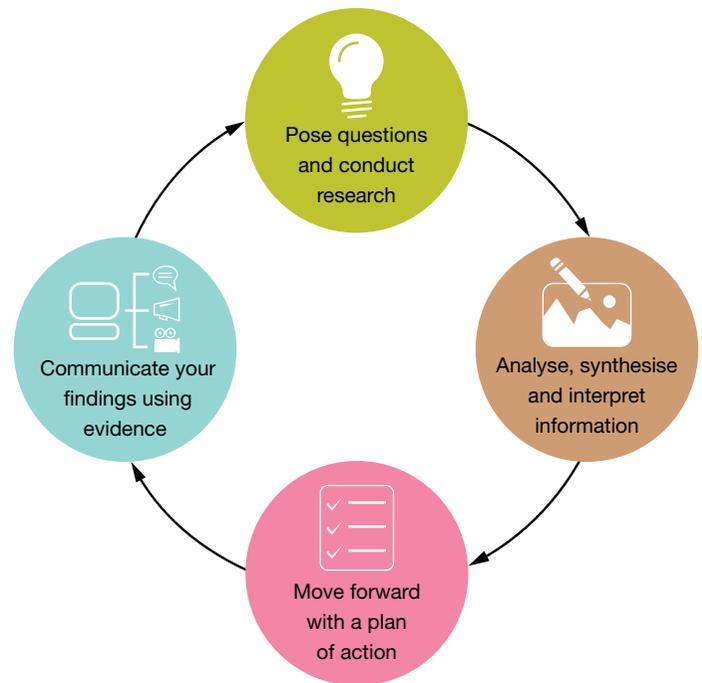
Analyse, synthesise (bring together) and interpret information from a range of **sources** (where information comes from). This is so you can **evaluate** (assess) each source’s **reliability** (trustworthiness) and build your own opinion.

Skill 3

Solve problems considering 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**.



13.1.3 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?

13.2 Posing questions and conducting research

Developing questions for civics and citizenship

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 questions and search for answers. Doing this will help us to look deeper into issues and concerns in our community. Then, we will be in the position to **justify** (support) our conclusions.

As active citizens, it is necessary for us to ask questions about the society in which we live, rather than simply accept things or take them for granted. We need to develop the key skill of sorting through a range of arguments to identify which we think are valid, which are reliable, and which do not have **bias** (unfairly favouring one opinion or point of view). This process helps us to develop well-informed opinions.

Students of civics and citizenship are faced with a range of opinions and sources. We need to examine these, or be critical about the views expressed, so that we don't just accept them as true or accurate without investigating them first.

Investigation: Protecting Australia's environment

An issue that concerns communities is the health of the natural environment.

Humans are having an increasingly negative impact on our world. We are responsible for increased pollution, destruction of natural environments, and large problems like climate change. Our impact on the natural world affects people locally, nationally and internationally. However, we are gradually realising that we need to do more to protect our Earth; every citizen has a responsibility to play a part in protecting and repairing our natural environment. Some ways people are currently helping include:

- ▶ trying to reduce, reuse and recycle
- ▶ catching public transport instead of using cars
- ▶ taking a reusable shopping bag to the supermarket instead of using plastic bags
- ▶ participating in events like Clean Up Australia Day or National Tree Day.

Citizens can also ask the **government** to take steps to protect our natural environment. This might be through signing a petition, participating in a protest, or writing a letter to their local **member of parliament** (MP).



13.2.1 These are some ways that people can help protect and repair Australia's environment: on the left, school students participate in the annual Clean Up Australia Day; on the right, people plant trees on National Tree Day

CO₂ EMISSIONS : THE PEOPLE'S CHOICE...



13.2.2 A cartoon about humanity's negative impact on the environment, now and in the future

You can investigate civics and citizenship issues, such as protecting the environment, by looking at a range of sources. Apply the following three steps to any source you choose, such as a cartoon (like Figure 13.2.2), a newspaper article or something on social media. Following these steps will enable you to determine if the source is a useful one to help you investigate the issue.

Step 1: Ask questions using the Five Ws

Asking the following questions will allow you to understand the basic information or background to a source.

- 1 **Who** created the source?
- 2 **What** is happening in the source?
- 3 **When** was the source created? What was happening at the time?
- 4 **Where** was the source created? Where is it published and by whom?
- 5 **Why** was it created? Is it responding to a specific event or statement?

Step 2: Breaking it down

Asking 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 thing 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?
 - 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 to 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 **a** As citizens, what do we all have the right to do?
b What do we all have the responsibility to do?
- 2 Define the term 'bias' in your own words.

Analysing and applying

- 3 Why is it important to establish the background of a source using the 5 Ws? How does this impact our reading and understanding of the source?
- 4 What do you think makes a source reliable? What makes a source unreliable?
- 5 Where would you look to find more information about a source or issue?

13.3 Researching civics and citizenship issues

Issues of reliability in research

One way to ensure reliability is to look at information and compare it to a range of other sources. To do this, we need to know where to look and to be aware of what forms sources may take.

13.3.1 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.

Research method	Do	Don't
Internet	<ul style="list-style-type: none"> 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 use. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> use your local or school library use a book's contents page, index and page headings to guide your investigation. 	<ul style="list-style-type: none"> randomly search bookshelves without seeking advice from librarians or teachers flip through pages of a book without a plan or questions in mind.
Newspapers	<ul style="list-style-type: none"> look at the same issue in a range of newspapers to verify information and bias. 	<ul style="list-style-type: none"> simply believe everything you read just read the heading.
Social media	<ul style="list-style-type: none"> look at the biography of the person posting and consider if they are reliable verify information before you use it. 	<ul style="list-style-type: none"> forget that anyone can publish on social media. They can do so anonymously and without any expertise.
People	<ul style="list-style-type: none"> remember that in your community there are local MPs and people with various expertise who can help you. 	<ul style="list-style-type: none"> forget to make sure the person you are asking is trustworthy and reliable.

Activities

Remembering and understanding

- 1 Why is it important to ask questions about the society we live in?
- 2 If a source is biased or untrustworthy, should we still consider it? Why or why not?

Analysing and applying

- 3 Citizens of your local community are debating whether there is adequate public transport in the area. What steps would you take to research the issue?
- 4 Several high-rise developments are under construction in your suburb. Many of the local

residents are complaining. To develop your opinion, what questions should you ask and of whom?

Evaluating and creating

- 5 Identify an issue in Australia.
 - a Develop a key question and related sub-questions that will help you to investigate.
 - b Create at least three headings to help you record and categorise your information.
 - c Find two sources that show different points of view on the issue.
 - d Evaluate which source is more reliable. Explain your reasons.

13.4 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. To check that a source is reliable, you can consider the follow tips.



13.4.1 It's important to check your sources for reliability. Don't believe everything you see or read!

Tips on source reliability

1: Who is supplying the information?

- Is the author identified?
- Is the author respected? Do they have a good reputation?
- Have they cited their sources, allowing you to check their evidence and information? This means, have they used a bibliography?

2: Does the source present a balanced view?

- Is the information objective (not influenced by personal opinions or feelings)?
- Does the author have a bias?
- Does the source present facts and straightforward information, or does it exaggerate?

3: Can the information in the source be confirmed by comparing it to other sources?

- Does the source present facts or opinion? (A fact is something that can be proven or uses evidence. An opinion is someone's personal thoughts and doesn't need evidence.)

4: Does the source give you enough information to meet your needs?

- Does it provide sufficient detail?
- Do you need to consult other sources to get more information?

5: When was the source written?

- Is the information current? Does it need to be?
- Is it appropriate to the topic and time you are investigating?

Activities

Remembering and understanding

- 1 What makes a source reliable?
- 2 Why is it important to check that a source is reliable?

Analysing and applying

- 3 You have accessed two sources online that present contradicting information.
 - a What steps should you take to verify the information?
 - b Why might the information in the two sources differ? Consider that information is sometimes used selectively to persuade citizens.
- 4 Practise checking if information is current or appropriate to the topic you are investigating:
 - a find an online source and a book source
 - b write down their titles and publication dates.

Evaluating and creating

- 5 Brainstorm reasons why an author might be biased. Try to think about why someone might publish something without evidence.
- 6 A student conducted a survey of your class about the price of items in the canteen. Seven students think the prices are very cheap. Nine students and the teacher believe the prices are fair. Eight students think that the canteen prices are too expensive.
 - a What conclusions can you draw from this data?
 - b Develop a set of questions to help you further analyse the data.

13.5 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. This skill 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. Following a democratic process allows everyone an opportunity to have their say and to be heard.

There are three steps to resolve a civics and citizenship issue.

Three steps to resolve an issue

Step 1: Identify the stakeholders and the differences in opinion

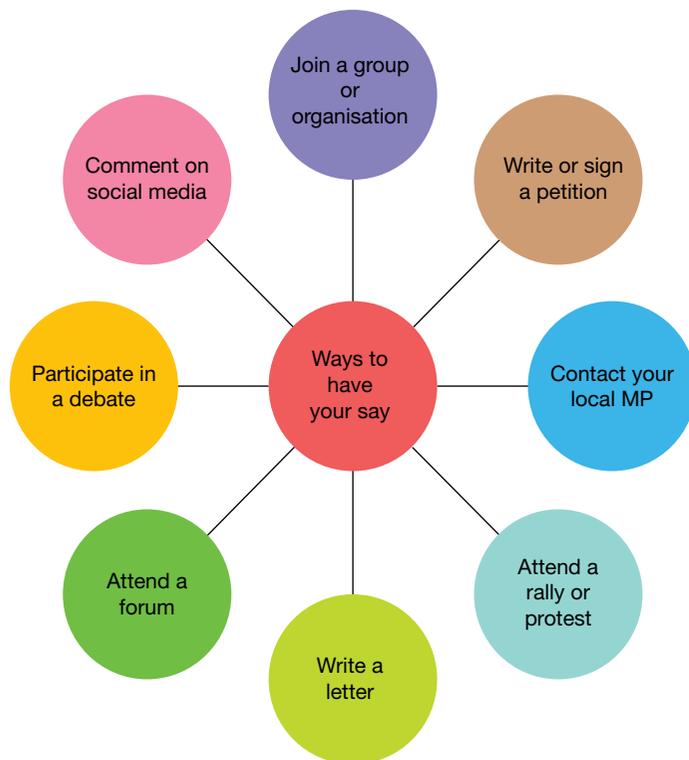
In an issue there are always different **stakeholders**. They are the people or groups affected or involved in the issue. Everyone is different and is entitled to their own opinion. As a respectful student of civics and citizenship, it is important for you to try to understand why stakeholders' opinions may differ. Doing so will ensure you are well informed on the issue. It helps you consider different people's perspectives and demonstrate empathy. This will also help stakeholders see similarities and resolve differences.

People's perspectives are shaped by:

- their upbringing and family's views and values
- their culture and heritage
- their education and wealth
- their life experience and social circumstances
- how they will be impacted by the issue.



13.5.1 Protesters in Moreland, Victoria, asking the government for the protection of Australia's environment, especially the Great Barrier Reef



13.5.2 Different ways you can have your say in society

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 of the ways that everyone can have their say in a democratic process are outlined in Figure 13.5.2.



13.5.3 Participating in the democratic process of voting

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.

Activities

Remembering and understanding

- 1** Why is it important to consider different points of view?
- 2** Identify some different ways citizens can have a say.

Analysing and applying

- 3** Your school is debating whether to get rid of its school uniform.
 - a** Identify the stakeholders in this issue and the opinions they may have.
 - b** Suggest why the stakeholders may have different perspectives.
- 4** There is a vacant plot of land in your local community. Residents are divided about how to use it. Some people want to create a park, others want a community garden, while others want to build apartments on it. Develop a plan of action to consult all the residents and to ensure all their views are heard.

Evaluating and creating

- 5** Consider Steps 1 to 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.

13.6 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. Like in all areas of study, you should use subject-specific terminology. Doing so will help you make arguments that are clear and convincing.

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 of each word. 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.

13.6.1 Communities come in all shapes and sizes. Everyone has the right to their own perspectives and the opportunity to express them.

Digital technology and graphic displays

Digital technology, and civics and citizenship go hand in hand. You'll use it yourself during your study when you create projects or argue your own ideas. You'll also see it used a lot in your communities.

Digital technologies and graphic displays are especially used 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 enables 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.



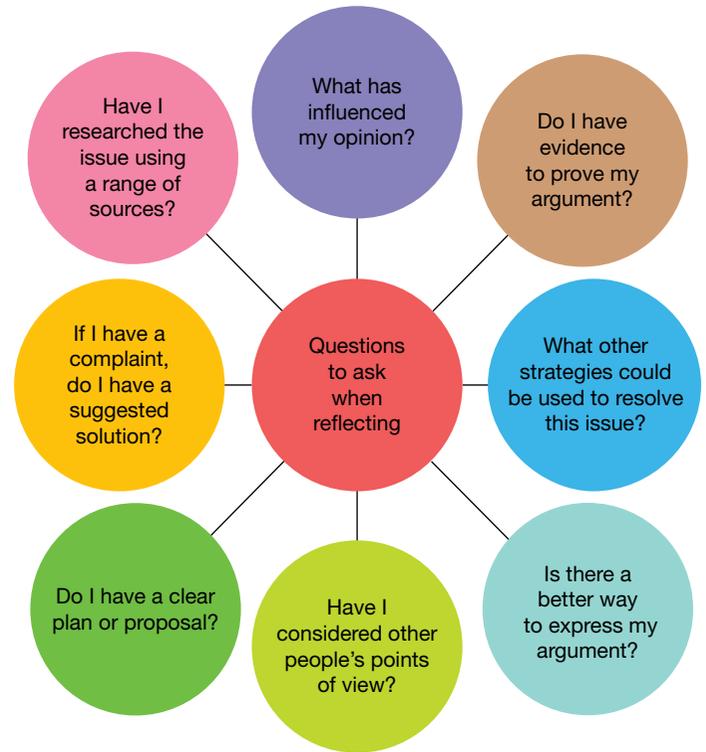


13.6.2 Citizens can have their say using social media. A hashtag is a good way to gain attention and bring people together.

Reflecting on the role you play

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 can contribute to making our world a better place.

We need to reflect on our own values and think about our opinions. We know it's important to question and analyse other people's views. Reflecting means questioning and analysing our own. Doing this helps us make 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.



13.6.3 Suggested questions to ask yourself when reflecting on your own opinion

Activities

Remembering and understanding

- 1 Create a sentence that uses the following terms:
 - perspective
 - bias
 - reliability.

Analysing and applying

- 2
 - a Identify three things you can do to positively contribute to your community.
 - b Select one and write a plan of how you might put it into action.
 - c Reflect on your plan using the questions in Figure 13.6.3.

Evaluating and creating

- 3
 - a Identify an issue that impacts your classroom or school community.
 - b Formulate and reflect on your own opinion.
 - c Interview at least ten students to identify and record their perspective.
 - d Create a proposal that will satisfy the different perspectives.



Citizenship, diversity and identity 14

Australian society is made up of many different groups. As a result, trying to define an identity that represents all Australian peoples is difficult.

The way Australians see themselves, and the Australian way of life, has changed along with the population. Different ethnic and cultural groups have contributed to a society which many believe is one of the most diverse in the world.

Modern Australia celebrates key values including freedom, respect, inclusion, responsibility, equality and a 'fair go'. This chapter explores how a sense of belonging and the vision of Australian identity have been shaped over time.

OVERVIEW QUESTIONS

- 14A** How might ideas of an Australian national identity shape a sense of belonging and/or exclusion?
- 14B** In what ways is Australia both a secular nation and a multi-faith society?
- 14C** How do different social groups in Australia express their religious and cultural identities?
- 14D** Which broadly accepted values influence the 'Australian way of life'?



Before you begin

14.0.1 *Australian Beach Pattern* by Charles Meere, 1940, Art Gallery of New South Wales. This painting of athletic beach goers from the time of World War II encompasses the myth of a healthy young nation.

GLOSSARY

Anglo-Celtic people who were born, or whose ancestors were born, in the British Isles

Anzac the soldiers who served in the Australian and New Zealand Army Corps (ANZAC) during World War I (1914–1918)

census an official count or survey of a population that gathers information about age, gender, income, occupation, ancestry and religion

civic something that is related to, or that benefits, citizens in a society

civil rights the rights of citizens to political and social freedom and equality

cultural relating to the ideas, customs and social behaviour of a society

discriminate to treat different categories of people unfairly or unjustly, such as on the grounds of race, sex, gender or age

diversity showing a large amount of variety and difference

empathise to understand and share the feelings of another

ethnic group parts of a population with common national or cultural traditions

First Fleet the name given to the eleven ships that departed from England to arrive and settle in Australia on 26 January 1788 AD

identity the condition, character or distinguishing features of a person or thing

immigrant a person who comes to live permanently in a foreign country

inhumane cruel; without compassion for the misery or suffering of another

secularism the principle of separating the state (the government) from religious institutions

14.1 What is identity?

The word **identity** can be used in lots of ways. A simple definition for identity is that it means ‘who someone is’. This includes the person’s qualities and beliefs that make him or her similar or different to other groups of people.



14.1.1 An Aboriginal performer stands in front of an Australian flag

What is national identity?

Defining national identity is a tricky task. How people from a country view themselves, and what is considered important to that country, are ideas that are often fiercely debated. For some people, a national identity is a set of shared values and traditions handed down from the past. This heritage gives people a sense of belonging to a group. For others, a national identity is something that can be debated and can change; for example, with contributions from new traditions and cultures.

‘I am, you are, we are Australian’

Over the years, the Australian media, as well as politicians and authors, have tried to define a uniquely Australian national identity. Many representations have been dominated by stereotypes, which are oversimplified and exaggerated ideas of a person or thing. The typical stereotypes of Australians have included the resourceful bushman from colonial times, the brave **Anzac** soldier, and the sun-tanned surfer at the beach. Historically, Australian stereotypes have been represented as **Anglo-Celtic** males. This can make people feel left out because they do not see themselves included in this popular imagery of Australia and Australian people.

The experiences of Aboriginal and Torres Strait Islander peoples, for example, were often left out or ignored in many of the representations of Australian identity. Indigenous peoples were not granted the same rights as their fellow Australians and they have experienced terrible injustices. In many ways, Aboriginal and Torres Strait Islander peoples have been treated as outsiders in their own homeland.

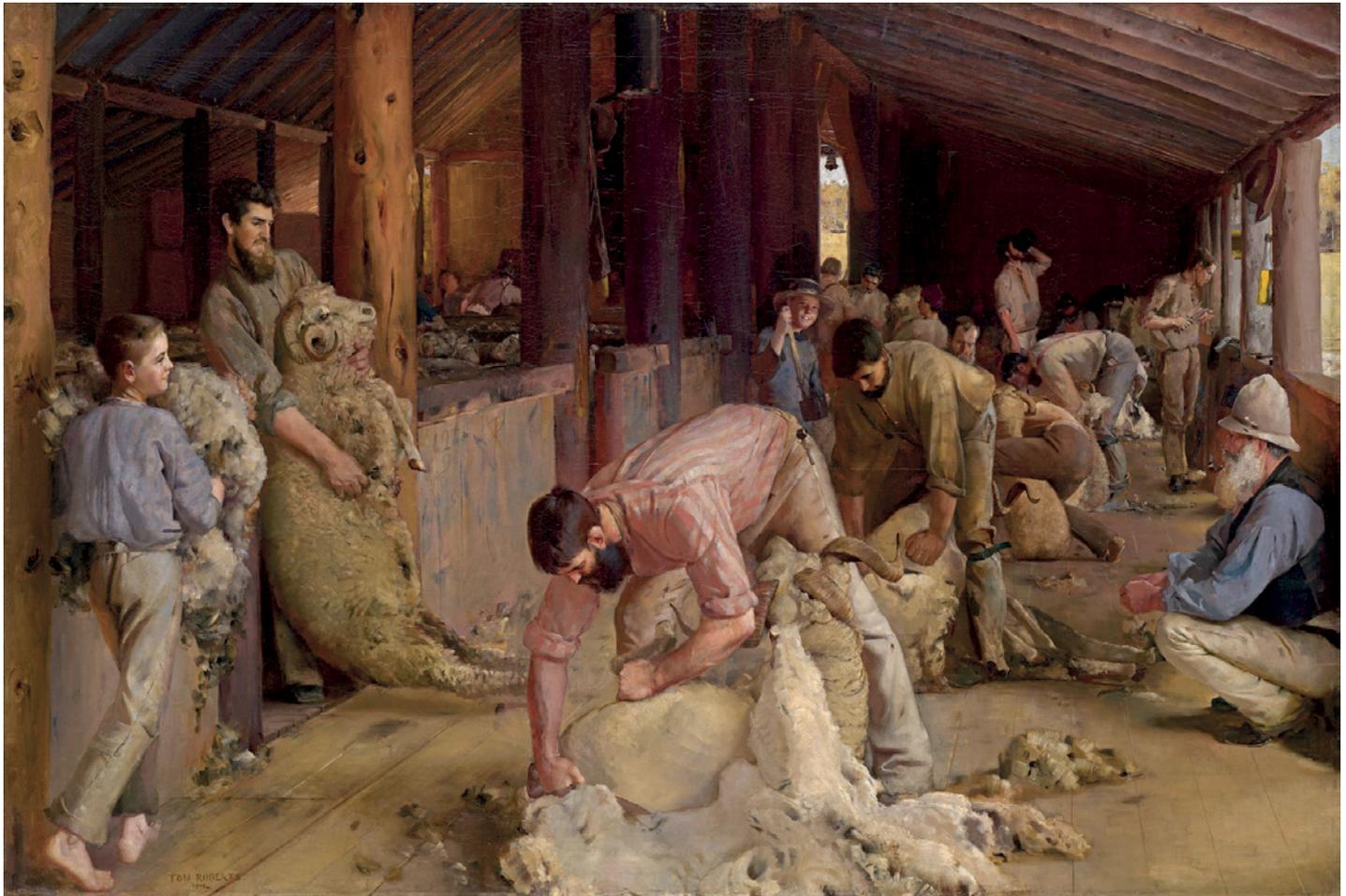
‘I am, you are, we are Australian’ is from Bruce Woodley’s song ‘I am Australian’. It was written in 1987 and tried to include many parts of Australian society, from Aboriginal and Torres Strait Islander peoples to European settlers and newly arrived **immigrants**. The song focuses on themes of identity and belonging; it was hugely popular when it was released.

British to the bootstraps

During the 1800s and the first half of the 1900s, Australian identity was built upon a sense of being ‘British’. Australia was described as a ‘working man’s paradise’ where the strict social hierarchy of Europe did not exist (meaning society was no longer ranked according to status or authority). This meant that anyone could create a successful life through hard work. As the image in Figure 14.1.2 helps to show, Australia was a pastoral and agricultural economy. For over 100 years Australia was said to have been built ‘on the sheep’s back’. This painting *Shearing the Rams*, and many others like it, also reveals that Australian people at the time were largely portrayed as being from a white Anglo-Celtic background.

Did you know?

The *Immigration Restriction Act* came into law in Australia in 1901. The Act gave immigration officers the power to make a migrant sit a fifty-word dictation test that could be given in any European language the officer chose. The dictation test was intended to help immigration staff filter out ‘non-white migrants’. Very few migrants were allowed to pass—prior to 1909, only fifty-two people were granted entry to Australia from 1359 tests. After 1909, no migrants passed the test. The Act also enabled the deportation of ‘undesirables’ (people who didn’t fit the image of the new nation). ‘Non-white’ people, who had come to Australia prior to 1901, were required to sit the dictation test to remain in the country. These discriminatory immigration laws were part of what became known as the ‘White Australia Policy’. This policy was gradually relaxed and was completely abolished in 1973.



14.1.2 *Shearing the Rams* by Australian artist Tom Roberts

Reshaping an Australian identity

Reconciliation and identity

Australia's history since European colonisation is filled with examples of racism and violence towards Aboriginal and Torres Strait Islander peoples. Generations of Indigenous peoples have experienced the loss of their land, families and culture. Over the past half-century, however, particularly since 1967, Australia has made considerable progress towards national reconciliation. Reconciliation is a process of uniting Aboriginal and Torres Strait Islander peoples and non-Indigenous Australians. In this context, it is about respecting the rich heritage and culture of Aboriginal and Torres Strait Islander peoples. Reconciliation recognises that *all* Australians are to be given an equal chance to live a healthy and happy life.

Australia Day or Invasion Day?

On 26 January each year, many Australians celebrate Australia Day. This day marks the arrival of the **First Fleet** in 1788 and the start of the British settlement of Australia. According to the Australia Day Victoria website:

Australia Day is the nation's largest annual public celebration. It's an opportunity to reflect on what it means to be Australian, and to celebrate all the things we love about our country: our land, sense of a fair go, lifestyle, democracy, the freedoms we enjoy and particularly our people.

For many Aboriginal and Torres Strait Islander peoples, and those who **empathise** with them, 26 January marks the British invasion of their traditional lands. The date is often referred to by protestors as 'Invasion Day'. The suitability of keeping 26 January as Australia's national day has been increasingly debated by Australians.

Social media sites such as Twitter reveal that the number of people engaging in the debate about the date of Australia Day has increased hugely over recent years. The use of the Twitter hashtag #ChangeTheDate has increased 5000 per cent since 2014, and other hashtags such as #InvasionDay and #SurvivalDay have grown by 200 per cent since 2014.

Several local councils across Australia have chosen to stop holding their local Australia Day celebrations in support of Australians who oppose the day. After surveying its listeners, ABC radio station Triple J announced in 2017 that it was moving its 'Hottest 100' countdown, traditionally held on Australia Day, to 27 January. Triple J did this in acknowledgement of the increasing debate about 26 January and its meaning for many Aboriginal and Torres Strait Islander peoples.

Skills builder

Source study

Examine Figure 14.1.3, which is a photograph of a protest held in Sydney in 2016.

Reading this source

- a** What do you think the most important keywords are in the banner?
b Why are these words (or dates) significant?
- How have symbols and imagery been used in the banner?
- Analyse the eye in the bottom right of the banner.
a Which event does the eye show?
b How does the artist convey that the event is tragic for Aboriginal people?

- a** What is the main issue the activists are protesting?
b What might the protesters want?

Extending your knowledge

- Research the history of the Aboriginal flag shown on the banner.
a Who created this flag?
b What does each colour represent?
- What do the words 'National day of mourning' refer to?

Reflection

- How do sources like this demonstrate that ideas around Australian national identity are changing?



14.1.3 Australian protesters hold a banner to outline their concerns



14.1.4 AFL teams Collingwood and Essendon line up for the 'Last Post' and the national anthem, Anzac Day 2014

War, sport and the Anzac legend

Australia's wartime experience, particularly during World War I (1914–1918), is often mentioned as a key part of the Australian national identity. World War I saw the birth of the Anzac legend, which celebrates values such as bravery, self-sacrifice and mateship. These values are also often celebrated in Australian national sporting teams including cricket and Australian rules football.

Every Anzac Day on 25 April, people across Australia commemorate the sacrifices of Australians who served in World War I and subsequent conflicts. The Australian Football League schedules matches to coincide with Anzac Day, and holds Anzac commemoration services. These matches are well attended by the Australian public who join in with the commemoration respectfully. Not everyone, however, agrees with this linking of the Anzac legend with Australian identity. Some claim that war should not be the focus of ideas about what it means to be Australian.

Activities

Remembering and understanding

- 1 Using Figure 14.0.1 as a prompt, list popular representations of Australian national identity. What other relevant images and ideas do you think could be added to this painting?
- 2 What was the main purpose of the *Immigration Restriction Act* and how did it contribute to ideas about the Australian national identity in the early twentieth century?

Applying and analysing

- 3 Examine Figure 14.1.4 and answer the following questions.
 - a What parts of society are represented in the image?
 - b What national symbol can you see in the image?
 - c How might this photograph be useful in assessing the role that war and sport play in Australian people's sense of identity?

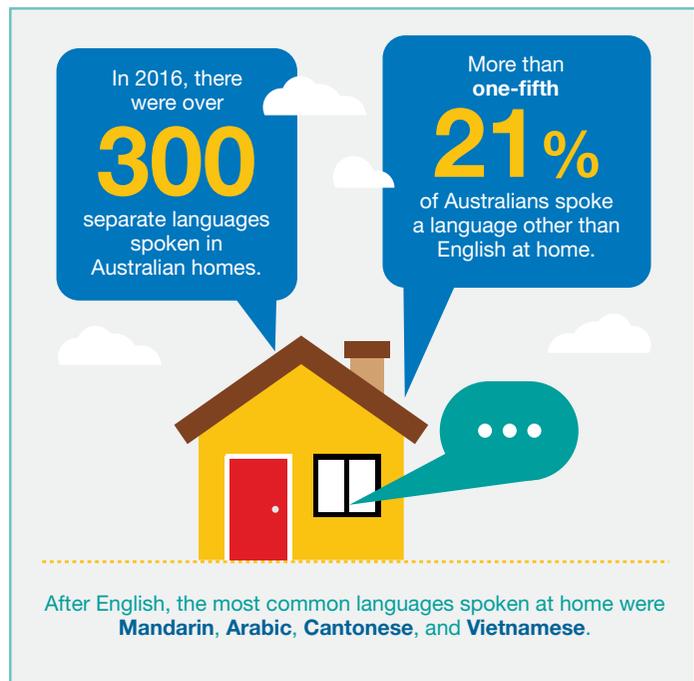
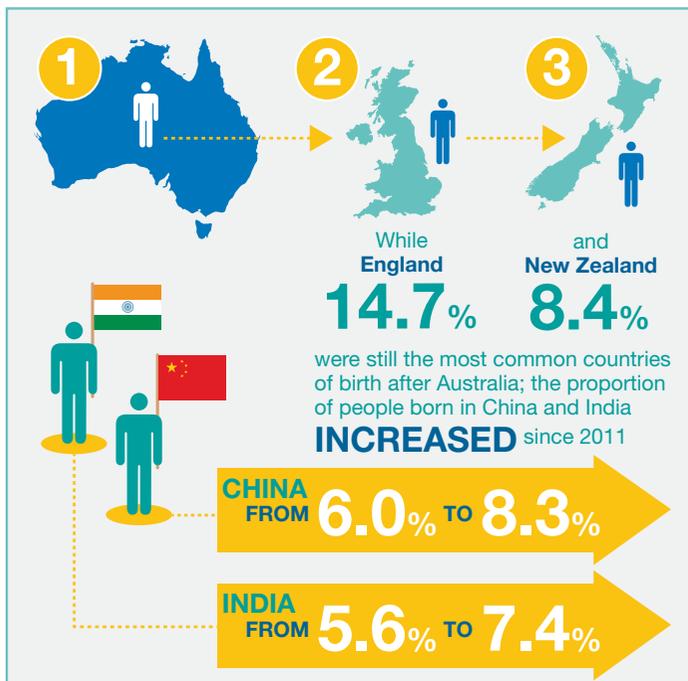
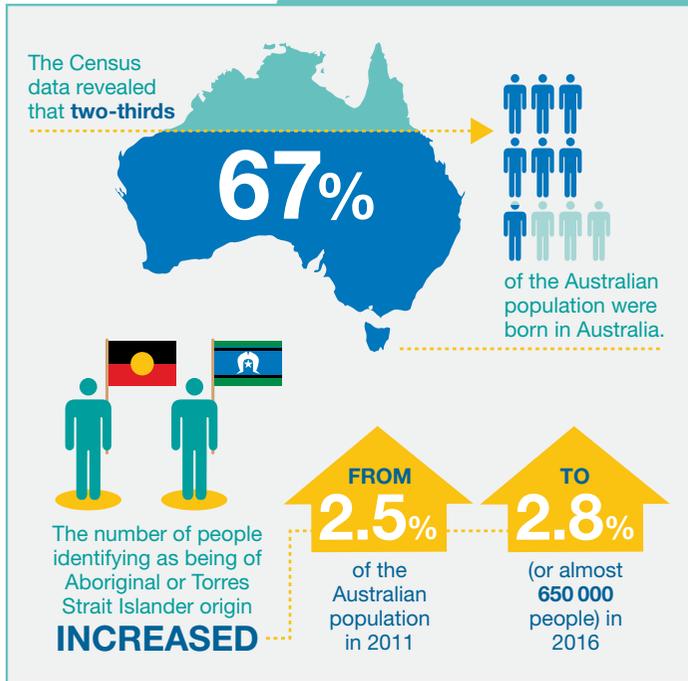
- d Do you think the Anzac legend is a good reflection of Australian identity?

Evaluating and creating

- 4 Australia Day is 26 January, the day the First Fleet arrived. Some believe that a new date is needed for Australia Day. Alternative dates proposed are 1 January (Federation Day), 25 April (Anzac Day) and 27 May (date of 1967 Referendum).
 - a Could moving the date of Australia Day make it more inclusive for all Australians, or would any date cause problems for groups in Australian society?
 - b Write a short opinion piece on whether we need a new date for Australia Day. If not, explain why you think the current day should not change. If so, provide an alternative date and your reasoning for such a move.

14.2 Multiculturalism: The changing face of Australia

NATIONAL CENSUS 2016



14.2.1 The 2016 national Census shows that Australia is a fast-growing, ever-changing and culturally diverse nation

Opening the nation's doors

Australian society is diverse today because of periods of large-scale immigration since the 1950s. From this time, the government realised that Australia would need more immigrants than Britain could provide to populate the country and improve the economy.

Since the White Australia Policy ended completely in the 1970s, more people have come to live in Australia, particularly from Asian countries. They have brought many different traditions and beliefs with them (see Figure 14.2.2). This has gradually changed the make-up of Australian society and the way Australians see themselves as a nation.

Australia has also been heavily influenced by US culture since the mid twentieth century. Technology such as television, and more recently the internet, has helped to open Australian society to more outside influences. This has led to widespread changes in areas like **civil rights**; all Aboriginal and Torres Strait Islander peoples, for example, were finally granted the right to vote in federal elections in 1962.

The Australian National University conducted a poll in 2015 on national identity. They found that Australians believe that speaking English and having respect for political institutions and laws are the most important factors in being Australian. According to those surveyed, being born in the country was the least important factor. Overall, the poll found Australians are overwhelmingly proud of their country and proud of its achievements in sport, science, the arts and literature.



14.2.2 Migrant arrivals in Sydney, 1947

Activities

Remembering and understanding

- 1 How many Australian people identified as being of Aboriginal or Torres Strait Islander descent in the 2016 Census?

Applying and analysing

- 2 Conduct a poll by asking your classmates what they think is essential to being Australian. What things about Australia are they most proud of?
- 3 Write a short paragraph about your identity covering these three aspects.
 - a Individual identity: what makes you who you are (physical characteristics, behaviour, preferences)?
 - b Social identity: what groups do you feel you belong to (teams, clubs, hobbies, classes)?
 - c Cultural identity: what is your family background? Where is your family originally from? Do you celebrate specific customs or traditions?

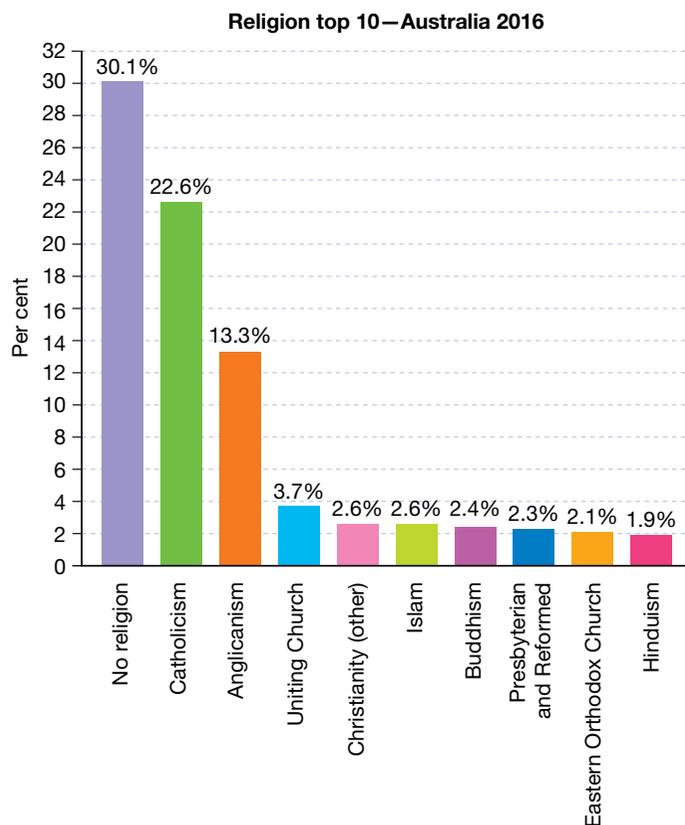
Evaluating and creating

- 4 As Australia's sense of national identity has evolved, people have questioned whether the use of the Union Jack, the flag of the United Kingdom, in the Australian national flag is still a suitable symbol of the nation. If you were asked to design a new Australian flag to replace the current one, what would you suggest? Design and draw your proposal, and explain your choices of colours, symbols and design.

14.3 Australia: A nation of many faiths

Faith and figures

Australia is a multi-faith society, meaning that people hold and follow many different religious beliefs. The 2016 **Census** data highlighted that most Australians (nearly 70 per cent) identified as religious. While the number of Australians who identify as Christian has fallen over the past 50 years, over half of all Australians still describe themselves as Christian. The number of Australians who identify as having a religion other than Christianity has grown from 0.8 per cent to 8.2 per cent, with Islam, Buddhism and Hinduism being the largest non-Christian faiths. Interestingly, the number of Australians in 2016 who responded as having 'no religion' has grown to 30 per cent.



14.3.1 Top ten religions in Australia in 2016. Catholicism is the largest Christian grouping in Australia, accounting for almost a quarter (22.6 per cent) of the Australian population.

Skills builder

Exploring Census data

The Census in Australia (officially called the 'Census of Population and Housing') is a descriptive count of population of Australia on one selected night. The most recent Census was held on 9 August 2016.

The Census is held every 5 years and is managed by the Australian Bureau of Statistics (ABS). Each of these counts produces masses of data about Australian society, such as people's age, gender, income, occupation, type of home, languages spoken, family backgrounds, and other optional questions including religion.

The information assists the government in making decisions about how to allocate resources for the population, such as what the government will spend on health, education, welfare and other essential services. Other groups and businesses also have access to the data, which helps them to target their products and services to the population.

Visit the ABS online. Click on the 'Statistics' tab to help you respond to the following questions.

- 1 List the main categories of data collected by the ABS (for example, 'People' and so on). Under the category heading 'People', click on the 'Population Size and Growth' link.
- 2 Looking at the 'June Key Figures', which Australian state or territory had the largest population? What was its population figure?
- 3 Which state or territory recorded the largest growth in population over the past year?
- 4 What was the total Australian population (in millions) at this point in time?
- 5 How might knowing the information provided by the Census assist governments in looking after the Australian population?

Keeping church and state separate

In Australia, the church and the state (the term given to the nation and its institutions of government) are kept separate. This means that no religion, including the Christian Church, is directly involved in running the country. Instead, the state is responsible for running Australia's political and legal systems. In this way, Australia's public health and education systems, for example, are also required to be free from direct religious influence or control. This feature of the separation of church and state is called secularism.

Australian law protects the religious freedoms of Australians. Section 116 of the *Commonwealth of Australia Constitution Act* states:

The Commonwealth shall not make any law for establishing any religion, or for imposing any religious observance, or for prohibiting the free exercise of any religion, and no religious test shall be required as a qualification for any office or public trust under the Commonwealth.

Secularism in Australia

Secularism does not mean that religion is absent from the institutions of government or other public institution. Many schools and hospitals, for example, are operated by religious groups. Sitting of Parliament begins with prayers, and these prayers symbolise Australia's Christian heritage, and demonstrate how certain religious values are embedded in Australia's **civic** (related to or benefiting citizens) institutions. Other examples of this influence of Christianity on Australia include the opening words to Australia's Constitution (which mentions the 'blessing of Almighty God'), and the fact that Australia's head of state, the British monarch, is the Supreme Governor of the Church of England.

Secularism is considered a key component of Australian national identity and there has been a steady decline in people identifying as religious. However, most Australians have not abandoned religion. The form of secularism in Australia gives people a choice about whether to follow a religion or not. It also allows religious groups to express their views along with other non-religious members of society.

Did you know?

- In Victoria there are three schools sectors:
- government, Catholic and independent (which includes schools operating under other religions).
- In the Victorian school system, 68.2 per cent of schools are run by the government, 22.2 per cent by the Catholic system and 9.6 per cent are independently operated.

Activities

Remembering and understanding

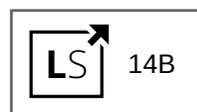
- 1 List the four largest religions in Australia (according to the 2016 Census).
- 2 What does the term 'secularism' mean?

Applying and analysing

- 3 What are the benefits of the separation of church and state in countries such as Australia?
- 4 How does Australian society demonstrate its strong Christian heritage?

Evaluating and creating

- 5 Recreate the information provided in the 'Did you know?' box in the form of a pie chart. You can use computer software to do this. Is this visual way of presenting information more useful to you when evaluating data, or do you prefer reading information through numbers?
- 6
 - a Conduct a survey that evaluates the different religious beliefs of the students in your class. Some students may feel uncomfortable talking about their beliefs so an anonymous survey (where people do not reveal their name on their response) might be a good idea. You can use the categories of religion shown in Source 14.3.1. Remember that only the top ten faiths are listed there, so you can add additional categories if necessary.
 - b Create a bar graph that shows the percentages of different religions represented in your class (like Figure 14.3.1). Do your survey results reflect the Census data from 2016?



14.4 Australia's diversity

From all corners of the earth

Australia is one of the most culturally and ethnically diverse nations in the world.

Each person has a **cultural** identity. A cultural identity is how a person identifies with their culture, ethnicity, religion, locality or any kind of social group. Understanding the **diversity** of cultural identities in Australia is an essential part of living together and building a strong and harmonious society.

The 2016 Census shows that Australians were born in approximately 200 different countries, meaning that Australia has a higher proportion of overseas-born people (26 per cent) than the United States (14 per cent), Canada (22 per cent), New Zealand (23 per cent) and the United Kingdom (13 per cent).

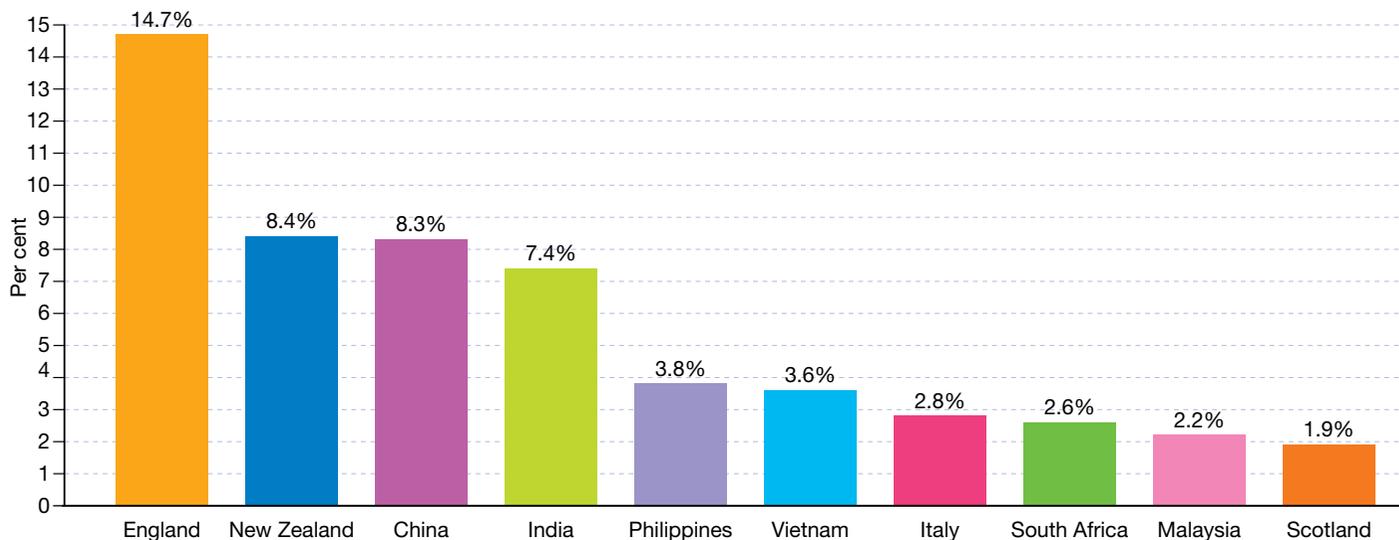
In addition to the continent's earliest inhabitants, the Aboriginal and Torres Strait Islander peoples (who make up 2.8 per cent of the Australian population), Australian society today consists of many different groups from across the world. They express their religious and cultural identities in many ways.

Just over 50 years ago, in 1966, Australia's overseas-born population was only 18 per cent of the total Australian population. At that time a third (32 per cent) of this population was born in England, and only 1.6 per cent came from India and China combined.

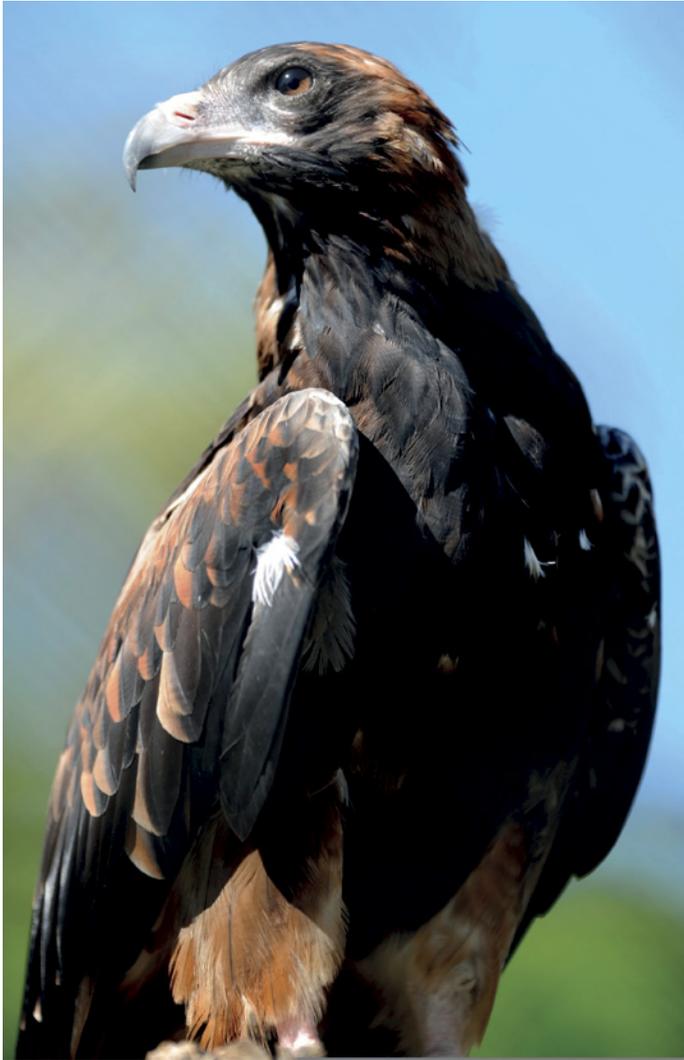
Aboriginal and Torres Strait Islander peoples

There is no such thing as a single culture for Aboriginal and Torres Strait Islander peoples. Before the arrival of Europeans, there were around 270 different language groups and many different cultural ways practised by the peoples in Australia. Also, not every person from a cultural group would necessarily believe the same things or participate in the same cultural activities.

Many Aboriginal peoples, however, do share an understanding of what is known in English as the Dreaming or the Dreamtime. The Dreaming is an account of the past passed from generation to generation through stories, song, dance and art. It is also a spiritual belief that connects Aboriginal peoples with everything around them, and which gives meaning to their lives. There is a belief that the collective wisdom of Aboriginal and Torres Strait Islander peoples is available after death. Elders and those chosen from the community can access this knowledge via Dreaming stories and through their spiritual connection to the land.



14.4.1 The ten most common countries of birth (for those born overseas), 2016 Census



14.4.2 Bunjil is a wedge-tailed eagle and the Creator to the Kulin people; stories of Bunjil provide meaning to the Aboriginal people in the south-east of Australia

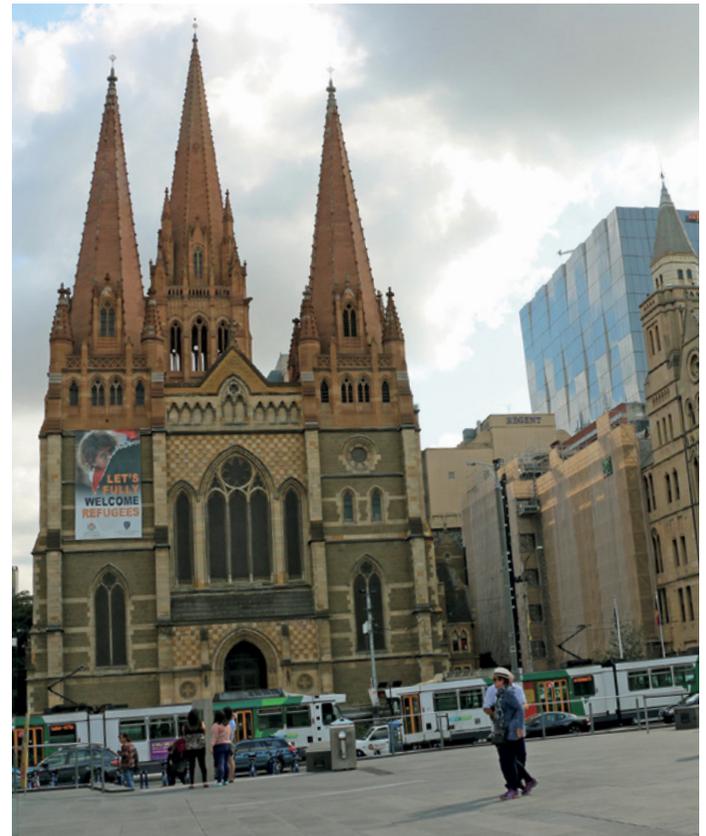
Totemism (a system of belief in which humans are believed to have a connection or a relationship with a spirit-being, such as an animal, plant or landform) also plays an important part in the cultures of Aboriginal and Torres Strait Islander peoples. Groups and individuals can be linked to a particular animal at birth; they are 'related' to that animal and so they look out and care for it. This gives people a strong sense of connection to the natural world.

The English in Australia

Australia's recent history, since European settlement in 1788, has been dominated by English culture. Through the nineteenth and well into the twentieth century, most Australians were from England (as well as Scotland and Ireland). They thought of England as the 'mother country'. English colonisation came with a strong religious belief in Christianity, which can still be seen in many ways in Australian society today. There are numerous Christian churches (Catholic, Anglican, Uniting and so on) in most communities across Australia, as well as many schools operated by, or linked to, Christian churches.

Other cultural links to England can be found in popular sporting pastimes in Australia such as cricket, soccer (football) and rugby.

However, the English language has undoubtedly had the greatest impact on Australian society. While many different languages are spoken in Australia, it is the English language that is the official language of the nation. It is spoken and taught in schools, for example.



14.4.3 St Paul's Anglican Cathedral is a sign of modern Australia's English and Christian heritage; it lies in the heart of Melbourne, opposite Federation Square and Flinders Street Station

The Chinese in Australia

Chinese people have been living in Australia since the early 1800s. In the 1850s, with the discovery of gold across Victoria and New South Wales in particular, Chinese people migrated in great numbers to join people from across the world seeking their fortune.

Once the gold rushes were over, many of these Chinese people settled as market gardeners or farm labourers, while some established grocery stores. In cities like Melbourne and Sydney, Chinese people set up businesses, including traditional Chinese medicine practices. Many Chinese religious and cultural organisations were established, and Chinese New Year celebrations became and remain a highlight in many towns in Victoria.



14.4.4 The people of Bendigo celebrate Chinese New Year and the Chinese heritage of the area, which dates to the 1850s

Today, the Chinese are the third-largest group among Australia's foreign-born population, after people from England and New Zealand. Many Chinese people in Australia share a heritage of traditional Chinese values. These have been handed down through the generations and have their roots in the traditions of Confucianism. At the centre of this ancient philosophy is the family. Traditionally, an individual's identity is defined in terms of their roles and relationships within the family, rather than by their own sense of self or who they are.

The Indians in Australia

By 1901, the India-born population of Victoria was almost at 1800 people. However, the White Australia Policy slowed this growth because of its restriction on 'non-white' immigration.

An increasing number of British citizens born in India immigrated to Australia after 1947, which is when India gained independence from Britain. Most were Christian and many also had an Anglo-Celtic background. After the end of the White Australia Policy, a broader range of Indians began arriving, including professional people such as doctors, teachers and engineers.

Today, the India-born community is far more culturally diverse. The recent Census recorded that 36 per cent speak English at home, while 20 per cent speak Hindi, and smaller numbers speak Tamil, Urdu and Bengali.

The growth of two religions which have their origins in India has been noticeable in Australia during the recent years. Hinduism, an ancient Indian religion, has grown 300 per cent since 2006, with followers in Australia numbering 440 300 in 2016. Sikhism, the youngest religion founded in India, has grown by 500 per cent in the past 10 years, with 129 900 followers in 2016.



14.4.5 Australian Hindus celebrate their religion in a Melbourne parade

Muslim Australians

According to the 2016 Census, the number of Muslims living in Australia has almost doubled from 341 000 in the 2006 Census to 604 200 people. This is 2.6 per cent of the total Australian population. About two-fifths of Australian Muslims are of North African or Middle Eastern origin and about a quarter are of South or Central Asian origin.

Most Muslim immigration occurred between the 1970s and 1990s, but there have been Muslim people interacting with and living in Australia for far longer. Evidence shows that Indonesian Muslim fishermen made annual visits to Australia since the early 1700s and interacted with Aboriginal and Torres Strait Indigenous peoples. In the nineteenth century, Muslim men from Afghanistan, India and Pakistan arrived in Australia to work in transportation, especially for exploration and in the mining industry.



14.4.6 Victorian policewoman Leading Senior Constable Maha Sukkar was the first hijab-wearing policewoman in Australia. She migrated to Australia from Lebanon in 2000 and was inspired after the 11 September 2001 US terrorist attacks to join the police force and change people's negative perspective of Muslim people.

Symbols of cultural identity

Different groups in Australia express their identities in different ways. This can include the way people dress, the customs and traditions that they follow, and the food that they eat. Many Muslims, for example, eat halal food (meat that has been slaughtered according to Islamic practices), and many Jewish people eat kosher food ('kosher' is a Hebrew word meaning 'fit' or 'proper' and relates to whether food and its preparation is permitted and acceptable).

Throughout history, the differences between people have sometimes caused suspicion or intolerance. This is especially so if the main group in a society has felt threatened by a different, usually much smaller, cultural or **ethnic group**.

Fortunately, in Australia, people have managed to live mostly in harmony, respecting each other's differences, and allowing all groups to participate in and contribute to the Australian way of life. In this way, cultural events, as well as styles of dress and types of food, have instead served to unite Australians. The different cultural influences and identities have shaped new understandings of what it means to be Australian.

Activities

Remembering and understanding

- 1 What are the top four countries of birth for people born overseas in the 2016 Census?
- 2 What is the animal form and name of the Creator spirit of many of the Aboriginal people who live in the south-eastern parts of Australia?

Applying and analysing

- 3 Refer to Figure 14.4.4. How might cultural events such as this encourage positive interactions between people in the Australian community from different backgrounds?
- 4 How can modern Australia's Christian heritage be seen in the traditions and institutions that make up the Australian way of life?

Evaluating and creating

- 5 You are an advertising executive who has been approached by the Australian Government to make a short video or PowerPoint presentation celebrating the cultural diversity of Australian society. Include relevant statistics from the ABS and lots of appropriate images that reflect Australia's cultural diversity, such as traditions, clothing, food, customs and so on. Describe how a tradition of multiculturalism in Australia has built an inclusive and harmonious community.
- 6 Different groups express their identities in different ways. When you see traditions, clothing and food that are different to what you are used to, how do you feel? Do you always have a positive reaction? How can people's cultural difference affect others' perception of them?
 - a Write a half-page response to these questions and think of examples from your experience or what you have seen from others close to you.



14.5 Australian values

What are values?

Values are principles or standards of behaviour. They also indicate what people judge to be important in life.

Citizens have needs that they want their government to meet. They also have expectations of their government and the community in general. What people need is often what they value. Therefore, by understanding what people value and seeking to provide it, a government can operate successfully. The government can then create a peaceful and harmonious society for its citizens.

Australian values

Figure 14.5.1 shows an Australian values statement from the Australian Government. People who wish to visit or live in Australia for a long time must read and sign this statement as part of their application. The statement outlines what Australian values are; it is also an agreement from the person who visits Australia that he or she will abide by Australian values and laws. In addition, the statement outlines the government's expectations of the person if they apply for Australian citizenship.

What are Australian values?

Politicians, writers and other commentators often refer to 'Australian values'. This suggests that there are values which are uniquely Australian and different to the rest of the world. Values that are often discussed as being central to Australia and the Australian way of life are explored below.

Freedom

Freedom is an important value to Western nations that have a democracy like Australia. It ensures that people can live as they choose as long as what they do is legal.

Australians value freedom of speech, where people can express their thoughts and opinions openly in public. This is not a freedom guaranteed by law in Australia, however.

Australian people are free to follow a religion of their choice or to live without religious beliefs as discussed earlier in the chapter.

Other important freedoms Australian men and women have are to vote, drive and work; to choose who they marry; to decide what they want to wear, read and think; and to protest decisions made by governments that they think are not fair or that are wrong.

AUSTRALIAN VALUES STATEMENT

You must sign this statement if you are aged 18 years or over.

I confirm that I have read, or had explained to me, information provided by the Australian Government on Australian society and values.

I understand:

- *Australian society values respect for the freedom and dignity of the individual, freedom of religion, commitment to the rule of law [a concept where the government and people know the law and will obey it], Parliamentary democracy [majority-rule in government], equality [seen as being the same] of men and women, and a spirit of egalitarianism [equality/sameness] that embraces mutual respect, tolerance, fair play and compassion for those in need and pursuit of the public good*
- *Australian society values equality of opportunity for individuals, regardless of their race, religion or ethnic background*
- *the English language, as the national language, is an important unifying element of Australian society.*

I undertake to respect these values of Australian society during my stay in Australia and to obey the laws of Australia.

I understand that, if I should seek to become an Australian citizen:

- *Australian citizenship is a shared identity, a common bond which unites all Australians while respecting their diversity*
- *Australian citizenship involves reciprocal [complementary] rights and responsibilities. The responsibilities of Australian Citizenship include obeying Australian laws, including those relating to voting at elections and serving on a jury.*

If I meet the legal qualifications for becoming an Australian citizen and my application is approved I understand that I would have to pledge my loyalty to Australia and its people.

Signature

Date / /

Name

14.5.1 Australian values statement for applicants of provisional, permanent and some temporary visas

Respect

Respect is a positive feeling or action shown towards someone or something considered important or highly regarded. It can include self-respect, where a person feels confident in who they are, and has the courage to stand up for themselves if treated badly by others. To respect someone is to listen to their opinions even when you do not agree, and to treat other people as you'd like to be treated.

Most people are raised as children to respect parents, teachers and elders in their communities. Students are taught to respect school rules. Every Australian is expected to respect and obey the laws of the nation; for example, driving on the left-hand side of the road.

Australian society expects that people respect other people's family and cultural traditions, as well as the institutions and symbols of the nation, such as the government and the Australian flag.

Inclusion

The term inclusion can mean many things in society. Basically, to include someone is to allow or assist them to be involved in an activity. Every human being is different. People have different abilities, skills and cultures, and they look, sound and act differently to others.

Often, differences can provoke feelings of fear and uncertainty in people who are unlike them. These feelings can result in acts of exclusion, where people are left out, ignored or mistreated. This can leave the people who are excluded feeling isolated, ashamed and angry.

Australian society values inclusion in all its forms. This could mean including people who live with a disability, welcoming and befriending those who come from different cultural or ethnic groups, or accepting and valuing people with a different sexual orientation.



14.5.2 People burning an Australian flag during a protest, which is not illegal in Australia, but the action is considered to be highly disrespectful and unpatriotic



14.5.3 Australians celebrate Harmony Day on 21 March, which is a celebration of our cultural diversity; everyone belongs in our society regardless of their differences

Responsibility

To demonstrate responsibility, a person needs to acknowledge that their good and bad behaviours have consequences for others in society. In many cases, people know the difference between right and wrong; their sense of responsibility is what will help guide them to choose a fair and appropriate course of action.

In Australia, the legal system is how people are officially held accountable if they commit a crime. Laws are made by parliament, and enforced by the police, courts and prisons.

A person can 'take responsibility' by supporting the society in which they live. It is the responsibility, for example, of every Australian citizen over eighteen to vote in parliamentary elections, and to serve on a jury in a court of law if they are required to do so.

Did you know?

Human rights are basic entitlements that belong to every person. This is regardless of their background, where they live, what they look like, what they think or what they believe. *The Charter of Human Rights and Responsibilities Act 2006* is a Victorian law that sets out the basic rights, freedoms and responsibilities of all people in Victoria in one document.

Compassion

When someone shows compassion to another person, they demonstrate concern or empathy towards them. In Australia, compassion is demonstrated by people supporting charities. The Australian Government shows compassion by caring for those who are sick, are elderly, have a disability or are unemployed by giving them welfare support. Australia also has a history of demonstrating compassion to people who live in other countries, which is seen in Australia's payment of humanitarian aid to nations overseas and offers of assistance to foreign governments during natural disasters that have occurred in their countries.

Based on the values of freedom, equality, respect and dignity, the law contains twenty rights which acknowledge the importance and worth of each person. The law places responsibilities on government, and other public authorities, to consider people's rights when developing laws, policies and delivering services.

Recently, Australia has been criticised by some of its citizens and by people overseas for not showing enough compassion for refugees and asylum seekers. These are people who have sought to come and live in Australia to escape terrible conditions in their homeland. Australia's border security laws prevent asylum seekers coming by boat and detains them in refugee camps. Some people consider these security laws to be **inhumane**.

Equality

By valuing equality, Australian people recognise that everyone, no matter their background, race, age or gender, is deserving of the same rights and opportunities.

According to Australian law, everyone should be treated the same way (by the law and by others in society). It is illegal to **discriminate** against people in certain areas of public life such as in education and employment. People cannot be treated differently because of their age, disability, race, weight, sex, intersex status, gender identity and sexual orientation.



14.5.4 Many Australians felt that prohibiting marriage between two people of the same gender was discriminatory so same-sex marriage was legalised in Australia in 2017

A fair go

Some people think that Australia is a place where people have a 'fair go' to succeed in life. This means that every person, regardless of their background, has the chance to get an education, access health care and gain meaningful employment. However, sometimes this value does not seem accessible to all in Australia; there are, for example, problems with homelessness, a big gap between the rich and poor, and some people cannot find a job to pay their bills. Nevertheless, the value of a 'fair go' is something many Australians hold dear. They believe that Australia is the 'lucky country' compared to other places in the world.

Activities

Remembering and understanding

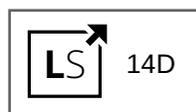
- 1 Define 'values' and list the ones that Australians commonly identify with.
- 2 Australia has been criticised for showing a lack of compassion towards others. Describe a current issue this criticism relates to.

Applying and analysing

- 3 Refer to Figure 14.5.1.
 - a Who produced this document?
 - b What is the document's purpose?
 - c What values does this document state Australian society considers important?
 - d How do the values in the document compare with those described in the textbook?
- 4 Research the Victorian Charter of Human Rights and Responsibilities online. Do you think these human rights are consistent with the Australian values discussed above in the Australian values statement in Figure 14.5.1?

Evaluating and creating

- 5 Review the values typically considered to be Australian in this chapter. To what extent do you think these values are central to the Australian way of life? Can you think of other values that could be on this list?
- 6 Are the Australian values listed in the chapter only found in Australia? Research which values other nations identify with and compare them to Australia. Explain your answer.





Economics and business toolkit

15

Economics and business deal with trade, which involves making, buying and selling goods and services. Trade involves the global movement of money or items of value from one person or organisation to another. Economists and business people follow guidelines to make sense of systems, such as how wealth is distributed around the world, or the best way of sourcing the resources needed to produce a good. This is so they can explain events, reduce mistakes or waste, make improvements and predict future trends.

OVERVIEW QUESTIONS

- 15A** What are economics and business?
- 15B** What skills do economists and business people need?
- 15C** How can the impact of economics and business be measured?

15.0.1 Understanding economics and business enables us to be well informed and prepared to make choices that best fit our goals now and in the future

GLOSSARY

business organisations that use workers and other resources to make money, so they can keep operating and expanding

consumer the customer who consumes the good or service produced

demand how much a product (good or service) is wanted by consumers

economics the study of the production of goods and services, and how they are valued, traded and consumed; it is a cycle that transfers wealth around the world

equilibrium when supply and demand are balanced; producers are making enough (quantity) and are satisfied with the payment they receive for their product or service, and consumers can access enough product and will pay the set price

input the raw materials and other resources that go into a production system to make a good or deliver a service

market system when customers set the price of goods and services by how much they are willing to pay

output the final product or service produced

production process the transformations raw materials go through to add value and make them into products

production system the method of making a good or delivering a service, including inputs, processes and outputs

resources anything required as an input for a production system to operate; for example, money, raw materials, equipment and ideas

scarcity the limited amount of available resources

social enterprise a business that has the goal of making money to continue running, but also has a main objective of helping society in some way

supply how much of a product is made by producers

systems approach used to study a production system; everything is documented as an input, a process or an output

15.1 What is economics and business?

Economics

Economics is the study of the unlimited wants of society and the lack of available **resources**. This limited amount of available resources is known as **scarcity**. Our planet has finite (limited) resources such as oil and coal; however, because of an ever-increasing population, there is also infinite (unlimited) demand. This is referred to as the economic problem.

Economists

Economists ask questions then collect and analyse data. They do this to research, interpret and describe economic systems. Economists look for ways to understand how the commercial world works. They try to find the best ways to:

- produce goods and services
- distribute them to a **consumer** (customer)
- exchange items of value and wealth.

Economists reflect and analyse their findings, then they predict economic events and suggest well-informed economic decisions. They communicate through economic reports.

Business

A **business** is an organisation that uses resources, including human labour, to work towards set financial goals through exchanging goods and services for money. A good is a product such as a book, and a service is something performed for a client, such as managing an online auction site. Businesses might also have social goals like providing a needed service or filling a gap in the market.

Business people

Business people work in commercial organisations and **social enterprises** to make money. They pose questions, then collect and interpret data to analyse and describe business systems. Business people conduct this research to find ways of making systems more efficient. This is so they can save time or use less resources. After reflection, business people communicate their findings to all stakeholders (the people or groups that care about what a business is doing, such as customers, workers, competitors and the government). Often they use business reports to predict future business trends and to make recommendations for change.



15.1.1 This toolkit will give you an overview of the skills required to study economics and business

Did you know?

An economist can value anything; for example, Deloitte's Access Economics® valued the Great Barrier Reef in 2017 by working out things like how much tax people would pay for it per year and how much money people pay to visit it. This all added up to a whopping \$56 billion total value, as well as an economic contribution of \$6.4 billion per year to our economy. Others say the role of the Reef to ecosystems and its irreplaceable nature actually make it priceless.



15.1.2 Can we place a value on the Great Barrier Reef or is it priceless?

Activities

Remembering and understanding

- 1 Describe 'the economic problem' in your own words.
- 2 Distinguish between a 'good' and a 'service' by using an example of each.

Applying and analysing

- 3 **a** Identify a resource you find scarce and relate this to your life.
b Classify and justify this resource as either 'finite' or 'infinite'.
c Suggest how you can access more of this resource.

Investigating

- 4 **a** Research the definitions of the terms 'commercial organisation' and 'social enterprise', and then write the meanings in your own words.
b Find real-life examples of these kinds of organisations and compile a short profile of each. Include in your description:
 - the name of the business
 - the goal/s of the business
 - where the business operates
 - what good or service the business provides.
- 5 If you were to start a business what would it be? Discuss this with a partner and then write the same type of profile as in Question 4b for your original business idea.

15.2 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.

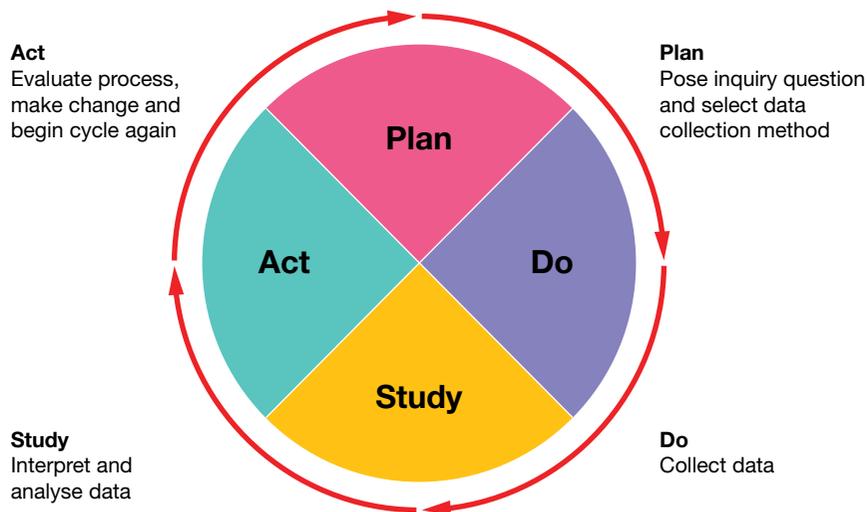
For example, an inquiry question might be: 'Should businesses switch to solar power?'

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.



15.2.1 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

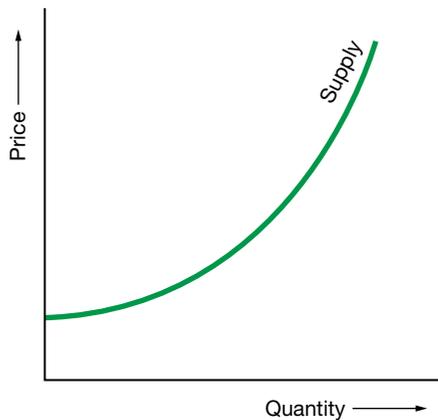
- 2 Take your research from Question 1 further by researching more about the issue. Present your findings as an oral or written argument to your teacher or class.

15.3 Analysis and interpretation

Economic system: Supply and demand

Economists analyse and interpret economic systems to make sense of them and to predict what might happen in the future. The free **market system** is where the price of goods and services is determined by what consumers are willing to pay for them. The market system is 'free' because consumers, rather than the government, determine pricing. The market system is based on the concepts of 'supply' and 'demand'. **Supply** is how much of a product is available. **Demand** is the amount people want to buy at a certain price.

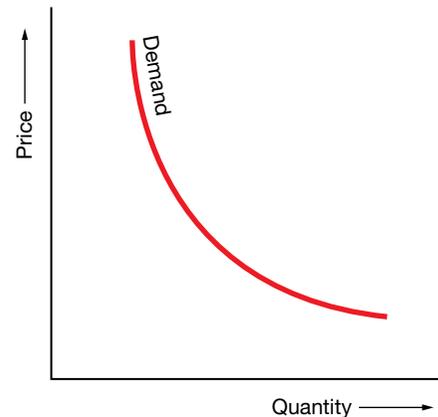
If more people want to buy something, or the same amount of people want to buy more units of something, then the price increases. This is because the resource has become less available or 'scarce'. This might happen when a certain kind of toy becomes very popular, for example like fidget spinners; more are being bought so they become harder to find in shops. However, this process can reach a point where the product becomes too expensive and some people spend their money on something else. This occurrence is called an 'opportunity cost.' It refers to a decision being made to buy one thing over an alternative, and that choice 'costing' the person the 'opportunity' to purchase something else.



15.3.1 When people are buying and businesses are supplying, prices go up

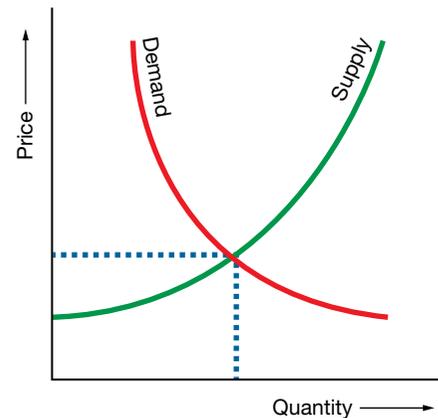
If less product is in demand, then the price people are willing to pay decreases. This means that businesses need to either produce the product for less (so they can set a lower price) or produce less units. In this scenario, businesses will need to assess the difference in profits and the opportunity

cost of either lowering their price or producing less products. For example when a fad ends a business needs to sell off their already produced stock in a sale and reduce the number of products made in the future.



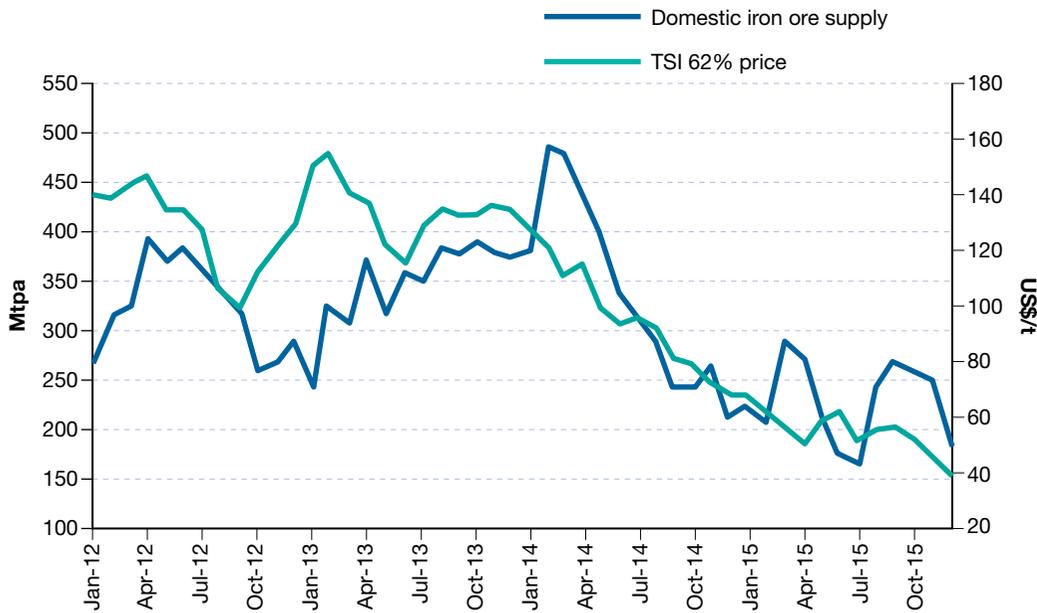
15.3.2 As demand goes down, so too do prices

If the supply that is available and the current demand are exactly the same, then the market is said to be in **equilibrium**. This means that all parties are satisfied; the customers are satisfied with the prices they are paying, and the businesses are satisfied with the profits they are making.



15.3.3 When supply meets demand, that sets the product price

In reality equilibrium doesn't happen very often. Instead, prices go up and down according to constant changes in supply and demand. Sometimes data makes a trend in supply and demand clear. Consider the points of equilibrium and the trends indicated by the chart in Figure 15.3.4.



The supply in China for iron has fallen because the price people are willing to pay has decreased. Some producers have even stopped all production. The True Strength Index (TSI) is a technical indicator used in the analysis of financial markets that attempts to show trend direction.

Iron ore = rocks that contain iron metal
 Mtpa = metric tonnes per annum
 US\$/t = United States dollars per tonne

15.3.4 A real market: Australian iron ore, 2012–15

Did you know?

Just one company can dominate a world market by restricting the supply of its products. De Beers® is one of the main diamond production companies in the world. They have ensured that diamonds have remained in high demand and at high prices for over 150 years. The company did this by controlling the release of diamond products (even buying from their rivals), marketing diamonds as an essential symbol of love and status, and suggesting men should spend 2 months' of their pay on a one-carat engagement ring. Today, natural diamond supplies are said to be at their peak, so, as supply runs out, prices could be on the increase once more.



15.3.5 Diamonds are one of the most sought-after commodities in the world

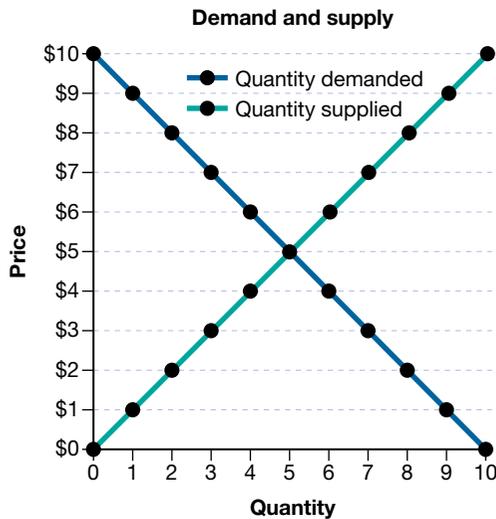
Activities

Remembering and understanding

- 1 Define and show the difference between 'supply' and 'demand'.
- 2 Using an example, write a paragraph to explain the concept of 'opportunity cost' in relation to a business choosing what goods to produce.

Applying and analysing

- 3 Consider Figure 15.3.6 and calculate the product price at the equilibrium point. Use Figure 15.3.3 to help you with your answer.



15.3.6 Demand and supply chart

- 4 Study the following scenarios and discuss whether prices are most likely to increase or decrease and why:
 - Ray is a student looking for accommodation while he completes his university degree. Unfortunately, he has been busy at various music festivals during summer and is now forced to find a home just after the term has begun. Will he pay more or less? Why?

15.3.7 Victorian regions of housing shortage and surplus 2017

Housing shortage regions in Victoria		
Victorian region	House shortage (not enough demand)	Percentage of total houses in area
Mornington Peninsula	1193	1.3
Casey (south)	1180	2.1
Surf Coast (Bellarine Peninsula)	679	1.6
Casey (north)	664	1.4
Cardinia	380	1.1

- Dacey loves the snow and has taken his girlfriend for an anniversary skiing trip in winter. He also wants to get her favourite flowers, frangipanis, but they only bloom in summer. Dacey finds some frangipanis online. Will the flowers cost more or less at this time? Why?
 - Hannah loves her PlayStation 3 and finds games all the time at car boot sales. Do they cost her more or less than they did when the PS3 was released? Why?
- 5 Reflect on the data in the tables of 15.3.7 and suggest where the most and least expensive places to buy a house are currently and why.

Investigating

- 6 Read the following quotes and think about choices as a consumer. Explain how these are examples that demonstrate opportunity cost.

I have seen young people order smashed avocado with crumbled feta on five-grain toasted bread at \$22 a pop and more ... How often are they eating out? Twenty-two dollars several times a week could go towards a deposit on a house.

Writer for *The Australian* newspaper, Bernard Salt, 2016

When I was trying to buy my first home, I wasn't buying smashed avocado for \$19 and four coffees at \$4 each ... We're at a point now where the expectations of younger people are very, very high. They want to eat out every day; they want travel to Europe every year.

Melbourne property tycoon, Tim Gurner, 2017

- 7 Describe a situation where you had to decide to purchase one thing over another. Give reasons for your decision. Explain whether you think you made the right choice for you and why.

Housing surplus regions in Victoria		
Victorian region	House surplus (more than needed)	Percentage of total houses in area
Melbourne City	3994	5.3
Whittlesea-Wallan	2637	3.4
Banyule	2297	4.6
Port Phillip	2127	3.7
Monash	2092	3.1

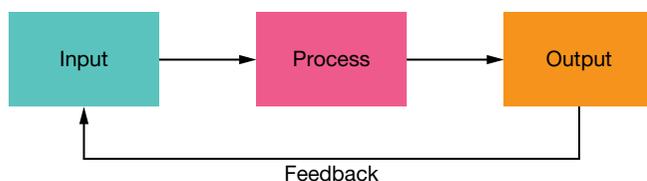
15.4 Economic reasoning, decision making and application

Business production system: Inputs, processes, outputs

Business people regularly try to use less resources of any kind in production. They want to minimise unnecessary steps and remove wasteful activities to save money.

A **production system** is a method of making a good or delivering a service. Any waste in this system is a cost. This waste could be in time, materials or even skills. Waste reduces a business's overall profits and the achievement of its goals.

To study a production process in detail a **systems approach** is used whereby everything is documented as an input, a process or an output. A business person can then make well-informed business decisions based on any highlighted inefficiencies or costs and benefits.



15.4.1 A business system diagram



15.4.2 A dairy farmer working to produce the milk that will serve as an input for producing cheese

Inputs

A resource that is needed to produce a good or service is called an **input**. Inputs can include:

- raw materials, which are essential ingredients like wood for a table or milk for cheese
- component parts, which are parts already half made like an engine for a car
- equipment like tools and machinery
- facilities like a factory or online shop
- human resources like workers and managers
- laws like keeping the workers safe and paying correct wages
- ideas
- time
- money.

Processes

Once the inputs enter the production system, they go through processes to transform them into the product or service. A **production process** is the change of raw materials into a finished product.

Processes add value to the original state of the inputs. In Figure 15.4.3, for example, milk undergoes value-adding processes to become the higher valued and final-priced product of cheese.

A process can involve taking a delivery, storing, cooking, assembling, painting, combining, sharpening, transporting or any number of activities. The possibilities are endless and depend on what is being produced.



15.4.3 Maturing cheese is a process that adds value to the raw ingredients

Outputs

The **output** (final product or service) of any production system depends on the inputs and the processes. Business people seek feedback in order to make improvements in the most efficient way. Feedback can be in the form of collecting data from any part of the system, or it can come from the customers of the product or service.

Quality control checks can also be done at any stage to see if things are working well. A quality control check might involve testing a sample in a laboratory, or scanning for imperfections visually or by computer. A product which is not up to its required standard is called a defect. A key business aim is to minimise the number of defects because every faulty product is a waste of resources.

Decisions to make changes must be based on an analysis of costs and benefits. This cost-benefit analysis is done after a thorough examination of an organisation's business systems.



15.4.4 Outputs include finished, packaged and distributed cheese products ready for sale

Activities

Remembering and understanding

- 1 Use examples to distinguish between raw materials and component parts.
- 2 Explain the concept of 'value adding'.
- 3 Select a product of your choice and list all the resources required for production.
- 4 Think about a bakery producing bread and list the processes raw materials must go through to produce a sandwich loaf output.
- 5 Other than to make improvements, why else might a business need to record all the steps in their production processes?
- 6 Consider a school delivering the service of education and suggest what the output might be for this system.

Applying and analysing

- 7 Anything can be examined using the systems view. Apply this model to your school studies.
 - a List the required inputs for you to study.
 - b Describe some of the processes in detail.
 - c Identify the current outputs (such as grades, meeting deadlines, remembering content or understanding concepts).
 - d Identify some unintended positive or negative consequences of your current study processes (such as an improved ability to concentrate, a tidy bedroom, high internet downloads, lack of time for socialising or fatigued neck muscles).

Investigating

- 8 Compare the resources required for a good with a service. Suggest which has more of a certain type of resource and why.
- 9 Conduct a cost-benefit analysis of paying for quality control checks during production of a food product.
 - a What does it cost a business and what benefit can come from seeking out defects? Try to provide at least three points for each.
 - b Suggest the kinds of business decisions that could be made based on your findings.

15.5 Communication and reflection

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.



15.5.1 Business reports provide the evidence to make well-informed business decisions

Activities

Remembering and understanding

- 1 Identify what must be included in an economic or business report.

Applying and analysing

- 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.

Evaluating and creating

- 3 Suggest why it is important to use clear expressions when you write economics and business reports.



CORNER

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Prahran

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YARRA TRAMS

chapelstreetprecinct

LUSCIOUS ORGANICS
— 100% VEGETARIAN & COFFEE —
FRESH SMOOTHIES JUICE

Souvlaki Express

Internet

PH SHOP

END HAIR

Luscio

40

Producing and consuming

16

Producers and consumers rely on each other to survive. Customers, known as 'consumers', buy products (goods and services) from businesses, known as 'producers'. Producers employ workers and pay them an income so that products can be made. For businesses to be successful, they need to sell the things that consumers want at the prices consumers are prepared to pay. Business owners must continually adapt to changes in the market. This requires an ability to assess what consumers want, and to ensure that the desired goods and services are available for sale.

OVERVIEW QUESTIONS

- 16A** What is the difference between the things we want and the things we cannot live without?
- 16B** Why do producers adjust what they make over time?
- 16C** How does price affect choices?
- 16D** What are the rights and responsibilities of consumers and businesses?



Before you begin

16.0.1 Melbourne's Chapel Street is internationally known as a shopping location where a wide range of designer products are available for consumers

GLOSSARY

capital human-made resources such as tools, vehicles, machinery and buildings

consumer a person or a group that is the final user of goods and services

consumer sovereignty the situation in the economy where the needs and wants of consumers control what is produced

enterprise the resource or skill provided by people who organise, fund or manage production to make a business successful

fair trade trade in which fair prices are paid to the producers in developing countries to help reduce poverty

interdependent describing the way consumers, workers, businesses and governments are connected to and rely on each other

labour the resource provided when people do physical and mental work

land the resources from the natural environment, including plants and animals

needs the goods or services that are necessary for consumers to stay alive such as food, shelter and education

price mechanism the process of consumers and sellers deciding on the price they both accept for goods and services

producer an individual or business that makes, grows or supplies goods and services

profit the difference between total revenue from sales (what a business makes from selling) and the total costs

wants the goods or services that a consumer desires, but are not necessary for survival or to meet the basic standard of living; for example, luxury items or updated technology

16.1 Identifying producers and consumers

Identifying producers

A **producer** is a person or business that makes something so that it can be sold. A wheat farmer is a producer because they grow wheat to sell it. A freelance graphic designer is a producer because he or she sells the service of designing a book such as this book, which will be produced and sold to the public. All people are consumers and many also contribute to the operation of producers through working for them. Everyone who has a job is helping to produce the good or service made by the business that employs them. A business is referred to as a 'firm' in the United States of America.

Generally, the aim of businesses is to make a **profit**. This is done by selling the goods and services they make for more than it costs to produce them. For example, a dress shop will sell each dress for a higher price than the costs associated with making and selling it. To generate profit, a business must have a clear idea of its costs and pricing. There must be enough money coming in from what is sold to cover all the costs, as well as some extra. The extra money made is called profit.

Some business structures do not aim for a profit. Socially aware people (those who consider the difficulties and needs of others) tend to expect businesses to contribute to the communities they make their profits from. Businesses therefore usually donate to charities or create non-profit enterprises that contribute to improving the society.

Identifying consumers

A **consumer** is any person who uses (consumes) goods and services. Sometimes the person who buys a product is not the consumer. Consider, for example, a parent who buys things for the members of their household. All the members of the household are consumers, even though there may only be one person who is buying the goods and services.

Needs and wants

Some of the items purchased by consumers are essential for their survival, such as water, food and housing. These are referred to as **needs** because the consumer must have these items to survive. There are other things that people consume apart from items that are needed to survive. These things are **wants**, which are desired items, but are not essential for survival. Examples include leisure items, such as movie tickets and musical download subscriptions, as well as junk food and designer label clothes. Consumers can survive without these items, but they may get considerable satisfaction from having them. Wants have the following characteristics:

- *They are unlimited:* when one want is satisfied, consumers start wanting something else. There is no end to this process.
- *They are competitive:* people cannot satisfy all their wants at once, so they must choose between them to decide which ones to satisfy first.
- *They can be satisfied:* it is possible to satisfy a particular want, although it is not possible to satisfy all wants at once.
- *They are complementary:* many wants lead to other wants. For example, if a person wants to watch a movie, they may also want popcorn or transport to the cinema.
- *They can vary:* different people want different things, and even the same person will want different things at different times.

No consumer can satisfy every single one of their wants. There is a significant variety of goods and services available, so even if a consumer could satisfy all their wants today, there would be other things they would want in the future.



16.1.1 Our basic needs include food, water, shelter and clothing

Interdependence

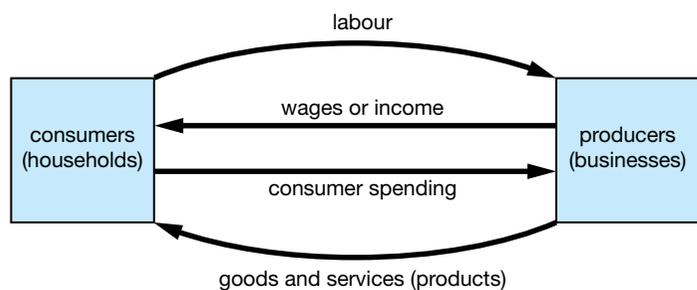
Consumers and producers are often described as being **interdependent**. This means that they rely on each other. Consumers rely on producers to make and sell the goods and services that consumers want to buy; while producers rely on consumers to buy the things they make so the producer can continue to operate. Producers also rely on consumers to work as employees in businesses to help make the goods and services that are sold in society.

The relationship between consumers and producers can be demonstrated using a diagram called the 'simple circular flow of income'.

Simple circular flow of income

Consumers need to purchase goods and services from the producers. This includes paying a plumber to fix a leaky tap, buying bread from a bakery or buying a ticket for a flight from Melbourne to Sydney. Consumers need to obtain money to pay for these items. They do this by working for a producer, who pays them an income. Examples include the pay earned by a salesperson, a chef or an engineer.

Producers employ workers to make goods and services that will then be sold at a profit. For example, a bakery will employ bakers and salespeople to produce and sell a range of bread and pastry products. Businesses will pay their workers an income to encourage people to work for them. The workers use this income to buy their desired goods and services.



16.1.2 The simple circular flow of income shows the relationships between consumers and businesses: consumers work for businesses to earn income, then they spend that income on buying goods and services to satisfy their needs and wants

Consumer sovereignty

Consumers rely on producers to make the items that will help satisfy their needs and wants. However, how do producers know what consumers will buy? A business that produces something nobody wants to buy will not make a profit; therefore the business will not be able to survive. Producers must align what they make with what people will buy.

Consumer sovereignty is the basis of the relationship between consumers and producers. A 'sovereign' is a ruler, like a king or queen; 'consumer sovereignty' means that consumers decide what producers will make. This means that whatever consumers want, businesses will be willing to provide it, if they can make a profit by doing so. Most things that can be bought are available in shops and online because people want to buy them.

Activities

Remembering and understanding

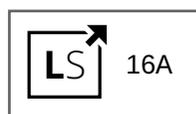
- 1 Define the term 'consumer'.
- 2 How does a business make a profit?
- 3 Why are consumers and producers described as being interdependent?

Applying and analysing

- 4 Explain the concept of consumer sovereignty.
- 5 Show the similarities and differences between needs and wants in a Venn diagram.

Evaluating and creating

- 6 Assess whether getting an education, having health care or getting a job are needs or wants in a modern world.



16.2 Responding to consumer demand

Changing demand

The things people want will change over time. As consumer preferences change, businesses may find that they struggle to sell products that were once very popular. To survive, businesses need to respond to these changes by altering their products or introducing new options. Two areas where businesses are responding to changing patterns of consumer demand are social awareness and environmental protection. Social awareness involves understanding the community and issues that affect people in society. Examples include having a fair society and giving people equal opportunities. Environmental protection involves businesses changing how they produce and sell products, so that the impact on the environment is limited. Examples of these new approaches are seen in the fair trade movement (social awareness) and the removal of plastic bags from retail stores (environmental protection).

Fair trade chocolate

The **fair trade** movement arose from concerns by consumers in the 1990s that farmers and workers in developing countries were being paid unfairly. The items that were made from the labour of these workers were being sold by large corporations in the developed world for a substantial profit. When a business advertises its product as being 'fair trade' it is promising that the producers have been paid a 'fair' amount to cover the costs of producing that item sustainably (in a way that avoids causing workers suffering, injury or loss).

Cocoa is the key ingredient used to make chocolate and is one of the focal points of the fair trade movement. Most cocoa is grown in West Africa, with around 90 per cent produced by small family farms. Supporters of fair trade argue that these small producers have little power to negotiate with the large companies that buy most of the cocoa beans. As a result, the farmers may be forced to sell their products for prices that require them to produce the cocoa beans as cheaply as possible. The fair trade movement addressed this through paying farmers a fair wage.

Initially, fair trade chocolate was only sold by small specialised businesses and consumers had to pay relatively high prices. However, consumer interest and social awareness has grown, so changing how chocolate is produced has become worthwhile for businesses. Many have now moved their production processes to countries where farmers are paid fair wages. Most chocolate sold in Australia today is fair-trade certified. The market leader, Cadbury Dairy Milk®, has been certified by Fairtrade Australia since 2010.

16.2.1 Cocoa beans are grown in hot, rainy areas near the Equator. The ripe pods are usually harvested by hand and then cut open to release the beans. This is a very labour-intensive process; workers can sometimes be paid wages that are so low that they are unable to pay for their children's education. Fair trade ensures farmers are paid fair prices for their labour.



The removal of plastic bags from retail stores

There has been a steady movement to remove plastic bags from retail stores in Australia. It is estimated that over 4 billion single-use bags are thrown away in Australia every year. These bags weigh over 20 000 tonnes and cause a very negative impact on the environment. The largest states have been very slow to respond to this environmental issue, whereas the ACT, the NT, South Australia and Tasmania have had bans in place for a while. Queensland and Victoria decided to ban the use of plastic bags in late 2017, and WA banned single-use plastic bags in mid 2018, but NSW has been very slow to change. Other forms of packaging, other than plastic bags, also impact significantly on the environment.

16.2.2 A summary of rubbish reported by 2016 Clean Up Australia volunteers, which shows the rubbish types removed in Victoria. Over 3000 tonnes of rubbish was collected with plastics making up approximately 38 per cent.

	Item description	Approximate %
1	Garbage/rubbish bags	11.7
2	Ceramics	10.0
3	Cigarette butts	7.5
4	Soft drink cans	5.3
5	Soft drink bottles	5.2
6	Plastic fruit juice bottles	5.1
7	Alcoholic beverage bottles	4.1
8	Plastic bottle caps and lids	2.7
9	PET bottles	3.2
10	Pieces of polystyrene	3.2

A related development is the rise of reusable coffee cups; many cafes will now accept coffee in a cup provided by the customer. This is a response to the increasing sensitivity that consumers have to environmental issues of throwing away millions of cups each year.

Some companies have gone further by developing designer bottles and cups that allow consumers to combine their environmental interests with a desire for unique, high-quality products. This demonstrates that as demand patterns change, existing businesses may need to alter their products, but opportunities also arise for new businesses to enter the market.



16.2.3 A wide range of reusable bottles are produced to cater for consumers' environmental concerns about disposable bottles

Activities

Remembering and understanding

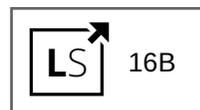
- 1 How can businesses respond to changing patterns of consumer demand?
- 2 What caused the development of fair trade coffee?

Applying and analysing

- 3 Identify the reasons why the movement against the use of plastic bags began.

Evaluating and creating

- 4 Develop an information campaign educating your school about Clean Up Australia Day and how to get involved.



16.3 Price and demand

Setting prices

One of the biggest challenges for many businesses is deciding what price to charge for their product. This decision affects how much consumers will buy. It will also impact on the amount of profit earned by a business. If the price is too low, consumers might demand more product, but the profit on each one will be low. If the price is too high, consumers may not be willing to pay, and the business could lose customers and profit. If a business sets the price at the level consumers believe represents the best value, then, profits will be at their highest.

The price mechanism

The way that prices are set by businesses occurs in the marketplace. This means that the interaction between the business and its consumers is what determines the price of a good or service. The **price mechanism** is the term given to the process where prices are set in markets. The price mechanism can be understood through using a simple diagram. See Figure 16.3.1.

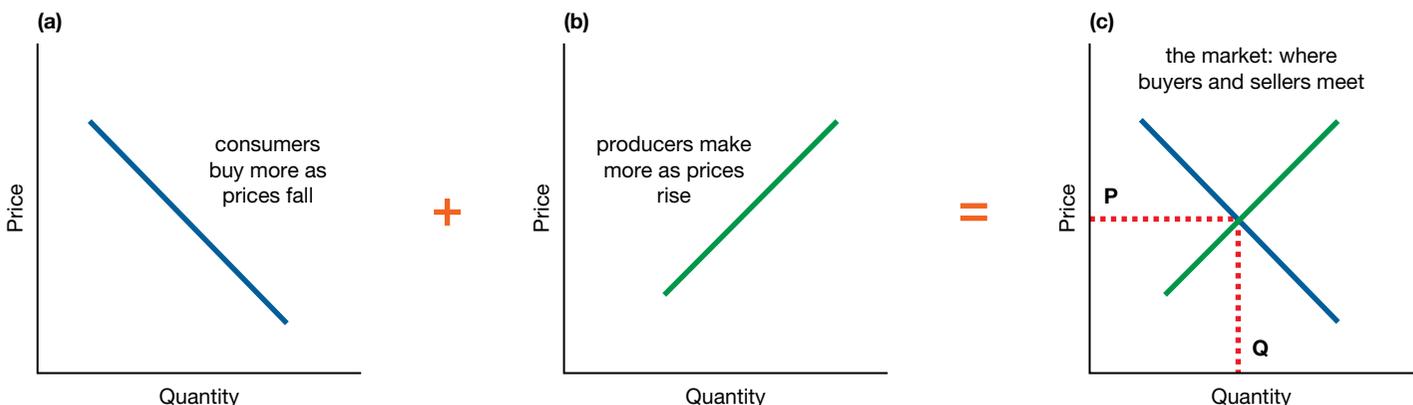
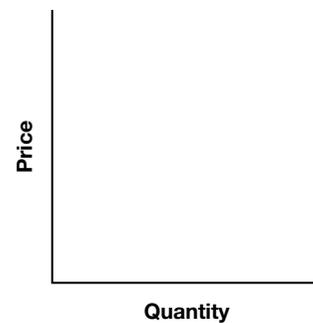
In the first figure, the blue line represents how much consumers will buy of a product when its price changes. It shows that consumers buy less as the price rises, and they buy more as the price falls. In the second figure, the behaviour of producers is shown. The green line represents how much they will produce when the price varies. It shows that as prices rise, producers will make more. The third figure represents the market, which is where the seller and the buyer meet. It is here that prices are decided. You can see from the third figure, where the consumer line and the producer line overlap, that the price decided is P and the quantity that the producer will supply is Q. But how does this work?

Skills builder

Using data to determine prices

The table below gives data about a music streaming service. Create a demand graph for consumers and a supply graph for producers. Put the price on the vertical axis, and the quantity demanded or supplied on the horizontal axis. Use the graph you create to determine the price that will be charged in the market.

Consumer		Producer	
Price	Quantity demanded	Price	Quantity supplied
\$2/month	1000 songs	\$2/month	100 songs
\$4/month	700 songs	\$4/month	200 songs
\$6/month	400 songs	\$6/month	300 songs
\$8/month	300 songs	\$8/month	400 songs
\$10/month	200 songs	\$10/month	600 songs
\$12/month	100 songs	\$12/month	1000 songs



16.3.1 The way the market operates through the price mechanism: (a) indicates the behaviour of consumers, (b) indicates the behaviour of producers and (c) indicates how price is determined when the consumer and the producer meet

Consider a price higher than P . If you trace a line with your finger you can see that consumers will want less than the producers will make. This will force producers to make less and to drop prices. Now, consider a price lower than P . Here the consumers will want more than producers are prepared to make. So, prices will fall, making consumers want less and producers make more. Eventually they will decide on a price (P) and a quantity (Q). This is how the price mechanism operates.

After a business has determined its prices, it may need to make adjustments in response to changing patterns of consumer demand. When determining the appropriate price to charge, businesses usually take the following factors into consideration:

- the resources used to make the good or service
- the amount of profit the business wants to make
- how many other sellers of the product there are
- what customers are prepared to pay.

Resources used to make the good or service

The more it costs to produce an item, the higher the price that the business will need to charge. This depends on the amount and type of resources the business uses. Resources are all the inputs into a business's production process. There are four broad categories of resource:

- **land:** all the natural resources or raw materials, such as water, trees and minerals
- **labour:** the human effort used in the production process, such as the effort and skill of a bricklayer or a brain surgeon
- **capital:** the human-made items used in the production process, such as tools and machinery
- **enterprise:** the ability to combine the other three categories of resources in a productive way to make a profit, such as strategic decisions by a business person.

Rare or unusual resources will usually cost more than commonly available resources. For example, natural diamonds are expensive because they are rare, but synthetic diamonds are now quite cheap to make. The synthetic diamonds have the same properties as natural diamonds, so they are the same strength and hardness. The synthetic diamonds can be used instead of natural diamonds in products like cutting tools and drill bits used by the mining industry. These products would be far more expensive if they were made with natural diamonds.



16.3.2 This diamond-coated drill bit is made of synthetic diamonds, which are much cheaper than natural diamonds and help to keep the prices of these drill bits reasonably low

The amount of profit the business wants to make

The owners of a business usually want to generate profit so that they can earn an income. Most businesses aim to make a reasonable amount of profit, and they are likely to take this into consideration when deciding what price they should charge. Many businesses use a 'cost-plus' pricing strategy. This involves calculating the costs of producing the item, determined by the resources used, and then adding the desired level of profit.

Sometimes, however, a business may decide to accept a lower level of profit for a short period of time, or may even be willing to sell the item at a loss. Selling a product at a lower price than usual may help the business enter a new market, introduce a new product, or sell more products and grow. In the longer run, these initial lower prices may allow the business to earn a higher profit.

How many other sellers of the product there are

Any business selling the same products as another business is a competitor. Customers have a choice which business to buy from when they sell similar products. This is especially true if one business has lower prices. When a business's competitors sell their products at lower prices, then the business may have to cut its prices or discount its products. This will affect the profits of the business.

What customers are prepared to pay

If the business sets its prices too high, consumers will not be willing to purchase its products. Producers therefore need to find a balance between setting the price low enough to attract consumers and high enough to earn an acceptable amount of profit. Consumers will decide how much of a business's products to buy, depending on the price. An important factor here is how consumer demand changes when prices change. For some items, even a small change in price can lead to a large change in demand.

Usually, the higher the level of demand for a business's products, the higher the prices it can charge. This links closely with the level of competition: if there are many businesses producing very similar products, a single business may be forced to charge the same price as their competitors. If they charge a higher price, the business will lose customers to the competitors; if they charge a lower price than their competitors, they may not earn enough profit. Usually, businesses do not like to lower prices, so instead they try to offer distinct products. They do this by focusing on branding, quality or other aspects of product. Also, through advertising the product in a way that emphasises its quality or uniqueness, the business might be able to persuade customers that it is worth paying more.

Responding to shifts in demand

Businesses need to regularly review the prices they charge. As patterns of demand change, the prices charged may no longer be appropriate. For example, customers may now be willing to pay more for products that have become fashionable. Alternatively, competitors may force a business to reduce its prices to remain attractive to consumers. Understanding, and even predicting, shifts in demand can give a business a significant advantage when setting its prices.



16.3.3 The price of Christmas trees, ornaments, cards and wrapping paper falls significantly after Christmas because consumers no longer feel the urgency to buy them for Christmas Day

Did you know?

- It is illegal for businesses to work together to determine their pricing strategy. A business is allowed to lower its price to pressure other businesses to also lower their price, but the business cannot have a price cartel. A price cartel is an agreement with other businesses to control prices.
- Controlling prices by collaborating with businesses in the same industry is called 'collusive behaviour'.
- Collusion is illegal because it usually results in customers paying unfair high prices in the long run. If found guilty of collusive behaviour, businesses may have to pay very large financial penalties and the staff involved can face prison terms. In 2016, Colgate-Palmolive® had to pay an \$18 million fine for fixing prices with Cussons®, Unilever and Woolworths®. The case involved these businesses agreeing to sell their concentrated washing liquid at a fixed price. This price was fixed instead of passing on the lower cost of the concentrated product to consumers.

Market research

Ongoing market research can help businesses to get their pricing strategy correct for the market. Market research includes any process of gathering and interpreting information about the needs and preferences of actual and potential customers. Taking surveys of potential customers is a common and cost-effective form of market research, so long as the surveys are carefully designed to provide useful information to the business.

Other forms of market research include conducting face-to-face interviews and observing customer behaviour. Observing behaviour can also come through data analysis of loyalty programs. This is because the loyalty programs offered by many businesses can also provide market research data. By providing customers with a card or loyalty number that is used each time they make a purchase, the business can assemble a significant amount of data about customer behaviour and preferences. Processing this vast collection of information can be time-consuming and costly, but it can provide up-to-date insights into even minor shifts in demand so many businesses do it.



16.3.5 Store loyalty cards can provide businesses with valuable data and insights about customer behaviour and preferences

Guest feedback

Food quality

Excellent 5 4 3 2 1 Poor

Menu variety

Excellent 5 4 3 2 1 Poor

Service

Excellent 5 4 3 2 1 Poor

Atmosphere

Excellent 5 4 3 2 1 Poor

Cleanliness

Excellent 5 4 3 2 1 Poor

Overall experience

Excellent 5 4 3 2 1 Poor

How frequently do you dine with us?

Would you recommend us to a friend?

How was your experience today?

Member benefits
 Join our mailing list to receive information about special promotions and birthday offers!

Name _____

Email _____

Birthday _____

Address _____

16.3.4 Customer surveys can tell businesses how they could improve

Activities

Remembering and understanding

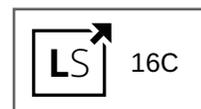
- 1 Define the term 'price'.
- 2 What can happen if a business sets prices that are too low?
- 3 Describe what consumers will do if prices rise.
- 4 How will the presence of other sellers affect prices?
- 5 Define the term 'collusive behaviour'.

Applying and analysing

- 6 Explain how the price mechanism works.
- 7 Describe the importance of market research to business.

Evaluating and creating

- 8 Study Figure 16.3.3.
 - a Taking the position of a producer, argue the case in favour of businesses dropping prices on Christmas products after Christmas Day.
 - b Taking the position of a consumer, argue the case against businesses dropping prices on Christmas products after Christmas Day.
 - c Decide which argument is more persuasive, the producer's view or the consumer's, and provide reasons for your decision.



16.4 Responsibility in markets

Consumers and businesses interact in markets. Consumers are sometimes considered vulnerable because they generally trust businesses. This means that consumers can be taken advantage of if a business does not take care to protect them. In markets, consumers have rights and so do businesses. These rights are balanced against the responsibilities of consumers and businesses.

Consumer and business rights

Consumer rights or entitlements include the following:

- the right to be treated respectfully by businesses
- the right to be told or fully informed about the products they buy
- the right to seek redress (correction or refund) if there is a problem with a product
- the right to safety.

These rights help to protect consumers and should be respected by businesses. Many of these rights are enforced by consumer protection laws.

Businesses also have rights, some of which include:

- the right for consumers to treat products respectfully
- the right for consumers to be honest if seeking redress
- the right to be protected from shoplifters
- the right for their products to be protected from being copied.

These rights are important to businesses and should be respected by consumers and other business owners. Many business rights are also protected by the law.

Consumer responsibilities

Consumers cannot:

- damage goods and then try to return them, saying the seller sold them like that
- return items and claim a refund if they change their mind about a product
- return goods if they find they are sold more cheaply somewhere else.

Business responsibilities

Businesses must:

- sell goods that are safe, are not faulty and do what they should do
- accurately describe the product being sold
- not charge hidden fees or costs or sell goods owned by someone else

- uphold consumer guarantees to give a refund, repair or replace products if any of the first three obligations is broken.

Consumer protections

Consumers are protected by several laws. The main law is the *Competition and Consumer Act 2010*. This law is regulated by the Australian Competition and Consumer Commission (ACCC), which means that they check businesses are following the law and follow up consumer complaints in relation to the law. Consumers in Victoria are also protected by Consumer Affairs Victoria, which advises the Victorian Government, and regulates twenty-seven more laws that protect consumers.

Generally, Australian consumers are protected in three main areas of consumer law:

- warranties (a document from a producer that promises the consumer to repair or replace a faulty product in a specific period)
- cooling-off periods (the time after a sale where a buyer can legally cancel a financial agreement without any penalties)
- product safety rules.

Warranties

A warranty is a form of consumer guarantee. The guarantee is that if a product fails, then the producer will replace or repair the product, or give the consumer a refund for the sale. In July 2017, for example, Lululemon® was fined by the ACCC for stating that there would be no refunds on sale items. This was because a customer had purchased a garment on sale and was refused a refund when the item was found to be damaged. The ACCC said that a business cannot refuse a refund, even on sale items, if the goods are not of merchantable quality, or in other words if the products are spoilt in some way.

Cooling-off periods

A cooling-off period is the time a consumer has if they want to change their mind about a purchase without being penalised. The purpose of the cooling-off period is to stop high-pressure selling. It gives consumers time to think about whether they *really* want the purchase. Cooling-off periods apply to house purchases. In this situation, a person is allowed 3 days to change their mind about buying a house after the contract is signed. Cooling-off periods of 10 days apply to contracts of over \$50 and products sold over the phone.

Product safety rules

The government has created a series of safety standards to ensure that producers and businesses supply safe products to markets. The government also has a system of product recalls if dangerous products are sold.

How government protects consumer safety

The government has laws that state all producers and sellers must only sell products that are safe to consumers. If a product is unsafe, then consumers have a legal right to a full refund. Safety standards have been created for products such as toys, child car restraints and swimming flotation devices. A full list of products can be viewed on the ACCC's website.

Mandatory and voluntary standards

Mandatory means that there is no option but to comply with the standard that has been set. Mandatory standards in Australia are introduced when the government thinks it is necessary to prevent or reduce the risk of injury to people. This means that any overseas manufacturers must make sure their products comply with the standard otherwise they cannot be sold in Australia. Voluntary standards are those created by suppliers, but do not have to be followed (see Figure 16.4.1).

Product safety rules

Voluntary standards

Many suppliers refer to voluntary standards, which may include safety elements, when making products or buying stock. They do this to ensure that the goods they supply are safe, which prevents them having to conduct recalls. It is not compulsory to meet requirements of voluntary standards. It is compulsory to comply with mandatory standards, many of which are based on aspects of voluntary standards.

Bans and mandatory standards

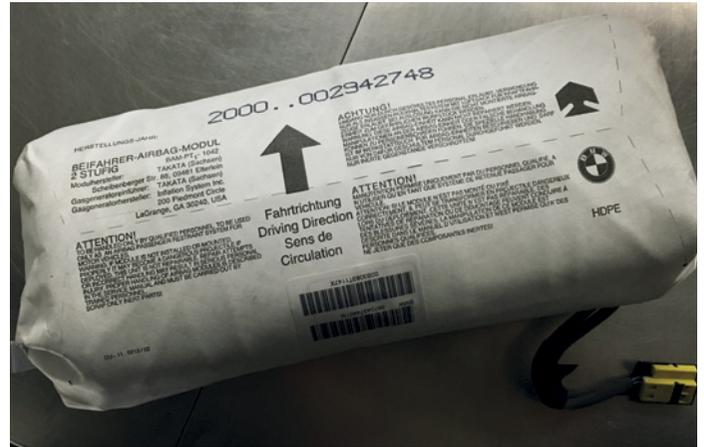
Where evidence shows that consumer products are particularly risky, regulations in the form of bans and mandatory standards are developed. People often think that all products sold in Australia have to meet safety standards. This is not correct. Bans and mandatory standards are only made when evidence indicates a risk of serious injury, illness or death associated with a product.

Recalls

A recall involves withdrawing unsafe products from sale. A recall will occur if a product or service is unsafe or does not comply with a mandatory standard or a product ban. The consumer protection law says that a recall notice must be made if:

- ▶ there is a risk that a product will or may cause injury
- ▶ a supplier is aware of an injury or death associated with the product.

Australia's biggest recall was in 2017. The ACCC issued an urgent recall for cars fitted with Takata® airbags. The airbags affected a large number of cars including the brands BMW®, Mazda®, Toyota®, Honda®, Mitsubishi®, Subaru® and Nissan®. A fault had occurred in the manufacturing of the airbags which caused them to unexpectedly explode. This risked the consumer's life and could also cause serious injury.



16.4.1 A Takata airbag that was removed from a 2001 BMW under a factory recall program

Activities

Remembering and understanding

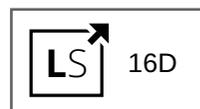
- 1 What is the difference between a right and a responsibility?
- 2 Recall four rights of consumers and businesses.
- 3 Define the following terms: warranties, cooling-off periods and product safety rules.

Applying and analysing

- 4 Describe why it is important that businesses have responsibilities.
- 5 Explain how consumers are protected by warranties and cooling-off periods.

Evaluating and creating

- 6 Design a poster that clearly explains in text and imagery the system of voluntary and mandatory safety standards and product recalls.





Becoming enterprising

17

An entrepreneur is an innovative person who sets out to build a successful business in a new field. Entrepreneurs gather and interpret data to weigh up the costs and benefits of various alternatives. They do this to make well-informed economic and business decisions. Entrepreneurs are self-motivated, innovative and willing to take risks for future rewards. They have several enterprising behaviours that ensure their businesses are successful. These include being able to collaborate, create and design new concepts, plan carefully, communicate and sell their ideas, work hard, manage money, use technology, and evaluate through reflection. Businesses can be structured in various ways, so entrepreneurs need to take advantage of current business conditions to be locally and globally competitive.

OVERVIEW QUESTIONS

- 17A** What makes someone an entrepreneur?
- 17B** How do enterprising behaviours help businesses?
- 17C** What are the various business structures?
- 17D** How do businesses take advantage of opportunities?



Before you begin

17.0.1 What makes a business enterprise a success?

GLOSSARY

collaboration working productively with others; requires good communication skills, tolerance and mutual respect

debts the money that is owed or due to be paid by a business

design thinking a guide to thinking of new solutions to problems; it involves understanding customers, defining the core problem, and generating ideas and solutions; often a product prototype is made and tested

digital literacy understanding or using digital technologies such as online content, video conferencing, artificial intelligence and cloud computing

e-commerce online buying or selling (trading)

enterprising ready to undertake difficult or challenging projects; energetic and daring

entrepreneur an innovative person who takes calculated risks to invent, design or create new products or services

initiative a readiness and ability to act and be enterprising

innovation a new product, service, idea or way of doing something better

revenue how much money a business makes through sales (generally for 1 year)

shareholders individuals or groups who own shares in a company

sole trader an individual who is the exclusive owner of a business

SWOT analysis an analytic tool to study internal business strengths and weaknesses, and external business opportunities and threats

vision an overall goal the business hopes to achieve (such as being the best in their industry or having the highest-quality product)

17.1 Entrepreneurs

The characteristics of entrepreneurs

An **entrepreneur** is someone who is **enterprising**. Generally, this person is recognised as an investor, owner or senior manager of a successful business. However, to be successful, anyone in a leadership role needs to have ‘entrepreneurial ability’, which is the skills and behaviours of an entrepreneur. Entrepreneurs create a shared **vision** with employees and communicate this overall objective clearly, so that everyone can work towards the same goals. Most successful entrepreneurs have a combination of these characteristics:

- innovation
- **initiative**
- self-motivation
- willingness to take appropriate risks.

Innovation

Innovation refers to the process of developing new ideas. Successful entrepreneurs come up with creative solutions to problems faced by consumers or businesses. These might involve developing new concepts that will help attract or keep customers; or taking measures to reduce the business’s costs and increase its profits. Some solutions could include developing entirely new products. Some recent examples of innovations include the smartphone and the driverless car. These products are designed to make lives easier and often lead to future developments in consumer products.



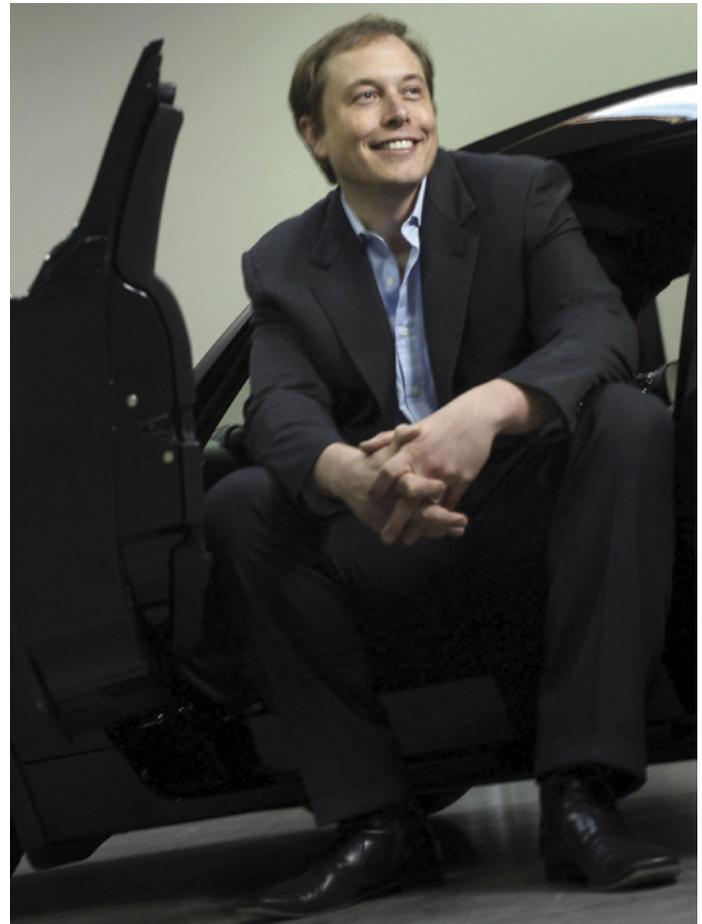
17.1.1 Driverless personal rapid transport pod cars are an example of innovation

Initiative

Successful entrepreneurs act or take charge of a situation before others do. This is essential for predicting and responding to changes in the market. An example of this is when Janine Allis was in the United States of America in 1999 and saw that the fresh juice and smoothie market was rapidly expanding. Despite the similarities between US and Australian consumers, there were very few juice bars in Australia at the time. Allis realised that this gap provided considerable business potential, so she seized the initiative and established Boost Juice®.

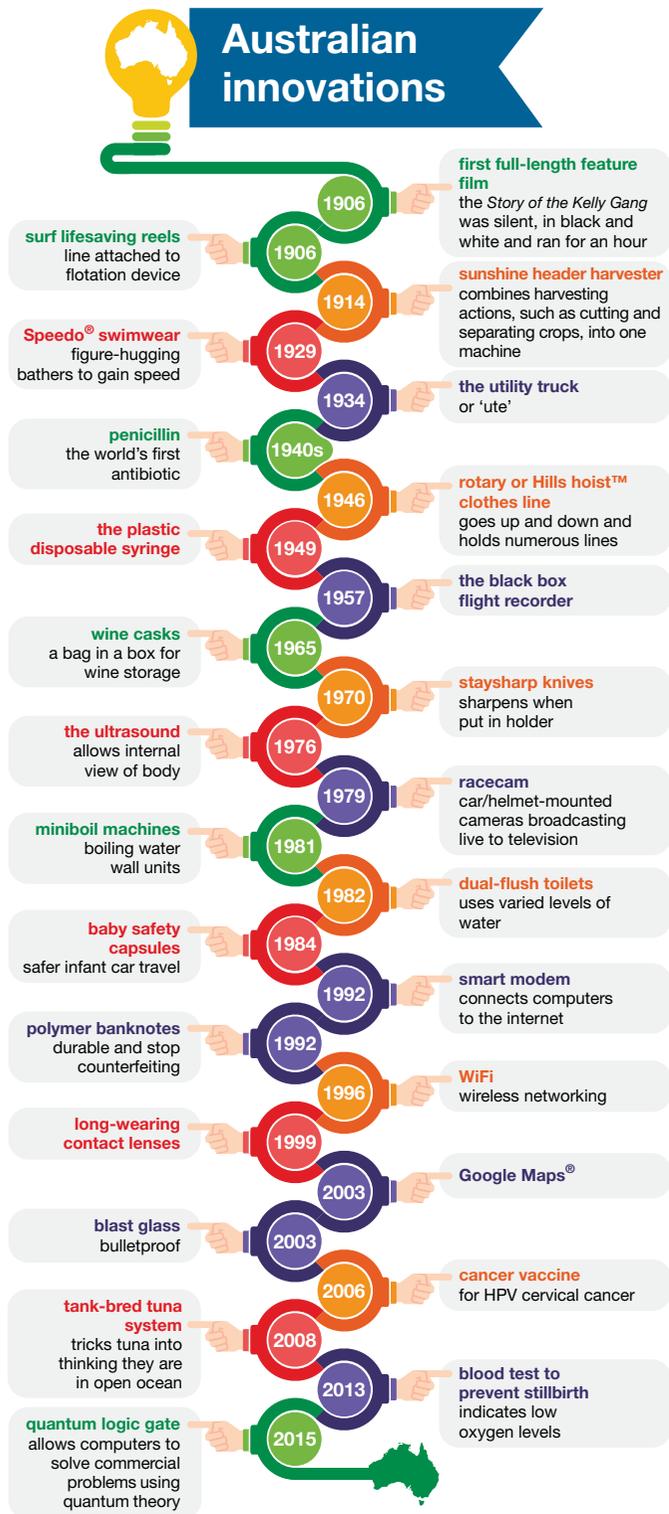
Self-motivation

Successful entrepreneurs are motivated to develop their ideas or business. They persevere when difficulties emerge. Elon Musk is an example of an entrepreneur who does this.

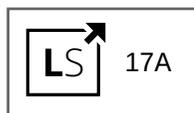


17.1.2 Elon Musk, co-founder of PayPal®, Tesla® and founder of SpaceX®

Musk was the creator of the secure payment system called PayPal. This is a system now widely used when people buy and sell over the internet. Musk took significant financial risks to create PayPal. He invested millions of dollars of his own money in the project.



17.1.3 Did you know that these innovations were all designed by Australians?



Musk was also the first person to send a commercial rocket to the international space station through his company SpaceX. In addition, he was the product designer for Tesla electric cars. Musk is an inventor with a degree in physics, so he is able to innovate using science. He also applies his business knowledge, which he built since writing and selling computer games when he was 12 years old.

Musk is now one of the most widely respected entrepreneurs in the world. He demonstrates a capacity to connect ideas and has a strong focus. He is highly motivated and sees opportunity when others see limits.

Willingness to take appropriate risks

All entrepreneurs need to take risks. This is whether they are starting a new business, developing a new idea, or finding ways to reduce costs. Sometimes the risk may involve large amounts of money, time or reputation. An entrepreneur needs to assess the likelihood of his or her project succeeding, and then decide whether the potential benefits of the project are worth the costs or risks.

Activities

Remembering and understanding

- 1 Check back in your glossary to define the term 'entrepreneur' and give an example of an Australian entrepreneur who is not already mentioned in this chapter.
- 2 State the four characteristics that most successful entrepreneurs demonstrate.
- 3 Identify the business Janine Allis started when she showed initiative. Explain how initiative is a good example of the entrepreneurial trait.

Applying and analysing

- 4 Identify the qualities displayed by Elon Musk in becoming one of the world's most notable current entrepreneurs.
- 5 Research a well-known entrepreneur and identify the behaviours and skills that he or she brings to their business; for example, does the entrepreneur create a shared vision, or demonstrate initiative, innovation and enterprise?

Evaluating and creating

- 6 Research three of the latest innovations from Samsung®. Create an A4 promotional poster that highlights the innovation displayed by each of the products.

17.2 Enterprising behaviours

Good business behaviours

Enterprising people are self-motivated, active and positive. They look for opportunities and are not afraid to take risks because they are optimistic about future rewards. They use initiative to problem-solve and they love to learn. People who are enterprising work productively with and take advice from others. They are always looking to innovate by continuously improving themselves and the systems they work in.

Organisations want to employ enterprising people because they have the skills required to make a project successful. Enterprising people are able to collaborate, create, plan, sell, work, manage money, use technology and reflect to evaluate performance.

Collaboration

Collaboration means working productively together. It requires good communication skills, tolerance and mutual respect. Teamwork increases efficiency because groups can achieve business objectives more quickly. Solutions and creative ideas are more likely when workers discuss and troubleshoot problems together, especially when a team includes diverse experience levels and thinking styles. Collaboration develops a sense of community and improves workers' job satisfaction. Workers can gain a support network from their colleagues, and they can build relationships and make friends.

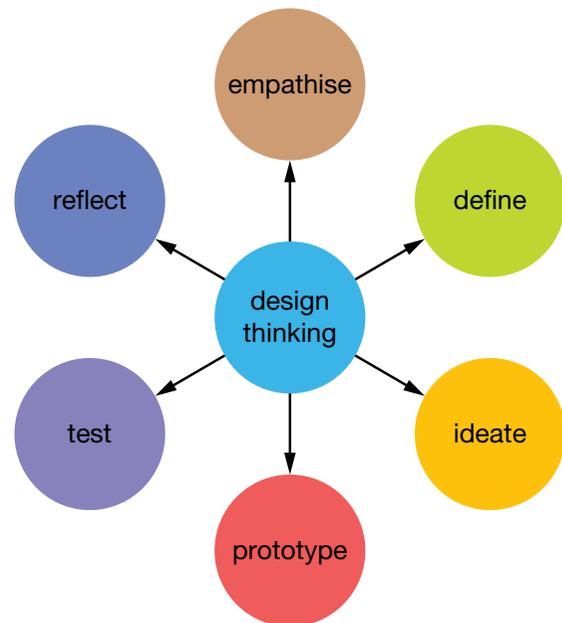
Collaboration benefits organisations because it helps employees to be confident in their work, to be more productive and to stay longer. Many workplaces are now being designed with collaborative and flexible work spaces to encourage teamwork. Online collaboration is becoming more essential to business success since more people are choosing to work from home and organisations are moving to operate globally.

Design thinking

Design thinking is a strategy to resolve issues or create products. It works well when a problem is complex or hard to clearly define. This method encourages collaborative brainstorming to generate creative ideas and encourages focusing on a solution, rather than the problem. Workers must put aside any of their own assumptions to commit to the process and work productively as a team. The design thinking process includes the following steps:

- empathise: get to know how an issue affects people, consult experts and gather customer feedback
- define: identify the core problem and pose questions about actions to make positive change

- ideate: generate ideas and alternative solutions
- prototype: construct a small-scale, inexpensive model to see if it works as expected and refine
- test: rigorously test the product to make more refinements, and see how people interact with it and if it solves the initial problem
- reflect: how did this process work? What could have been done better? What improvements would you make next time?



17.2.1 The design thinking process



17.2.2 Everyone can improve their creativity with practice and tools like the design thinking process

Skills builder

Worst possible idea

Design thinking involves brainstorming but sometimes people are reluctant to contribute in a group setting. This is when a technique such as the worst possible idea can help encourage participation.

- 1 As a small group of less than five people, agree on a problem you currently have.
- 2 Use a physical or digital whiteboard to record every worst idea possible for a product to fix that problem; nothing is too wacky and every idea is recorded.
- 3 Agree on the worst product idea possible and share your problem and solution with the class.
- 4 Congratulate everyone on their truly terrible ideas. Discuss with your team how this technique helps to get every team member involved.

Design thinking process

Use the problem identified earlier and the same team to work your way through a design thinking process. Be as fanciful as you like, but make sure your product solves your particular problem.

Use an A3 sheet of paper to map a plan of action you could take to solve the problem. Use the six process stages to design your concept map:

- 1 *empathise* (get to know how an issue affects people, consult available experts and gather customer feedback)
- 2 *define* (identify the core problem and pose questions about actions to make positive change)
- 3 *ideate* (generate ideas and alternative solutions)
- 4 *prototype* (construct a small-scale, inexpensive model to see if it works as expected and refine)
- 5 *test* (rigorously test the product to make more refinements, and see how people interact with it and if it actually solves the initial problem)
- 6 *reflect* (how did this process work? What could have been done better? What improvements would you make next time?).

Working

Enterprising people get things done. They don't wait for opportunities, but instead seek them out. They act when others just talk about doing something, and they manage their time well. The main objective of a business is to complete core work, such as making a profit or providing a service. To do this, a business needs employees who will be committed every day to meeting the set targets.

Busy people are able to fit more into their day if they use their time productively. They can use speakerphone so they can keep typing when they are on call waiting, or they can have a 'walking meeting' to discuss matters with colleagues on the way to somewhere else. Time management tools can assist productivity; for example, ticking off checklists, and setting and sticking to schedules.

Managing money

Managing money and financial planning are essential enterprising skills. These are not skills we are born with. They are developed by practice over time. Unfortunately, many people learn money management through trial and error. Mistakes are always good learning opportunities, but financial flops can have long-lasting effects and be a serious problem.

Keeping accurate records is the first step to becoming a money manager. To do this, you will need to calculate your expected income earnings and then create a budget for your expenses. This is so you spend only what you can afford. You will also need to know the difference between your wants and needs so that you can allocate your money in the best way. You can research the best value deals and delay your needed purchases until more favourable times. After you have done this, you can consider saving and investing to increase your wealth.

Enterprising people work hard for their money and then they make it work for them by borrowing and investing wisely. They set financial goals and then track their progress as they work consistently towards achieving them.



17.2.3 Businesses cannot operate without money, so managing and planning finances is an essential enterprising skill

Technology skills

Enterprising people need to be comfortable using technology, and adapt to the constantly changing technological environment.

‘Media literacy’ refers to using different kinds of media, interpreting the messages communicated and thinking critically about them in order to make well-informed decisions. Since so much of our modern world is now online, media skills include technology skills and working with digital content.

Enterprising people work on their own technological, media literacy and **digital literacy** skills. Their activities include:

- online document sharing
- cloud computing and data storage
- digital record keeping
- video conferencing
- mobile working by using smart devices
- web publishing
- ensuring cyber security
- troubleshooting technological problems
- using artificial intelligence to their benefit
- practising good online citizenship behaviours, such as respectful communication and crediting authors of online material.

Evaluating

Enterprising people are comfortable reflecting on their own and their business’s performance. They enjoy and want to learn, so they use skills like the PDSA cycle (see page 352). People who are enterprising tend to question the status quo (how things are right now) and work to make things better. This includes improving their own skills, knowledge and abilities.

A business can be evaluated (have its financial worth estimated) in many ways. One way is to add up the value of the business’s assets (things the business owns). Value can also be estimated by looking at a competitor that is similar. Another way is based on what they have earned in the past and what they might earn in the future. A business valuation is important for buying and selling businesses. A valuation technique is demonstrated on shows like *Shark Tank*[®], where business owners offer the ‘sharks’ a percentage of ownership of their business. The business value is worked out on estimated future sales of products or services.

Stories of business failure are a rich source of information that can be helpful for enterprising people to avoid making the same mistakes. The most common reason for business failure is a lack of cash flow (money moving into a business as income and out as expenses in a period, usually a month). An example is that a business may have made many sales, but the business has not yet been paid, so there is no cash for the business to pay any money it owes. This is why planning and managing your money well is important.

Another frequent business mistake is not spending enough money on marketing (advertising, promotions and product launches) to find potential customers. Even the most useful or impressive product available will not sell if no one knows about it; if there are no customers, there will be no sales or profit, and that means there is no business.

Did you know?

Artificial intelligence (AI) systems are already used across many industries. AI can be used to predict text on smartphones, create first drafts in article publishing or graphic design, compile legal reports, and translate written or spoken text. Before a human ever reads a movie script, AI systems can sift through them to analyse story structures for what most pleases audiences, estimate box office takings and even determine how emotional audiences will be and when.



17.2.4 Enterprising people are willing to reflect on personal and business performance to look for areas to improve

Activities

Remembering and understanding

- 1 Suggest the kinds of business environment factors that are changing the skills needed to be employable.
- 2 What might good online citizenship behaviours include?

Applying and analysing

- 3 Investigate how artificial intelligence can help in the business world by searching for IBM's Watson and the stories about how it is being used to improve our world. Summarise two case studies that you find.
- 4 Reflect on work skills now and in the future as you answer the following questions.
 - a Discuss with a partner some enterprising behaviours that you think workers require today and make a note of the three you agree are most important.
 - b Consider the kind of good business behaviours and work skills required in the future. Will they be the same as now? After your discussion, suggest in writing three skills the future workforce will need to be successful.



17.3 Business in Australia

Having a good idea for a product or service is an essential part of starting a business, but this does not guarantee success. After having the good idea, the entrepreneur needs to decide how to structure the business, how to respond to changing circumstances and how to manage employees. To make the issue more difficult, decisions that are appropriate for today's conditions may be unsuitable in a couple of years' time. To be successful a business needs the good idea, but also the creativity and flexibility to cope with change.

Business structures

A business is any organisation that is involved in buying or selling goods and services. This includes very small businesses run by just one person, such as a local shoe repair kiosk, all the way up to large corporations with thousands of owners, such as Woolworths. There are several common business structures in Australia. These include:

- sole trader
- partnership
- corporation
- cooperative
- franchise.

Sole trader

Being a **sole trader** is the simplest way to structure a business: one person owns the business and makes all the decisions about how it is run. Sole traders can employ others to work in the business, but the owner makes the strategic decisions. If there are fewer than fifteen employees, the sole trader is also considered to be a small business. The owner is responsible for any business **debts** (any money owed to others). This means that if the business fails, the owner may need to sell some of their personal assets, such as a car or house, to pay off the business's debts. Examples of businesses suitable to be sole traders include business ventures like a local fish and chip shop or an online subscription service (like monthly delivered beauty goods or digital magazines).

Partnership

In a partnership, the business is owned by two to twenty people. These people share in the decision-making process, but generally have authority to make decisions equal to the percentage of their share. Like a sole trader, the partners in the business are personally responsible for any business debts and they share in any profits that are earned.

The advantages of partnerships include being able to spread the workload in accordance with each partner's experience and expertise. An example of a business partnership is VonBlü vegan lipstick founders Julianne Prochilo and Stefan Vrankovic. One having worked as a make-up artist and the other in pharmaceuticals; their professional skills combine to make them a successful business duo.

Corporation

A corporation is a much more complex business structure than a sole trader or partnership and it is generally a large business with many employees. There are many owners, known as **shareholders**, who own shares in the company. Their influence depends on the number of shares they own. Rather than having day-to-day input, shareholders elect directors to oversee the operation of the business and appoint senior managers. Examples of Australian corporations include Telstra[®], AGL Energy[®] and the Westpac[®] Bank.



17.3.1 All the shareholders of a corporation are invited to an annual general meeting, where the directors report on the company's progress through the year and shareholders vote on key measures

A corporation (also known as a company) has the same legal rights as a person: it can sue others, be sued and must pay its own debts. This means that the shareholders are not personally responsible for payment of the business's bills, so even if the company fails, shareholders are not required to sell their personal assets to pay debts.

Cooperative

A cooperative is a business that is owned, controlled and operated by a small group of five or more owners for their own benefit. It is often a small business, but is special because the members all have an equal say in the running of the business, regardless of the amount of money they have contributed. Like a corporation, a cooperation is a separate legal entity, so the members are not responsible for any business debts of the business.

Most cooperatives limit the amount of profit that can be paid out to members. Some do not allow any to be paid out, preferring instead to reinvest profits back into the business. In several regions of Victoria, organisations have formed local cooperatives to make the most of their combined resources. Examples of these include the Southern Obedience Dog Club Co-operative, the Swan Hill Theatre Group Co-operative and the Macalister Demonstration Farm.

Franchise

A franchise is a special type of business relationship in which a parent business gives permission to independent people to promote and sell their business's products and to use their name for a certain period of time. This is based on a formal legal document called 'the franchise agreement'.

The business founder, or *franchisor*, can set a maximum price that the products can be sold for, but the operator of the franchise (the *franchisee*) is free to charge less if they choose. The franchisee is the person who has access to knowledge of how the business is run and its overall marketing. This is an advantage because the franchisee can draw on the specialist skills of others and use well-tested business systems. However, it can be very expensive to purchase a franchise and some agreements can set strict controls on the operation of the business. IGA[®] supermarkets, Bakers Delight[®] and the Jim's Group[™] are all examples of franchises.



17.3.2 Boost Juice is an Australian franchise chain that now operates in seventeen countries

Did you know?

The Jim's Group of franchises began with gardening because Jim Penman needed some part-time work while he completed his PhD studies in history. In 1982, he decided to focus on the business full time, and he franchised it in 1989. Jim's is growing every year by around 200 franchises, with a total of nearly 4000 independent owners in four countries. This gives franchisees the right to use Jim's name, logo and marketing to build their own business. Jim's now has almost thirty divisions including painting, concrete cutting, locksmiths, computer services, asbestos removal, insurance, dog washing and, of course, mowing. Jim is still the owner and full-time CEO; he loves his work and has no plans to retire.

Activities

Remembering and understanding

- 1 List the different types of business structures.

Applying and analysing

- 2 Summarise the important features of a business partnership.
- 3 Test the idea that the biggest businesses in Australia are all corporations. Conduct research to either prove or disprove this idea. Then, write your findings in a paragraph that argues one way or the other. In your analysis, you will need to show the aspects of the businesses that have made you decide whether the biggest businesses are corporations. Remember to provide evidence to support your contention by referencing your sources.
- 4 Do research online to find an example of a sole trader that became a corporation and outline their expansion story.

Evaluating and creating

- 5 Compare a cooperative and a franchise. Evaluate which is the most effective way to structure a business. To do this well, you could define the terms first and give an example, and then list the strengths and weaknesses of each. Conclude with which is the most effective structure.



17.4 Business opportunities

Long-term business success

In order to remain successful, businesses need to identify and respond to changes in their market. To do this, managers often need to think creatively about potentially difficult situations and turn them into opportunities for business growth. Businesses that do not respond successfully to changes in the market may become outdated and irrelevant; the business's industry may have many more dynamic (constantly changing) and appealing competitors. A business that wants long-term success today needs to be globally aware and compete with businesses from all around the world.

Changes in demand

A central requirement for business success is to have a reasonable level of demand for their product. Patterns of demand can easily change for many reasons, including:

- *population changes*; for example, a baby boom (more babies being born) will greatly increase demand for prams, while an ageing population will increase demand for home support services
- *changing fashions*; for example, a product may be wildly popular for a short period of time, then have a total market collapse
- *competing items*; for example, if other businesses are producing a cheaper, higher-quality product or more desirable substitute, the business may find that demand for their product decreases rapidly.

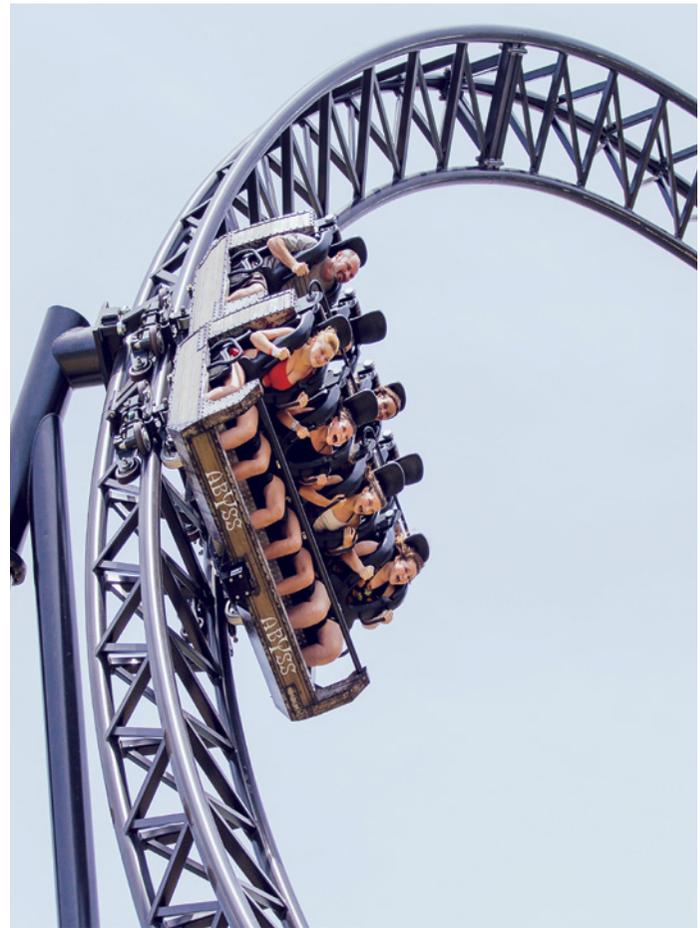
Businesses need to ensure they stay up to date on the interests, hopes and concerns of their target market. Managers may be able to identify, or even predict, shifts in demand at a very early stage if they have a deep understanding of the market. This gives the managers time to plan the response that gives the business the best competitive advantage in the situation.

Other changes

Changes in law and government policy

Changes in government policy (the plans or principles that guide how a government acts and manages its day-to-day running) and laws can often affect the way organisations operate. This might include changes to:

- safety regulations that require businesses to update the way a product works or is produced
- tax that affects how much it costs to make an item or what price it can be.



17.4.1 The Adventure World® Abyss® roller-coaster in Perth cost \$12 million to build; the loops, climbs and drops are like the ups and downs of uncertainty that all businesses must face

These sorts of changes are usually announced several weeks or months before they take place. This gives business managers the time they need to ensure they are up to date on the news relating to their industry. A change in government after an election can be an unstable time for business because this is when policies are most likely to change.

Changes in competition or resources to produce goods and services

Changes in the operations of suppliers or rival businesses can also create significant opportunities. If another organisation changes its product in some way, or if key resources are more difficult than usual to obtain, the business may need to quickly change its operations. Some examples of this might be a restaurant changing their weekly specials to suit the seasonal produce, or a florist substituting flowers in bridal bouquets because of the types of blooms available due to the weather.



17.4.3 Peony roses are sought after for bridal bouquets, but they do not flower for long and need a cold winter to grow well. They can be imported, but will then cost more so other types of roses often need to be substituted.

Internal changes

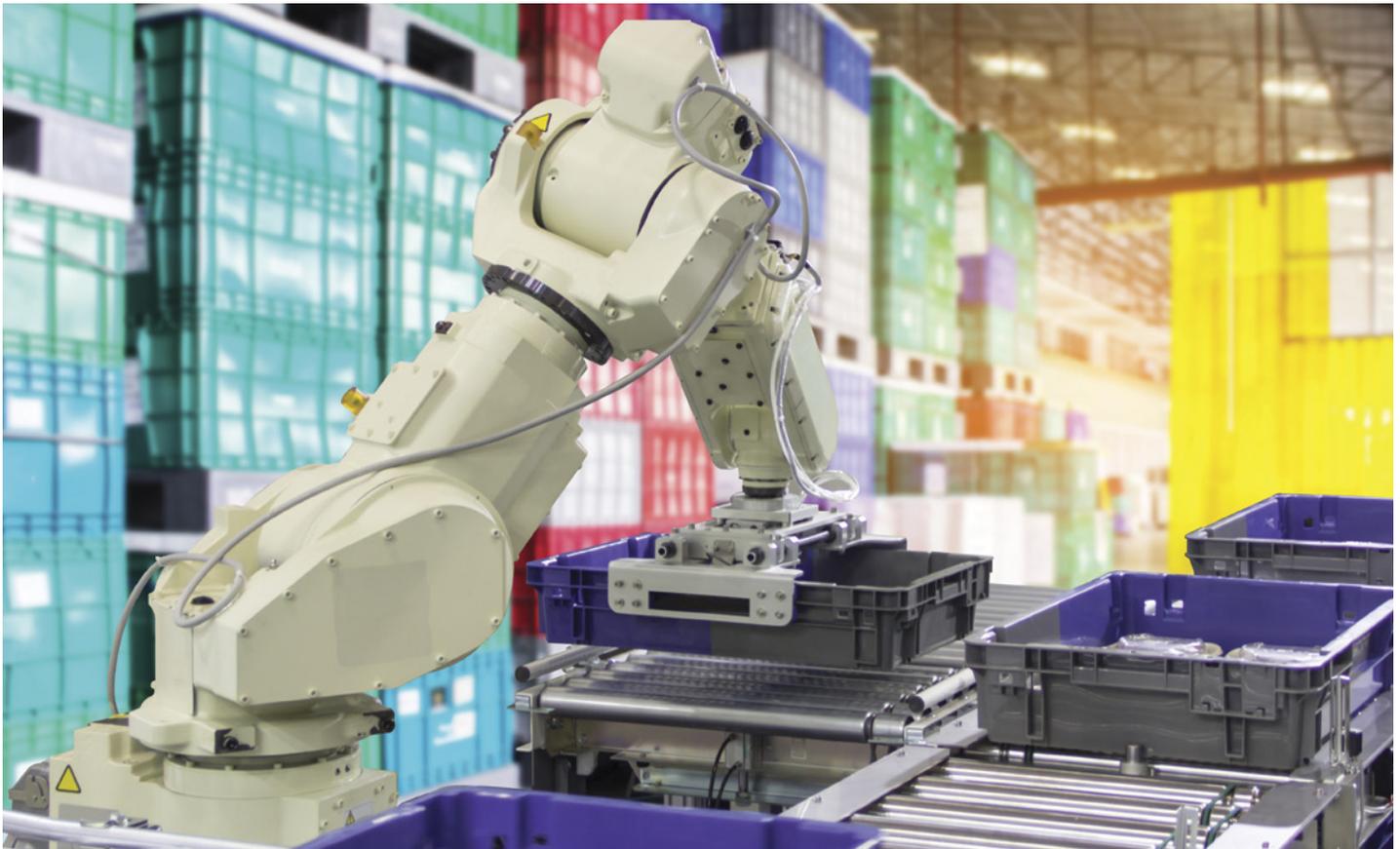
Businesses may also be affected by internal changes. When an employee leaves, this creates a risk that essential skills or information might be lost. Alternatively, when a

new employee arrives, they may bring new ideas and methods that can affect the way the business operates. This could affect any aspect of the organisation's operations, from how the product is made to the overall management style.

Changes in technology

Technological advances drive business change and offer opportunities. There has been a dramatic increase of **e-commerce** (buying and selling online) and improvements in communications technologies. This enabled smaller businesses to compete on a global scale. A local business now has access to overseas markets, international workers and sometimes better business conditions, such as paying less tax in other countries.

Technology, in the form of robotics and automation (replacing human workers with machines), has also driven improvements in productivity. Technology has changed the way businesses allocate their financial resources. Human labour is often the largest expense for a business, so replacing workers with machines can be more cost-effective. Machines are expensive to design, install and maintain. However, they can produce high volumes of identical products and they can operate around the clock without taking breaks. They are also able to accurately perform repetitive, very complex, precise or dangerous tasks.



17.4.4 Robotic technology offers business opportunities like saving on labour costs or performing dangerous, precise or complex tasks that people cannot do

Responding to market opportunities

Often businesses need to respond to changes very quickly, before their product loses momentum in the market. This might involve changing the product in some way, developing a new line, revising the product's price or creating a new advertising campaign.

Sometimes, managers may change the way their business operates if it is slower to respond to market conditions than its competitors. Useful strategies could include: changing the management style to encourage greater input from employees, altering pay structures to allow for bonuses for employees who do great work, or employing more people with the key skills that the business needs.

Today, almost half of all internet users can now be found in the Asia-Pacific. There are, on average, twenty new mobile broadband subscriptions every second, around half of which originate in the Asia-Pacific region. China alone is expected to add more than 250 million new mobile subscriptions over the next five years. For Australian enterprises, that presents enormous opportunity for growth.

17.4.5 Nigel Stitt, Head of Sales Australia/New Zealand of Global Enterprise Services, International

The substantial technological progress of recent years has meant that many businesses have needed to alter the way they sell their products. They have done this to maintain their market share or to access new markets. There are advantages in making e-commerce safe and easy for customers, and businesses have more customers if the customers can book or purchase online. However, the online environment also makes it easy for customers to obtain the prices of competitors. As a result, the level of competition and the pace of change is now faster than ever before in many industries.

Many businesses use **SWOT analysis** to cope with continually changing market conditions. This analytic tool lists **S**trengths, **W**eaknesses, **O**pportunities and **T**hreats. It enables a manager to look at a situation from these four important areas and decide on areas for improvement. A SWOT analysis can help a manager choose between alternative courses of action. It outlines the current strengths and weaknesses of a business, and this information can be used to develop different ways of responding to external opportunities and threats. In addition, businesses must work out the opportunity cost of taking one action over another, so a SWOT analysis is useful in deciding which action to take.



17.4.6 Some businesses find the SWOT framework useful when deciding how to respond to changes in the market

Activities

Remembering and understanding

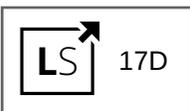
- 1 Describe how the population can influence demand for a product.
- 2 Explain what having a deep understanding of the market might involve.

Applying and analysing

- 3 Give examples of how changing fashions can influence demand.
- 4 List two products or businesses that directly compete with one another. Justify your answer.

Evaluating and creating

- 5 Which of the following has the greatest impact on the operation of businesses?
 - changes in government policy
 - rival businesses
 - internal business changes.Give at least two reasons in your answer.
- 6 Use bullet-point lists or draw up a table with four cells to conduct a SWOT analysis on yourself.
 - a Strengths: What aspects in your environment assist you? (Examples could include family members that support you or capable teachers.)
 - b Weaknesses: What is hindering you? (Examples could include your tendency to procrastinate or being disorganised.)
 - c Opportunities: What opportunities are available to you? (Examples could include doing new things, having a different study routine or using an external tutor.)
 - d Threats: What are the external things that distract you or are mostly outside of your control? (For example, a new series on Netflix or moving to a new house.)
 - e Highlight areas in your SWOT analysis where a course of action for you is possible.
 - f Note what you might do differently to make improvements.
- 7 Choose one business and formulate a SWOT analysis of how it will be affected by changing market conditions in Australia.
- 8 Work with a group of three other students for this teamwork hypothetical task. You and your team have been asked to undertake a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) for a large company (for example, Nike, Cadbury, Apple). The company wants to make sure they are heading in the right direction and continuing to maintain a successful business so they require a thorough examination by your team.
 - a They want one member of your team to look at each of the following:
 - *strengths*: what they are doing right, what they excel at, how they are ahead of their competitors
 - *weaknesses*: what they are doing wrong, areas they can improve on
 - *opportunities*: areas they can move into, ideas they haven't thought of, new uses for technology in their business
 - *threats*: potential problems they may face in the future, what competition they have in the marketplace.
 - b Present your team's SWOT findings in an ICT presentation.



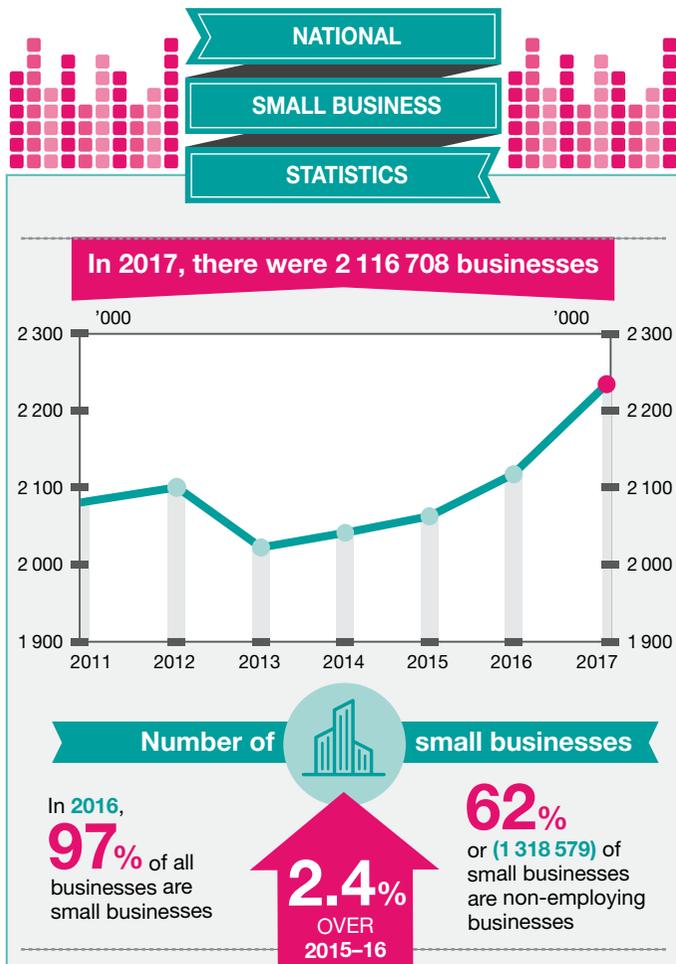
17.5 Australian businesses

Diversity of business

Over 2 million businesses are actively trading in Australia (see Figure 17.5.1). More than a quarter of these are based in Victoria. The top industries in Australia include:

- construction
- professional, scientific and technical services
- retail trade
- accommodation and food Services
- agriculture, forestry and fishing
- health care and social assistance.

The five Australian businesses highlighted in this section reflect the considerable diversity of the business community. The case studies are drawn from the retail, health, law, hospitality and mining industries.



17.5.1 Number of small businesses in Australia

Business case studies

Each business studied here demonstrates that flexibility and openness to change are essential to ongoing business success. Some of the business owners have updated their skills. Some have changed their operations significantly as part of the ongoing process of business: to predict and respond to changes in the market.

Raining Spirit Dojo™

Sole trader Sylph Hawkins used his enterprising spirit and Japanese martial arts skills to set up a training school in 2009. He was passionate about fitness and empowering young people. However, after running a small venture from various premises, he realised he needed business skills in order to succeed.

Hawkins went back to school to complete a small business course to help him develop enterprising skills and so he could make more effective decisions. He now runs a business called 'Raining Spirit Dojo'.

Hawkins hired past students as teachers and shares his space: with local community groups. His business is committed to using ethical business practices. Some of these practices include using environmentally friendly power, and recycled paper and vegetarian inks for printing.

Hawkins, known as 'Sensi Hawkins' ('sensi' means teacher in Japanese), has studied and taught martial arts since 2000. He has black belts and teaching certificates in the Hoshin Jutsu Ryu and the Bujinkan Budo Taijutsu styles. He has also created his own form of twelve-phase Hoshinden Jutajutsu.

Hawkins teaches children, teenagers and adults martial arts. He also gives self-defence classes at his business location in Research and at festivals around Australia. He is interested in oriental philosophy and the mechanics of movement. He is known for his fun and exciting classes. Hawkins has three tips for small business operators:

Take the time to help train others. Younger people are our future; if they can help spread the word about your business, that's great, but you can also help skill them to build their own livelihoods.

Minimise debt. Look after your cash reserves [and] don't rely on credit cards ... you will become more resilient as a person and a business person.

Build relationships with your community. Support other small business people where you can. They will support you, in turn, adding to a genuinely positive sense of community.

Uncle's Smallgoods™

Over 20 years ago, Marian and Nora Poprawski set up a business to cater for Eastern European immigrants. They aimed to:

feed the Eastern Europeans of Australia with carefully hand-crafted and wood smoked smallgoods, sausages and cured meats, based on century old traditions and recipes from the homeland.

The couple began working from home for friends and the Polish community, but soon moved to a manufacturing premises and deli in Dandenong. Their business, Uncle's Smallgoods, now sends their smoked-meat products around Australia.

The Poprawskis are retired and the business is now managed by a brother-in-law partnership, Brendan D'Amelio and Bert Glinka. D'Amelio and Glinka were familiar with and respected Uncle's Smallgoods products after selling their kranisky sausages at markets. However, before being allowed to take on this much-loved family venture, they had to prove themselves to the Poprawskis. D'Amelio and Glinka showed how hard they could work by chopping an enormous pile of wood on a hot day. They received the Poprawskis' approval, and bought Uncle's Smallgoods.



17.5.2 Uncle's Smallgoods is still smoking hams to meet demand

D'Amelio and Glinka focus on traditional methods and locally sourced ingredients, but are open to innovation and expansion. They came up with a sausage bouquet as an alternative to roses for Valentine's Day. They have now opened two cafes to attract a younger market. And they have a business model where customers can sample the goods before buying at the deli to take some home.

Uncle's Smallgoods now employs twenty staff and they have expanded by setting up a factory to produce wholesale products.

Glinka says:

We believe in uncompromised quality, natural local ingredients, passion and real wood smoke.

Your Law Firm®

Meda Royall is the founder and Chief Executive Officer (CEO) of Your Law Firm. She worked for 4 years before providing the first Australian law franchise opportunity in 2015. Royall is a technical expert in all aspects of commercial law and litigation. She juggled running a business and working with looking after a young family.

Royall is known for her legal, social and management knowledge and skills. She covers the needs of her customers and ensures they are satisfied. Royall's initial focus for her business was on offering online law services. She engages low-cost, but highly educated, Indian law graduates for legal assistance work. She makes use of technology through cloud computing and video conferencing.

Royall now offers her franchisees secretarial and legal assistance, marketing, professional development, planning, cash flow assistance, business advice, corporate governance and compliance help. Her model suits lawyers with family responsibilities and commitments, and lawyers who want to control their work-life balance. Being a franchisee in Your Law Firm frees solicitors from working their way up large law firms and it suits legal experts who are looking for a different work culture, particularly women.

Royall says:

Franchising as a business model enables people to be part of a wider network, but also to have the autonomy of having their own business and pretty much determine their direction.

BHP

BHP (formerly BHP Billiton) is a resources company with more than 60 000 staff across Australia and the Americas. It has a **revenue** each year of over \$US 38 billion. BHP is a large corporation. It extracts and processes oil, gas, coal and minerals, including iron ore and copper. The business is run by a board of directors and has shareholders as part owners. Shares are traded on the Australian Securities Exchange (ASX). Their value depends on how much they are in demand and how much people will pay for them.

The central business goal of BHP is to add shareholder value. They aim to do this through achieving the highest levels of productivity, quality and profitability. BHP's other main business goals are to provide employee and client satisfaction, and to be a good corporate citizen.

The company began in the 1800s as the two businesses Broken Hill Property in NSW and Billiton Island, a tin mine in Indonesia. The business founders had enterprising behaviours early on. This was demonstrated in actions such as:

- risk taking: paying for the largest Australian mining lease in 1883 after discovering silver and lead
- innovating: creating a new mining process in 1902 to extract larger amounts of zinc
- expanding: opening the largest steelworks in Australia in 1915
- taking advantage of a market need: establishing mines to produce aluminium needed for planes in 1935
- diversifying business activities: building ships for the navy in 1941

- seeking areas for improvement: opening a research facility in 1957 to develop new techniques in refining, steel making, ore processing and natural resource discovery
- collaborating: worked with ESSO to discover oil in Bass Strait in 1967
- managing: becoming a major coal exporter in 1984
- creating: merging in 2001 to pool resources and become one of the world's largest resource companies.



17.5.3 BHP has mining operations in Australia, North America, and South America, and petroleum operations in the U.S., Australia, Trinidad and Tobago, the UK, and Algeria.

Smiggle®

Smiggle is an example of a company where the managers have taken carefully considered risks. The business was founded in Melbourne in 2003 by Stephen Meurs and Peter Pausewang. These entrepreneurs wanted to fill a market gap by providing fun, engaging, collectable, fashionable and affordable stationery. They aimed their products at young teenagers and soon experienced success.

In 2008, Meurs and Pausewang took the risk of expanding Smiggle into New Zealand. Then they took the risk of expanding into Singapore in 2011, the United Kingdom in 2014, and Malaysia, Hong Kong and Ireland in 2016.

These expansions required the business to spend significant amounts of money. The organisation engaged in a lengthy period of market research and planning to help manage the risks involved in each expansion. Despite this careful planning, risks and uncertainties remained. It was the task of Meurs and Pausewang to make the final decision about whether to proceed. While Smiggle's expansion has been successful so far, there are many other entrepreneurs who have not had this degree of success.



17.5.4 Smiggle store in Melbourne Central

Activities

Remembering and understanding

- 1 Identify the percentage of Australian businesses that are based in Victoria.
- 2 Work out and record the year of establishment for the five Australian businesses mentioned as case studies in this unit.
- 3 Classify each of the business case studies by their business structure.
- 4 Describe in detail what one of the businesses offers its customers.
- 5 Where and when did Smiggle first expand its Melbourne business and how is this an example of taking a business risk?

Applying and analysing

- 6 Research the marketing strategies used by one of the businesses and comment on its effectiveness.

Evaluating and creating

- 7 If you could invest money in one of these businesses, which one would you choose and why? Consider the factors that contribute to the success of a business, such as location, quality of service, quality of products, innovation and sound management practices. Justify your response in a paragraph.

Glossary

A

- ab urbe condita** Latin for 'From the [time of the] founding of the City [of Rome]'
- accessibility** how many people have access to a product, device, service or environment
- accessible** easily entered into, especially in the context of giving elderly people and those with disabilities easy access to places and services
- active citizen** a person who participates in their community to the best of their ability
- AD/CE** *anno Domini* (after the birth of Christ)/of the Common Era
- afterlife** life after death; a place where a person goes after they have died
- agora** the marketplace or centre of a Greek city-state; public offices and shops were in the *agora* and people met there to socialise
- agricultural plain** an extensive area of level or rolling treeless land, used for farming
- air mass** a body (or area) of air with similar temperature, humidity and pressure
- air pressure** the weight of the air pressing down on the Earth's surface at a particular location
- ancient history** the period from when humans began to produce written records
- Anglo-Celtic** people who were born, or whose ancestors were born, in the British Isles
- anthropologists** people who study the origin, development and varieties of human beings and their societies
- Anzac** the soldiers who served in the Australian and New Zealand Army Corps (ANZAC) during World War I (1914–1918 AD)
- aqueducts** artificial channels built to transport water
- aquifers** layers of rock that can store large quantities of water
- archaeologists** professional workers who recover and analyse material remains such as artefacts
- artefacts** objects made by humans (like pottery and flint spears) that are used by historians as evidence to learn about the past
- artisans** workers who create goods with their hands after training in the necessary skill; for example, metalwork, making silk, ceramics
- Aryans** a group of peoples who began arriving in India via the Hindu Kush mountains in about 1400 BC. Most Indians trace their descent from these groups
- atman** the soul of the person in Hinduism
- atmospheric pressure** the pressure/weight of the atmosphere at sea level
- aulos** an ancient Greek wind instrument
- auspices** signs of approval or disapproval from the gods

B

- barter** the swapping of goods or services for other goods or services without using money
- BC/BCE** before Christ/before the Common Era
- bias** unfairly favouring one opinion or point of view
- bier** a stand on which a corpse is laid before the funeral
- biophysical environment** environments that are dominated by natural features such as landforms and vegetation; this includes the Earth's soil, water, air, sunlight and all living things
- blue water** fresh surface water and groundwater, such as lakes, rivers and aquifers
- BOLTSS** the essentials of a map: **B**order, **O**rientation, **L**egend, **T**itle, **S**cale, **S**ource
- BP** before the present
- brahman** the single source of all creation in Hinduism
- brahmin** the *varna* (class or caste) of priests in ancient Indian society
- brine** a very salty solution
- business** organisations that use workers and other resources to make money, so they can keep operating and expanding

C

- capital** human-made resources such as tools, vehicles, machinery and buildings
- catchment** an area of land where water (from precipitation) is collected by the natural landscape. The water then flows or drains into rivers, creeks, streams, dams, lakes or into a groundwater system
- census** an official count or survey of a population that gathers information about age, gender, income, occupation, ancestry and religion
- chronology** the order (sequence) of events
- 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
- civic** something that is related to, or that benefits, citizens in a society
- civics** the study of the rights, responsibilities and duties of citizens, and how the government works
- civilisation** when large groups of people live together in complex and well-developed ways
- civil rights** the rights of citizens to political and social freedom and equality
- climate** the long-term weather pattern for a place or region
- collaboration** working productively with others; requires good communication skills, tolerance and mutual respect
- colonisation** the process of settling among and establishing control over the indigenous people of an area
- concubine** a woman who was not married to the emperor, but who still lived at the palace and had his children; some wealthy men also had concubines

Confucianism belief in the philosophical teachings of Confucius. These formed the basis of the government's official examination system

conscripts men forced to serve in the army or to work on some official project

constructed environments human-altered landscapes, including the features normally associated with settlements, industries and agriculture

consumer a person or a group that is the final user of goods and services

consumers the customer who consumes the good or service produced

consumer sovereignty the situation in the economy where the needs and wants of consumers control what is produced

contour lines lines on a map that join places of equal height above sea level

corroborating verifying information by searching a range of sources

Creator Ancestors spiritual beings who shaped the Earth during the Dreaming, providing life and laws to people

cultural relating to the ideas, customs and social behaviour of a society

D

dam a structure built across a river to control the river's flow and create a reservoir (lake)

Daoism belief in the philosophical teachings of Laozi. This includes the idea that people should live in harmony with nature

debts the money that is owed or due to be paid by a business

deciphered decoded or translated

deep aquifers deep underground layers of water stored in rock; this water is difficult to access except with expensive drilling

deities gods or goddesses, or divine beings

delta an area where a river splits into separate rivers before flowing into a sea

demand how much a product (good or service) is wanted by consumers

democracy a form of government in which people choose leaders by voting, and in which everyone is treated equally and has equal rights

demographic profile relating to the characteristics of different groups of people who make up populations

desalination the removal of salts from seawater or other saline (salty) solutions

design thinking a guide to thinking of new solutions to problems; it involves understanding customers, defining the core problem, and generating ideas and solutions; often a product prototype is made and tested

digital literacy understanding and using digital technologies such as online content, video conferencing, artificial intelligence and cloud computing

discriminate to treat different categories of people unfairly or unjustly, such as on the grounds of race, sex, gender or age

diversity showing a large amount of variety and difference

drainage basin the area where water collects and moves towards a river and its tributaries (branches of water from the main river); similar to how a bath catches waters and drains; also known as a catchment or river basin

drought a prolonged (lengthy) period of below-average rainfall

dynasty a family of rulers

E

e-commerce online buying or selling (trading)

economics the study of the production of goods and services, and how they are valued, traded and consumed; it is a cycle that transfers wealth around the world

Egyptomania a modern term used to describe the fascination with ancient Egyptian culture and history

embalming preserving a dead body from decay; in ancient Egypt this involved using spices and salt

empathise to understand and share the feelings of another

enterprise the resource or skill provided by people who organise, fund or manage production to make a business successful

enterprising ready to undertake difficult or challenging projects; energetic and daring

entrepreneur an innovative person who takes calculated risks to invent, design or create new products or services

environment our total surroundings, such as the living and non-living features of the Earth's surface and atmosphere; this includes features that are changed or created by people

equilibrium when supply and demand are balanced; producers are making enough (quantity) and are satisfied with the payment they receive for their product or service, and consumers can access enough product and will pay the set price

equites wealthy plebeians who were involved in commerce and finance

ethnic group parts of a population with common national or cultural traditions

evaluate (history) to judge the accuracy or reliability of a source

evaluate (civics and citizenship) to make a judgement based on your research

evidence primary and secondary sources

F

fair trade trade in which fair prices are paid to the producers in developing countries to help reduce poverty

firestick farming controlled burning of the land by Indigenous Australians to help with hunting and to control native flora and fauna

First Fleet the name given to the eleven ships that departed from England to arrive and settle in Australia on 26 January 1788 AD

flash floods floods resulting from intense storms dropping large amounts of rain in a short time

floods when land that is normally dry becomes covered by water; floods are caused by overflow of water from a river or stream, or the release of water from a dam

freedmen/freedwomen slaves who were granted freedom by their master

G

geography a structured way of exploring, analysing and understanding the characteristics of the places that make up our world

god a supreme being that is worshipped by people

good a tangible (actual or touchable) thing that meets a human need

government the elected group of people who control and make decisions for a country or state

green energy energy (electricity) produced using renewable resources, such as wind or sunlight, without creating greenhouse gases

green water the precipitation (rainfall) on land that does not run off or become groundwater, but is stored in the soil or temporarily stays on top of the soil or in vegetation

grey water water generated from domestic activities such as washing clothes, dishwashing and bathing

groundwater water beneath the Earth's surface that fills pores or tiny spaces in materials such as sand, soil or gravel

guru a wise teacher; for example, a sage (knowledgeable person) who teaches disciples (students)

gymnasia sporting and teaching facilities where Greeks exercised both their body and mind

H

heatwaves short periods (usually no longer than a few days) of well-above-average temperatures

Hellas the Greek word for Greece

Hellene the Greek word for a person of Greek descent

heritage features belonging to the culture of a society from the past, such as traditions, languages or buildings

historians professional workers who research and write about the past

housing density the number of dwellings (houses, apartments, town houses) in a specific area

human geography looks at people and how, individually or in groups or communities, they interact with the environment

human rights the basic rights that all people have, regardless of their citizenship, nationality, race, ethnicity, language, gender, sexuality or ability

humidity the amount of moisture in the air

hunter-gatherers people who obtained food by hunting, fishing and foraging rather than by farming

hyperthermia overheating of the body

I

identity the condition, character or distinguishing features of a person or thing

immigrant a person who comes to live permanently in a foreign country

imperium power and authority originally given by the Roman gods to the kings

infrastructure the physical structures that allow a society to function; includes buildings, roads, water pipelines, sewers, electricity, internet, railways and airports

inhumane cruel; without compassion for the misery or suffering of another

initiative a readiness and ability to act and be enterprising

innovation a new product, service, or way of doing something better

input the raw materials and other resources that go into a production system to make a good or deliver a service

interdependent describing the way consumers, workers, businesses and governments are connected to and rely on each other

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

inundated (geography) covered with water

inundation (history) to flood with water; the Nile flooded at the same time each year and made agriculture and settlement in Egypt possible

J

justify to support your argument or conclusion

K

kingdom a period of time when ancient Egypt was ruled by pharaohs and their descendants

L

labour the resource provided when people do physical or mental work

land the resources from the natural environment, including plants and animals

leaching the removal of salt from the upper layer of soils by the downward movement of water

league an alliance of states

Legalism the philosophy that people needed a strict set of laws with clear punishments

libation a liquid offering, usually of wine, to the gods

lineage a direct line of descendants from an ancestor

liveability the qualities of a place (a city, town, suburb or neighbourhood) that contribute to and enhance the wellbeing of those who live or visit there

location the position of a feature or place on the Earth's surface

lyre an ancient Greek string instrument; shaped like a U, the lyre was used to accompany songs and recitations

M

managed environments human-changed landscapes dominated by the natural environment; this includes crop and grazing lands, plantations and planted forests

Mandate of Heaven the belief that the emperor was chosen by Heaven to rule. However, if the emperor (or his dynasty) was overthrown then Heaven had withdrawn that Mandate or right to rule

market system when customers set the price of goods and services by how much they are willing to pay

master-planned housing estate a settlement that is carefully planned and is usually constructed in a previously undeveloped area

mausoleum a very large and elaborate tomb

mediate to negotiate in a dispute so that an agreement or reconciliation can be reached

member of parliament a person elected by the people to represent their area in government

metic Greek or foreign migrant living in a city-state

moiety a Latin word meaning 'half'. In moiety societal systems, everything, including people and the environment, is split into two halves

moksha the freedom from being born again into the world; a person's release from the cycle of rebirth through his or her achievement of supreme wisdom

monarchy a system of government in which power is held by a king or queen

mummification to preserve a body by drying it with salts, packing the cavities inside with spices and sawdust, and wrapping the body in linen strips

N

natural disasters serious disruptions to communities or regions caused by natural hazards

natural hazards events in biophysical environments, such as storms, cyclones, floods or droughts

needs the goods or services that are necessary for consumers to stay alive such as food, shelter and education

neoclassicism a period of revival (the bringing back) of ancient Roman and Greek culture in Europe. This was seen in architecture, art and interior design. The neoclassical period lasted from the mid eighteenth to the early nineteenth century AD

O

oracle this word had multiple meanings; it could refer to a place of prophecy, the prophecy itself or the person giving the prophecy

oral tradition passing on knowledge, culture and history to the next generations by using spoken words often through stories or song

output the final product or service produced

P

patricians the old noble families of Rome

Pax Romana the name given to a period when there was a long time of peace within the Roman Empire; it lasted for nearly 200 years

peninsula a portion of land nearly surrounded by water; a peninsula is connected to the mainland

perceptions how something is seen or regarded by someone

perspective (civics and citizenship) a particular attitude or way of thinking; a point of view

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

pharaoh the title used for ancient Egyptian kings

physical geography looks at how the Earth was formed and how it continues to change; includes the study of the atmosphere, hydrosphere, lithosphere and biosphere (the four parts of the biophysical environment)

plebeians the common people of Rome

polygamy having more than one spouse

precipitation any moisture reaching the surface of the Earth, such as rain, hail, snow and sleet (snow and rain falling together)

prehistory the time before human civilisations

price mechanism the process of consumers and sellers deciding on the price they both accept for goods and services

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

princeps a term for the first (most important) citizen of Rome

producer an individual or business that makes, grows or supplies goods and services

production process the transformations raw materials go through to add value and make them into products

production system the method of making a good or delivering a service, including inputs, processes and outputs

profit the difference between total revenue from sales (what a business makes from selling) and the total costs

pyramid a triangular-shaped monument including a tomb for the deceased

Q

quality of life the happiness, wellbeing and satisfaction a person experiences. Many factors influence this, including a person's family circumstances, income and access to services

R

radiocarbon dating a technique used by scientists to learn the ages of ancient biological specimens (like wooden objects or human remains)

raja kings of ancient India, usually from the Kshatriya varna

rapid-onset floods floods that occur with little or no warning

relative location the location of a place in relation to other places

reliability a consideration of how trustworthy or accurate the sources you are investigating are

repatriation the process of returning an item of symbolic value, or the remains of a person, to its place of origin

republic a system of government in which the public is involved

reservoir a large natural or artificial lake used as a source of water supply

resources anything required as an input for a production system to operate; for example, money, raw materials, equipment and ideas

revenue how much money a business makes through sales (generally for 1 year)

rishi holy wise men who advised rajahs (kings)

river basin land that acts as a container for water to flow towards a main river or ocean; also known as a catchment or drainage basin

rock shelters shallow cave-like openings at the base of a cliff; often the location of ancient archeological sites

run-off the movement of surface water down slopes

S

sanitation the infrastructure related to the collection and disposal of sewage (human waste)

sarcophagus a stone coffin

scale the relationship between the distance linking two points on a map and the actual distance on the Earth's surface

scarcity the limited amount of available resources

scholar-gentry educated men in ancient China

scribe a person employed to write

sea changes a lifestyle-related change that involves moving from an urban settlement to a coastal community

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

secularism the principle of separating the state (the government) from religious institutions

sense of place the distinctive characteristics or features of a place that make it unique

service something you pay someone to do for you (such as having a haircut or going to the doctor) that cannot be touched, held, handled, looked at, smelt or tasted

shareholders individuals or groups who own shares in a company

shell middens places of archaeological interest where the rubbish from humans eating shellfish and other food has accumulated over time

Shiva one of the main Hindu gods; the creator and destroyer of life

shreni the artisan or merchant guilds (organisations) that helped ancient Indian trade with China and Rome prosper

site an area of land where one or more buildings are constructed

slow-onset floods floods that may last for one or more weeks, sometimes months

social connectedness the relationships people have with others

social enterprise a business that has the goal of making money to continue running, but also has a main objective of helping society in some way

society a community of people living together

sole trader an individual who is the exclusive owner of a business

sophist a wise man, philosopher or teacher

source someone or something that provides information and evidence

spatial inequalities the differences between where poor and wealthy people live

spatial patterns the way features of a place are arranged and connected, which influences what a place is like

sphinx a statue with a human head and a lion's body

stakeholders people or groups that are involved in an issue

stelae upright stone slabs or pillars that served as monuments or markers, especially as gravestones

storm surge a rapid rise in the height of the ocean along a coastline, caused by storm winds pushing water towards land

suburbanisation the process by which people and businesses move out from central areas of cities and into the suburbs

supply how much of a product is made by producers

SWOT analysis an analytic tool to study internal business strengths and weaknesses, and external business opportunities and threats

systems approach used to study a production system; everything is documented as an input, a process or an output

T

temple a religious building where people worship their god(s)

thematic maps maps designed to illustrate a particular theme; for example, annual rainfall or the location of oil resources

tomb a large room, often underground, to bury the dead

topographic maps detailed, large-scale maps illustrating selected features of the physical environment

topography the shape of the land

tornado a violent, rotating column of air extending from the base of a thunderstorm to the ground

tree changes a lifestyle-related change that involves moving from an urban settlement to a rural or semirural community

tributary a smaller river or stream that flows into a larger one

Triumvirate a term used to describe the time when three generals ruled jointly in Rome

tropical cyclone an intense low-pressure system (when air is heated by the sun and rises) over tropical waters, usually with strong winds and heavy rain

U

urban consolidation increasing population densities in existing built-up areas, usually by replacing low-density housing with medium-density housing

urban sprawl the outward spread of a city and its suburbs

V

varna classes or castes of ancient Indian society

virtual water the volume of fresh water that is consumed (or polluted) when a product is created

Vishnu one of the main Hindu gods; the divine saviour of humans

vision an overall goal the business hopes to achieve (such as being the best in their industry or having the highest-quality product)

vizier the chief government official in ancient Egypt; the vizier helped the pharaoh to administer (organise and run) the kingdom

W

wants the goods or services that a consumer desires, but are not necessary for survival or to meet the basic standard of living; for example, luxury items or updated technology

water cycle the processes of water passing from and to the Earth's oceans, atmosphere and land

water footprint the total volume of fresh water used by an individual, a household, a business, a community or a country

water scarcity a situation in which the demand for water is greater than the amount available

watersheds the boundaries between catchments

water stress the negative effect that water scarcity can have on people and environments

water table the level at which underground rock is saturated (soaked) by water

weather the daily atmospheric conditions of a place

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Index

A

- absolute power, ancient Roman monarchy 118
- Abu Simbel 74, 78
- accessibility 274, 271, 295, 297
- access rights, Australia 347
- Achaean 3, 87
- Acropolis 81, 109
- action plans 377
- active citizenship skills 319, 320, 321, 322–3
- active public spaces 296
- acupuncture 170
- AD (anno Domini) 1, 8
- Adelaide 232, 237, 298
heatwaves (2008, 2009) 262
- administration 276
ancient Egypt 55
Mauryan empire [H1, 24]
- Adnyamathanha people 32
- Adventure World roller coaster 382
- advertising campaigns 324, 368, 384
- Aegean Sea 15, 65, 84, 102
- Aeneid, The* (Virgil) 141
- aerial photographs 187
- Aeschylus 108, 110
- aesthetics 284
- affordable housing 272, 284, 296, 314
- Afghanistan 12, 343
- Africa 70, 84, 188–9, 194, 292, 306
ancient Roman invasion of 133
human origins 24
water scarcity 213
- afterlife beliefs 49
ancient China 162
ancient Egypt 66
ancient Greece 98
ancient Rome 128
- age 382
liveability and 274
location and 277
- aged care facilities 286
- Agni [H1, 8]
- agora*, Athens 81, 92
- agricultural land 113, 305
- agriculture 386
ancient China 149
ancient Rome 117
Australia 332
Bali 218
drought and 264, 265
inundation and 52
Murray–Darling Basin 236–7
piped water and 229
water resources and 222, 223, 234
- ahimsa* (nonviolence) [H1, 11]
- air-conditioning systems, efficiency 300, 308, 309
- air mass 189, 200
- air pollution 285, 289, 292
- air pressure 194, 202, 241
- air temperature 199
- akb* (spiritual intelligence) 66
- Akhenatan, Pharaoh 51, 75
- Alexander the Great 13, 51, 83, 110
ancient India and [H1, 20, 23]
- Alexandria 110
- Alfred, Prince 11
- algae growth, Murray–Darling Basin 238
- Allis, Janine 374
- alluvial plain, India [H1, 4]
- alphabet, Greek 82
- alphabetical list system, tropical cyclones 252
- Alps 117, 133
- altitude
air temperature and 194, 199
climate and 192
- aluminium mines 388
- Amazon River Basin 214
- ambrosia 94
- amphitheatres, ancient Roman 136
- amphora, ancient Greek 1
- analysis
business report 359
data 353, 354–5
ideas 321
sources 325
- ancestor worship, ancient China 154, 162
- ancestral spirits, Australian Aboriginal and Torres Strait Islander peoples 18, 38, 44, 280
- ancestry, location and 278
- ancient history, definition 1, 2
- ancient robbers, Tutankhamen's tomb and 76
- Anderson, Ghillar Michael 44
- aneroid barometer 202
- Anglo-Celtic heritage 331, 332, 342
- 'angry summer' (2016–17) 262
- animal farming
ancient China 152
ancient Egypt 52
Australian Aboriginal and Torres Strait Islander peoples 31
- animal images, rock art 283
- animal imports, gladiatorial games and 125
- animal mummification, ancient Egypt 68
- animal sacrifices, ancient Greece 94
- Antarctic ice sheet 210
- anthropology, Australian Aboriginal and Torres Strait Islander peoples and 17, 37
- anthropomorphic gods, ancient Greece 94
- anti-invasion walls, Warring States period 164
- Antonius, Marcus 6–7, 135, 139
- Anubis 57, 66, 77
- Anyang 146, 164
- Anzac soldiers 331, 332, 335
- apartment living 302, 303
- Apella* (Assembly of Citizens), Sparta 88
- Apollo 95, 97, 127
- appendices, business report 359
- apps, water usage 225
- aqueducts 114, 221, 229
- aquifers 189, 206, 228, 233, 234
Libya 230
- archaeology 1, 3, 10
ancient China and 149, 162
- ancient Egypt and 62
- ancient Roman ruins and 142
- Athenian discoveries 91
- Atlantis and 111
- Australian Aboriginal settlement and farming 20–1, 30
- beginnings of Indus Valley civilisation [H1, 5]
- British 47
- contribution of 15
- origins of Australian Aboriginal and Torres Strait Islander peoples 24–5
- Shang dynasty discoveries 164
- songlines and 44
- stone tools 34
- trading systems [H1, 22]
- Archaic period (ancient Greece) 83, 85
- architecture
ancient China 158
ancient Greek influence 108, 110
ancient Roman influence 142, 143
suburban shopping centres 308
topographic maps and 186
- area reference maps 182–3
- Areopagus* (law court), Athens 89
- argument presentation 328
- arid landscapes 216, 232
- aristocracy, ancient Greece 88, 89
- Aristophanes 108, 110
- Aristotle 93, 110, 111
- Arjuna [H1, 6, 18]
- armour
ancient Egyptian army 64–5, 70
ancient Greek army 100
- army
ancient Egypt 64
ancient Greece 100
ancient Rome 130–1
Mauryan Empire [H1, 24]
- Arnhem Land 37, 39, 47, 282
- arranged marriages, ancient China 158
- artefacts 17, 20, 46
- Artemis 95, 103
- Arthashastra* (Science of Material Gain) (*Kautilya*) [H1, 26]
- artificial intelligence (AI) 378
- artificial precipitation 197
- artillery, Roman army 131
- artisans, ancient China 145, 152
- artists' colonies 278
- Art of War, The* (Sun Tzu) 161, 171
- arts
ancient Greek influence on 110
Augustus and 141
- Aryans [H1, 1, 2, 5, 6]
- ascetics, ancient India [H1, 10, 11]
- Ashoka, Emperor [H1, 1, 3, 4, 12–13, 25]
- Asia 84, 148, 293, 306
immigrants from 24, 337
- Asia Minor 102, 137
- Asia-Pacific region 384
- aspect 276
climate and 192, 193
slope 185

- assassination, Julius Caesar 139
 Assemblies, ancient Rome 122, 123, 134
 astronomy, ancient Indian [H1, 28]
 asylum seekers, compassion for 347
 Athena 83, 95
 Athenian empire 105, 108
 Athens 47, 81, 84, 88, 99, 105, 109, 111
 Battle of Marathon and 102
 defeat of 105, 106
 drama festivals 97
 everyday life 91–3
 governmental structure 89
 naval force 100–1
 Pericles and 108
 Persian War and 102–5, 109
 social reform laws 83
 social structure 87
 Sparta versus 100, 105
 treasury power 108
 Atlantis, legend of 111
 atlas maps 178
atman (individual soul) [H1, 1, 9, 18]
 atmosphere 175, 176, 179, 210
 atmospheric hazards 240–69
 atmospheric pressure (air pressure) 189, 192
 attachment to place 272
 Augustus, Emperor (Octavian) 115, 122, 126,
 130, 135, 136, 139, 140
 aulos 81, 92
 auspices 113, 119
 Australia 2, 19, 226, 292, 293, 388
 business activity 380–1
 car ownership 306
 cultural diversity 336
 droughts (1914–15; 1965–68; 1982–83;
 1991–95; 2202–03; 2006–09) 264,
 266–7
 environmental protection skills 322–3
 human migration from Asia 24
 innovations designers 375
 legal system 143
 multicultural society 319
 national issues 321
 natural hazards and disasters 243–4
 normal weather systems 266
 piped water 229
 population densities 118, 288–9, 304–306
 post-war immigration 337
 rainfall location 201
 recreational space improvements 310
 religious faiths 338–9
 top industries 386
 tornado locations 255
 water resources 206–7, 208–9, 223, 224,
 225, 232–3
 Australia Award for Urban Design (2010) 310
 Australia Day, Invasion Day versus 14,
 333–4
 Australian Aboriginal and Torres Strait
 Islander peoples
 ancestors' remains removal 14
 ancient history of 16–47
 Burrarung Marr and 312
 Country and 280–3
 cultural diversity 340
 European colonisation and 333–4
 languages and customs 14
 modern Australia and 46–7
 Muslim fishermen and 343
 national identity and 332
 removed children 6
 societies 2
 water resources 191, 207, 216–17
 Australian Alps 236
 Australian Bureau of Statistics (ABS) 291,
 315, 338, 352
 Australian Competition and Consumer
 Commission (ACCC) 370, 371
 Australian Federation 14
 Australian flag, respect for 345
 Australian Football League (AFL) 335
 Australian identity, changes to 333–4
 Australian National University (ANU) 337
 Australian Open tennis 277
 Australian Securities Exchange (ASX)
 shares 388
 Australian values 344–7
 Austria 292, 293
 authorship, sources 325
 automatic weather stations 252
 automation 383
 availability, water resources 206, 212
 avatars, Vishnu [H1, 17]
 average annual precipitation
 Australia 206
 world 198, 211
 axe blade 146
- B**
- baby murder, Sparta 90
 Bacchus 137
 back-burning 37
 bakeries 363
 Bakers Delight 381
Balayang (Creation Being) 28
 Bali, water resources in 218–19
 ballots, Athens 89
 bamboo rafts 24
 Bangladesh 278, 292, 293, [H1, 4]
 Banpo, ancient pottery 149
 banquets, ancient Rome 126
 banyan tree [H1, 10]
 Barak, William 27, 43
 barbarians 84, 115
 bar graphs 247
 Barmah Forest Wetlands, management of
 217
 barter system
 ancient Egypt 49, 70
 Australian Aboriginal and Torres Strait
 Islander peoples 32
 Bass Strait 25, 388
 Batemans Bay waterspout (2012) 257
 battering rams, ancient Roman army
 131
 battle formations, ancient Indian
 armies [H1, 21]
 BC (Before the birth of Christ) 1, 8
 BCE (Before the Common Era) 1, 8
 Beaufort scale, wind speed 203
 behaviour guide, Confucius 154
 belief systems (Chinese), conflicts 161
 bend distance, measurement 187
 Bengali 342
 Benghazi Dam 230
 Bhagavad-Gita [H1, 18, 26]
 BHP 388
 bias 319
 avoidance of 322
 sources 324, 325
 bicycle use, Melbourne 307
 bier 81, 99
 billabong 216
 Billibellary, Uncle 27
 Bininj/Mungguy people 283
 biophysical environment 173, 174, 175,
 186, 190, 284, 296
 biosphere 175, 176, 210
 Birrarung Marr 312
 Black Death 166
 Black Saturday bushfires (Victoria)
 (2009) 37, 243, 262
 Black Sea 84, 85
 Blay, John 44
 blogs 324
 blood sacrifices, ancient Roman religion
 119, 126
 Blumenthal, Heston 143
 boab tree 216
 board games, ancient Egypt 63
 bogong moth hunting 44
 BOLTSS (Border Orientation Legend Title
 Scale Source) 173, 180
 bone tools 18
 book burning, Qin dynasty 169
 Book of the Dead 66
 books, as sources 324
 boomerangs 34, 35
 Boost Juice 374, 381
bora grounds 42, 43
 border security laws, Australia 347
 borrowings 377
 bottled water 222
Boule (Council of 500), Athens 89
 Bowler, Jim 22
 bows and arrows 64, 70
 boys' education
 ancient Rome 124
 Aryans [H1, 6]
 Athens 92
 BP (Before the Present) 1, 8
 Bradfield Scheme 208
 Brahmanas [H1, 3, 8, 9, 26]
brahmins (priests) [H1, 1, 6, 7, 8]
 brainstorming 320, 376, 377
 branding 368
 brine 221, 231
 Brisbane 232, 252
 floods (2011) 258, 268
 Britain 113, 138, 142
 ancient Roman invasion of 115, 132,
 136, 137
 immigration from 337
 legal system 143
 see also United Kingdom
 British identity, Australians 332
 British Museum 5, 47, 149, [H1, 10]
 British settlement, first 18
 Broken Hill Proprietary (BHP) 388
 Bronze Age 82
 bronzework, ancient China 146, 162, 163

- Brutus 139
buath gurru (grass flowering season) 28
 Buddha, life and death [H1, 3, 9, 11]
 Buddhism 147, 166, [H1, 1, 6, 8, 9–11, 26, 28]
 Australian 338
 nonviolence and [H1, 12]
 spread of [H1, 22]
 budgets 377
 building program, ancient Rome 138, 141
 building regulations, natural hazards and 268–9
 built environments 177
buliyong (bats) 28
 Bundian Way 44–5
bunjil (wedge-tailed eagle) 19, 28, 40, 341
 Bureau of Meteorology (BoM) 202, 204
 floods and 259
 tropical cyclones and 252
 website 316
 bureaucracy, Mauryan Empire [H1, 24]
 burial rites
 ancient Egypt 66–9, 77
 ancient Greece 98–9
 ancient Rome 128, 129
 Han dynasty tombs 163
 Bush, George W. 12
 bushcraft 27
 bushfires 37, 242, 243, 262
 bush clearing and 36–7
 climate change and 244
 Victoria (2009) 244
 bushwalkers, topographic maps and 186
 business activity, Australia 380–1, 385–9
 business debts, responsibility for 380
 business decisions 373
 business expansion, Smiggle 389
 business failure 378
 business opportunities 382–5
 business reports 359, 369
 business rights 370
 business structures 380
 business toolkit 348–59
 buttress dam 229
- C**
- Cachette Court 73
 Cadbury Dairy Milk 364
 Calcutta [H1, 12, 21]
 California 220–1, 229
 Canada 292, 293, 340
 canal proposals, Western Australia 208–9
 Canberra bushfires (2003) 243
 Cannae, Battle of 4, 133
 canoeing, Murray–Darling Basin 237
 canopic jars 67, 77
 Cape Town (drought 2018) 264
 capital 361, 367
 Capitoline Hill 116, 119
 captured armies, ancient China 161
 car making, water use and 224
 car ownership 302, 306
 car transport, suburbanisation and 304, 305, 306, 308
 Carnarvon, Lord 76
 Carter, Howard 10, 76, 77
 Carthage 4, 11, 115
 ancient Rome and 132–3
 cartographers (map makers) 180
 cash flow 378, 387
 caste system, ancient India [H1, 7, 14]
 Catacombs, ancient Rome 129
catapultae (catapults), ancient Roman army 131
 catchments 189
 floods and 259
 management of 233
 Murray–Darling 236
 categories, tropical cyclones 251, 252
 Catholic Church 341
 Australia 338
 Latin and 143
 schools system 339
 cause and effect 6, 7, 12–13, 171
 CE (Common Era) 1, 8
 celibate students, ancient Indian society [H1, 15]
 Census of Population and Housing data 315–16, 331, 336, 338
 Central Asia, Muslim immigrants from 342
 central Australia, water resources 208
 central business districts (CBDs) 300–1, 306
 central heating, ancient Rome 143
 centre pivot irrigation 234
 centurions, Roman army 130
 Cerberus 98, 128
 ceremonies, Australian Aboriginal and Torres Strait Islander peoples 33, 42–3
chakra (wheel) [H1, 13, 15]
 Champollion, Jean-François 5
 chancellor, ancient Egypt 55
 ChangeTheDate 334
 Chapel Street shopping 360–1
 chariots
 ancient China 160
 ancient Egypt 64
 ancient Rome 125
 Aryan army [H1, 6]
 Mauryan army [H1, 24]
 Tutankhamen's tomb 76, 77
 Charon 98, 128
 Charter of Human Rights and Responsibilities Act 2006 (Victoria) 346
 cheese production 357, 358
 Cheonggyecheon River development 311
 chief executive officers (CEOs) 387
 chief officials, ancient Egypt 58
 childcare facilities 286
 children, liveability and 274
 children's lives
 ancient China 153, 157, 158
 ancient Egypt 62–3
 ancient Rome 124
 Sparta 90
 China 311, 340
 ancient 118, 144–71, [H1, 14]
 immigrants 342
 large dams 229
 mobile subscriptions 384
 Chinatown (Melbourne) 11, 278
 Chinese New Year 166, 342
 chipped-stone tools 34
 chocolate production, fair trade movement and 364
 Christchurch earthquake (2011) 244
 Christianity 137, 278, 341
 Australia 338, 339
 water rituals 190
 dating system and 8
 chronology 1, 6, 7, 8, 122
 church and state separation, Australia 339
 Church of England 339
 Circus Maximus 142
 cirrus cloud 204
 cities, improvements 300–1
 citizens 319, 320
 ancient Rome 118, 120, 121
 Athens 87
 citizenship
 Athens 92
 diversity and 330–47
 Pericles and 108
 skills 319, 320–1
 citizenship application 344
 city edges 287
 city living, country living versus 275
 city-state, ancient Greece 84–5
 political systems 88–9
 unity against the Persians 103
 warriors 100
 civic institutions, religion and 339
 civics and citizenship toolkit 318–29, 331
 civilisation 1, 2
 civil rights 331, 337
 civil service examination, ancient China 150–1, 154, 158
 civil war
 ancient Rome 122, 134, 135, 138, 139
 Warring States period 155
 clans, Australian Aboriginal and Torres Strait Islander peoples 26–7, 32
 class system
 ancient China 150, 156
 ancient Egypt 58
 Aryans 7
 Classical period, ancient Greece 83, 87
 Clean Up Australia 258, 322, 365
 Cleisthenes 83, 89, 109
 Cleopatra VII, Pharaoh 6–7, 51, 135
 climate 189, 244
 Australian 19
 definition 192
 water loss and 210
 world patterns 194–5
 climate change 322
 fresh water resources reduction 212
 liveability and 285
 natural disasters and 242, 244, 268
 climate control, shopping centres 308
 Climate Data Online 204, 316
 climate graphs
 Tripoli 230
 local area 316, 317
 Western Australia 209
 clothing 362
 ancient China 157, 158
 ancient Rome 124–5
 cloud computing 378, 387
 clouds 200, 201, 204
 coal exports 388
 coal power stations, water use 224
 coastal erosion, climate change and 242, 244

- cocoa beans, production 364
 Code of Qin 169
 coffee production, water use 226, 227
 coffins, hollow logs 38, 39
 cohorts, Roman army 130, 131
 cold fronts 179, 200, 246
 cold waves 263
 Colgate-Palmolive 368
 collaboration 373, 376, 388
 collusive pricing 368
 colonisation 17, 20, 331
 ancient Greece and 85
 Australian Aboriginal spirituality and 40
 Colosseum 112–13, 114, 142, 143
 colour scale, maps 179, 180, 185
 column graphs 247
 columns, ancient Roman influence on 143
 commanders, Roman Republic 123
 commercial organisations 350
 communication skills 321, 359, 376
 communications technologies 275, 328–9, 383
 community gardens 298
 community participation 274, 296, 298–9, 320–1, 326, 386, 387
 compact cities 307
 compass directions, maps 180
 compassion, Australian values 346–7
 competition
 changes 382
 prices and 362, 368
 Competition and Consumer Act 2010 370
 complementary wants 362
 computer-based learning 312, 313, 375
 concave slope 184
 concentrated washing liquid, collusive pricing and 368
 concept map 377
 concrete, ancient Rome 143
 concubines, ancient China 145, 153
 condensation level (dew point) 196, 201
 conflicts, ancient Roman army 132–3
 Confucianism 145, 154, 155, 168, 171, 342
 warfare and 161
 Confucius 146, 150, 154, 155, 166, 168
 conscripts 130, 145, 160
 conservation, Australian Aboriginal and Torres Strait islander peoples' history 46–7
 Constitution, Australian 339
 constructed environments 173, 174, 177, 186, 323, 386
 consuls, Roman Republic 120, 123, 138
 consumers 349, 354
 demands 364–5, 367
 price changes and 366–7, 368
 producers and 360–71
 protection laws 370–1
 rights 370
 sovereignty 361, 363
 consumption reduction, water supplies 209
 contamination, water resources 213
 continuity and change 6, 7, 11, [H1, 27]
 contour lines 173, 184, 185
 controlled burning, Australian Aboriginal peoples and 36
 convex slope 184
 cooling-off period 370
 cooperatives 381
 coordinates, maps 182
 copper deposits 72
 copyright protection 370
coranderrk (Victorian Christmas bush) 27, 28
 Corinth 105, 133
 corporations 380
Corpus Iuris Civilis (Body of Civil Law) 143
 corroboration 1, 6
 corroborees 43
 Corsica 85, 114
 cost–benefit analysis 353, 358
 cost-plus pricing 367
 costs 357
 deep aquifers 229
 desalination 231
 floods 258
 Coubertin, Pierre de 111
 countries of birth, Australian population 340
 Country, Australian Aboriginal and Torres Strait Islander peoples and 26, 28, 37, 44, 280–3, 285
 country living, city living versus 275
 court system, ancient Greece 83
 cowardice, Spartan attitude to 90
 craftworkers, ancient Egypt 58, 60, 61
 Crassus, Marcus 122, 134, 135, 138
 Crates, embalment of 67
 Creation myths 26
 ancient Egypt 56
 ancient Greeks 94
 Australian Aboriginal and Torres Strait Islander peoples 38
 creative solutions 6, 374
 Creator Ancestor 17, 26, 40
 cremation practices
 ancient Greece 98, 99
 ancient Rome 128
 Hinduism [H1, 19]
 Crete 5, 82, 94
 Minoans 72
 crime rates, city living and 289, 292
 criminal penalties, ancient Rome 126
 critical thinking 6
 crops
 ancient China 171
 Australian Aboriginal and Torres Strait Islander peoples 31
 contamination of 213
 drought and 265
 crossbow
 ancient China 160
 Medieval period 160
 crowns, pharaohs' 54
 Cruikshank, Dan 10
 cultural diversity 280, 331, 336, 340–3, 345, 346
 culture 331
 ancient China 166, 169
 ancient Greece 108
 ancient Rome 142
 Australian Aboriginal and Torres Strait Islander peoples 46, 47, 280
 environment and 177
 liveability and 274, 292, 299
 location and 273, 274, 277
 neighbourhoods and 314
 cumulonimbus clouds 248, 250, 254
 cumulus cloud 204, 254
 cuneiform writing 2
 Curia Julia 138, 140
 currency
 ancient China 169
 ancient India [H1, 14–15]
 curse of the Pharaohs 79
 customer feedback 361, 369
 cyber security 378
 cycleways 301
 Cyclone Larry (2006) 243
 Cyclone Nargis (2008) 244
 Cyclone Tracy (1974) 243
 cyclone warnings 268
 Cyclone Winston (2016) 251
 Cyclone Yasi (2011) 243
 Cyrillic scripts 110
- D**
 dairy industry 357, 358
 dams (reservoirs) 206, 210, 221, 228, 229, 232, 261, 269
 flat landscapes and 209
 Murray–Darling Basin 238
 dance and music, Australian Aboriginal and Torres Strait Islander peoples 21, 35
 Dandenong 313, 387
 Daoism 145, 154, 155, 166, 171
 temples 146
 warfare and 161
 Darius, King 102, 103
 Dark Age (ancient Greece) 83
 Darling River 236
 Darwin 243, 252, 284
 data collection 352, 353
 dating system, historical 8
 Dawson, Charles 9
 daylight hours, temperature and 193
 De Beers 355
 dead person's name, respect for 38
 death
 ancient Chinese beliefs 162–3
 ancient Egyptian beliefs 66–9
 ancient Greek beliefs 98–9
 ancient Indian beliefs [H1, 18–19]
 ancient Roman beliefs 128–9
 Australian Aboriginal and Torres Strait Islander beliefs 38
 Tutankhamen 77
 death toll, natural disasters 244, 258
 debts 373, 387
 decimal number system, ancient Indian [H1, 28]
 decipherment 1, 4
 decision making 326–7, 359
 Decleleian–Ionian War 105
 deep aquifers 221, 228–9
 defects, products 358
 Delian League 105, 108, 109
 Delphi 88
 delta, Nile River 49, 53
 demand 349, 373, 382
 supply and 354–5, 368
 Demeter 94, 95

- democracy 320, 321, 326, 327, 331, 344
 ancient Greece and 89, 108, 109, 110, 319
 naval forces and 100
 oligarchy versus 105
- demographic profile 271, 277
- demons, ancient Indian [H1, 8]
- demonstrations 321
- dendritic drainage 215
- density, topographic features 186
- desalination 189, 221, 228, 231, 232
 Perth 209
- deserts 52, 264
- design thinking 373, 376, 377
- dew point 199, 201
- dharmā* (universal order) [H1, 8]
- Diamantina River 215
- diamonds, artificial supply restriction 355
- dictation test, Immigration Restriction Act 1901 332
- dictatorship, Julius Caesar 138
- diet
 ancient China 158
 ancient Roman soldiers 130
 Spartans 90
- digging sticks (boomerangs) 35
- digital literacy 373, 378
- digital technology
 ideas presentation 328
 photographs 314
 recording devices 202, 315
- dingoes 19, 31
- Dionysian festivals 92, 97
- diplomacy, ancient Egypt 73
- Diprotodon optatum 25
- directors, board of 380, 388
- disability, people with
 respect and 345, 346
 service needs 286, 287
- discrimination 331, 347
- distance measurement 187, 194, 276
- distribution, water resources 208, 210–11
- diversity 388
 celebration of 297
 citizenship and 330–47
- dividers, map estimation and 187
- divine messages, Roman religion 119
- Docklands 40, 298
- domes, ancient Roman 143
- Dorian Greeks 86, 87, 105
- double glazing 309
- double graves, Indus Valley civilisation [H1, 18]
- draconian laws 88
- drainage basin 189, 214, 215
- Dreaming, The (Dreamtime) 27, 38, 43, 44, 216, 280, 340
- dress shop 362
- drill bits 367
- drip irrigation 234
- driverless pod cars 374
- drought 241, 242, 243, 264–7
 climate change and 244
 risk areas (Australia) 206, 267
 warnings 266, 268
- drum trade 32
- dryland salinity 232
- dual-flush toilets 225
- dynasties 145, 150, 160
- dysentery 213
- ## E
- Eagle battle formation [H1, 21]
- early warning systems 268
- earthenware drinking cup 92
- earthquakes 242, 243
- Eastern Desert 53
- Eastern European immigrants 387
- Eastern Roman (Byzantine) Empire 115, 143, 167
- eastings 182
- ecological footprint 293, 308
- e-commerce 373, 383, 384
- economic factors
 environment 177
 location 277
- economic impacts
 drought 265
 floods 258
 natural hazards 244, 245, 246
 tropical cyclones 252
- economic prosperity
 liveability and 297, 299
 Roman Empire and 136
- economic valuations 351
 central business districts 306
 Murray–Darling Basin 236–7
- economics toolkit 348–59
- ecosystems 189
 Country and 280
 dams and 229
 money evaluations 351
 Murray–Darling Basin 236
 water use and 191, 212, 221
- edge-ground axe, world's oldest 35
- education
 ancient Egypt 62
 ancient Rome 124
 occupation and income and 278
 Spartan boys 90
 Spartan women 91
 water conservation and 234
- educational facilities
 liveability and 274, 292, 299
 neighbourhoods and 314
- eel farming, Lake Condah 30, 31, 34, 46
- egalitarianism 344
- Egypt, ancient 2, 5, 6–7, 22, 48–79, 110, 118, [H1, 20, 21]
 Roman invasion of 115, 132, 135
- Egyptomania 49, 78
- Ekklesia* (Assembly of Athens) 89
- electricity supplies, stored water and 229
- elephant army, Hannibal 133
- (eleven) 11 September 2001 attacks 343
- Elgin Marbles 47
- El Niño 266
- Elysian Fields 98, 128
- email 290
- embalming 49, 57, 66–7
- emergency responses, natural hazards 269
- empathy 331, 377
 Australian Aboriginal and Torres Strait Islander peoples 333
 Australian values 346
 design thinking and 376
- Emperor, role of
 ancient China 150, 153, 154, 158, 160, 161
 ancient Rome 123
- employment 384
 large cities and 288
 Mauryan empire [H1, 25]
 neighbourhoods and 314
 opportunities 272, 275
 social change and 383
 training 387
- empty-nesters 303
- energy use reduction 301
- engineering
 ancient Roman legacy 143
 flood protection and 269
 water supplies and 233
- English culture, Australia and 340, 341, 342
- English language
 ancient Greek language and 110
 Australian values and 341, 342, 344
- enterprises 361, 367, 373, 374–5
- entertainment venues 286
- entrepreneurs 372–89
- environment 173
 location and 273, 274
 key concepts 174, 176–7
 neighbourhoods and 314, 326
- environmental impact
 Australian Aboriginal occupation 25
 suburban shopping centres 308
 catchments 209
 drought 264
 floods 258
 natural hazards 244, 246
- environmental living, rural and remote areas 289
- environmentally friendly businesses 386
- environmental protection
 Australia 322–3
 consumer demand and 364
 direct action 323
- environmental quality, liveability and 284–5, 299
- environmental water flow 208, 233
- ephors (leaders), Sparta 88
- epic poetry, Hinduism and [H1, 11]
- Epidaurus health sanctuary 82, 97
- equality, Australian values 347
- Equatorial zone 192, 194, 250
- equilibrium, supply and demand 349, 354
- equites, ancient Rome 113, 118, 121, 123
- erosion control 259, 269
- essential goods 362
- estates, Kulin people 28
- eternal life, ancient Egyptian beliefs 66
- ethical understanding 6
- ethnic diversity 331
 Australia 340–3, 345
 location and 273, 274
 neighbourhoods and 314
- eunuchs, ancient China 153

- Euripides 108
- Europe 165, 226, 293, 306, 307
 heatwave (2003) 262
 medieval 3
- European Cold Wave (2009–10) 263
- European colonisation 333
 corroborees and 43
 Aboriginal records and 21
 sheep farming 29
- evaluation 1, 319
 business systems 353
 ideas 321
 performance 378
 sources 9
- evaporation 194, 196, 201, 202, 210, 211, 234
- everyday life
 ancient China 156–9
 ancient Egypt 60–3
 ancient Rome 124–7
 Athens 91–3
 southern India [H1, 14–17]
 Sparta 90–1
- evidence 1, 2, 7, 329
 Australian Aboriginal and Torres Strait
 Islander peoples' history 20–3
 historical sources 6, 9–10, 111
- examination system, ancient China 150–1
- excavation work, archaeology 15
- exile, ancient Roman law 126
- exports
 Australian 236
 ancient Egyptian trade 70
- extinction, ancient Australian species 25
- extreme weather events 240–69
- eye, cyclone 250
- ## F
- Facebook 290, 291, 324, 328
- face-to-face interaction 290, 369
- 'fair go' 331, 347
- fair trade movement 361, 364
- family background 278, 342
- family life 272
 ancient Egypt 62
 ancient Rome 124
 Aryans [H1, 6]
 Confucianism and 154
- farming
 ancient China 151, 156
 ancient Egypt 52, 53
 Australian Aboriginal and Torres Strait
 Islander peoples 28, 30
 drought and 267
 fire and 37
 water resources and 206, 213
 Victorian flood (2011) and 260
- Federation Drought (1895–1902) 266
- Federation Square 312, 341
- feedback, business 358
- fertilisers 238
- Field of Reeds (afterlife), ancient Egyptian
 beliefs 66, 68
- fieldwork activity, weather and rainfall 202
- field workers, Egyptian peasant women 62
- Fiji 251, 252
- filmmakers 4
 ancient Rome as subject matter 143
- financial planning 286, 350, 359, 377, 378
- Finland 227, 292
- firebreaks 36
- fire-resistant plants 25
- firestick farming, Australian Aboriginal and
 Torres Strait Islander peoples 17, 25, 30,
 36–7
- firms (businesses) (US) 362
- First Fleet 18, 331, 333
- First Persian War 83
- first rulers, ancient China 154
- First Triumvirate 134–5, 138
- fishing 22
 Australian Aboriginal and Torres Strait
 Islander tools 34
 Muslim 343
- fish ladders 239
- fish species reduction
 French heatwave (2008) 263
 Murray–Darling Basin 217, 236, 238
- Fitzroy Crossing, climate graph 209
- Five Classics 164
- five sage-kings, ancient China 154
- five symbols, Hinduism [H1, 15]
- five virtues, Confucianism 168
- Five Ws, sources 323
- flash floods 241, 242, 246, 259, 269
- Flinders Island mission 14
- Flinders Street Station 341
- flood plains, building regulations 268–9
- flood relief 206
- floods 197, 241, 242, 243, 246, 258–61
 Australia 206, 244, 260
 Chinese rivers 149
 control of 229, 261
 Indus River [H1, 5]
 Murray–Darling Basin 238
 Nile River 54
 tropical cyclones and 250
 warnings 259, 268–9
- foetus mummies, Tutankhamen's tomb 77
- food production 226, 362, 386
 ancient Rome 124, 143
- virtual water use 226
- food taxes, ancient China 151, 156
- foot soldiers
 ancient Chinese peasants as 152
 ancient Egyptian army 64
- footpath gardening 298
- foreign contact
 ancient China and 165–7
 ancient Egypt 72
 ancient India and [H1, 14, 22–3]
- foreign policy (US) 12
- forest dwellers, ancient Indian society [H1, 15]
- forestry, ancient Rome 117
- forts, ancient Roman 136
- forums 15, 141, 327
- fossilised footprints 23
- Four Lions of Sarnath [H1, 13]
- Four Noble Truths (Buddha) [H1, 9]
- four transitions, Hindu legal texts [H1, 15]
- four-wheeled chariots, ancient India [H1, 20]
- France 85, 138
 heatwave (2003) 262
 heatwave (2008) 263
- franchise agreements 381
- freedmen/freedwomen, ancient Rome 113,
 120, 122, 123
- freedoms, Australian values 344
- freeways, replacement of 311
- frequency
 natural disasters (Australia) 243,
 244
 tornadoes (US) 255
- fresh water 210, 222, 224, 228
- freshwater turtles, Murray–Darling Basin
 236
- frontal rainfall 200, 201
- frontier guards, Roman army 130
- fruit trees, ancient China 156
- Fuller, Robert 44
- funerary customs
 ancient China 162–3
 ancient Egypt 50, 56, 66–9, 77
 ancient Greece 98–9
 ancient India [H1, 19]
 ancient Rome 128–9
- funerary temples 74
 ancient Egypt 56
 ancient Greece 99
- future schools 313
- ## G
- Gammage, Bill 30
- Gandhi, Mahatma [H1, 18, 29]
- Ganges River [H1, 3, 4, 5, 17, 19]
- gardens, water use 225
- Gaul, Roman Empire and 117, 134, 132,
 135, 138, 140
- Gautama, Siddharta [H1, 3, 9, 11]
- Geelong Youth Activities Area 310
- gentrification 278
- geography
 ancient China 148–9
 ancient Egypt 52–3
 ancient Greece 84–5
 ancient India [H1, 4–5]
 ancient Rome 116–17
 definition 173, 174–5
 Murray–Darling Basin 236
 toolkit 172–87
- geophysical events 244
- Germany 15, 136, 137, 292
- Gerousia (Council of Elders), Sparta 88
- Gippsland floods (2007) 243
- girls' everyday lives
 ancient Rome 124
 Athens 92
 Aryans [H1, 6]
- Giza 69, 78
- glaciers 199, 210
- gladiatorial games, ancient Rome 14, 125,
 143
- Glass House Mountains bora ring 43
- Glinka, Bert 387
- Global Liveability Report, Economist
 Intelligence Unit (EIU) 292
- Gobi Desert 148, 149
- gods 49
 ancient Egypt 54, 57, 73, 78, 137
 ancient Rome 119, 126–7
 Hindu [H1, 8, 16–17]
 Olympian 94–5

- gold
 Troy 15
 Tutankhamen's tomb 76–7
- Golden Age
 ancient Rome 141
 Athens 105, 108
- gold rushes, Chinese immigrants and 342
- goldsmiths 59
- good (actual) 271, 286, 350
- Goolwa 236, 238
- government schools 339
- governments 319
 ancient Egypt 54–7
 citizens' action and 322
 Confucianism and 154
 liveability and 297, 298
 natural hazard protection and 269
 policy changes 382
 Roman Empire 136
- governors, Roman Republic 123
- grain production
 Athens 87
 virtual water use 226
- graphic design 328, 362
- grass burning, Australian Aboriginal peoples 31
- grave markers, ancient Greece 99
- Great Barrier Reef 326, 351
- Great Dividing Range 208, 229, 236
- Great East Japan Earthquake (2011) 244
- Greater Man-Made River Project 230
- Great Pyramids 46, 50, 69
- Great Stupa of Sanchi 1, 25
- Great Temple (Abu Simbel) 74
- Great Wall of China 144–5, 148, 160, 164–5, 167, 171
- Greece, ancient 3, 53, 73, 80–111, 135
 colonies 102
 gods 94
 government of 47
 invasion of 115
 Persian Wars and 105
 Roman invasion of 132, 133
 Roman religion and 119
- green buildings 300, 301, 308, 309
- green energy 221, 231
- greenhouse gas emissions 222, 268, 305
- greenstone quarries, Mount William 32, 33
- green water 221, 222
- grey water 221, 222, 225, 234, 300
- grid references 182–3
- grinding stones, Australian Aboriginal and Torres Strait Islander peoples 19, 24, 31, 34
- groundwater 189, 196, 197, 210, 214, 221, 222, 228, 232, 238
- Gunai/Kurnai nation (Victoria) 26
- Gunditjmarra people 30, 31, 46
- guru* [H1, 1, 8, 15]
- gymnasia*, Athens 92
- H**
- habitat destruction, Murray-Darling Basin 236, 237
- Hades (underworld) 94, 98, 128
- hailstones 198–9, 246
- Haiti earthquake (2010) 244
- halal food 343
- Hamlett, Colin 33
- Han dynasty 147, 148, 150, 153, 154, 164, 171
 burial customs 163
 chariots 160
 trade expansion 166
 warfare 165, 167
- Hanging Rock 42
- Hannibal 4, 132–3
- Happy Planet Index (HPI) 292–3
- Harappa [H1, 2, 5]
- Harmony Day (21 March) 346
- Hart, Aunty Connie 34
- hashtags 328, 334
- Hatshepsut, Pharaoh 51, 61, 71, 75
- Hawkins, Sylph 'Sensi' 386–7
- health care facilities 286, 292, 386
 liveability and 274, 275, 299
 neighbourhoods and 314
 rural and remote areas 289
- healthy lifestyles 297
- heart, weighing of the 68
- heatwaves 241, 242, 243, 262–3
- height estimation, landform features 185
- Heliaea* (law court) 89
- Hellene 81, 85, 107
- helots, Sparta 86, 87, 90
- hemp 157, 170
- heritage
 ancient Egypt 79
 Australian 17, 46, 285, 305
 Graeco-Roman 110
- Hermes 72, 73, 95, 98
- Herodotus 53, 78, 111, [H1, 22]
- hidden fees 370
- hieroglyphs, ancient Egyptian 5
- high pressure systems 192
 drought and 266
 heatwaves and 262
 low pressure systems and 250
- high priests, ancient Egypt 55
- high-density housing 296, 303, 304, 306
- high-speed broadband 286
- Himalayan Mountains 148, [H1, 4]
- Hindi 342
- Hindu Kush [H1, 2, 4, 6]
- Hinduism [H1, 1, 6, 8, 9, 11, 28]
 growth of 342
 nonviolence and [H1, 29]
- Hindus [H1, 4]
 Australian 338
 Balinese 218
 water rituals 190
- Hippocrates 111
- historia* (investigation) 111
- historians 1, 3, 4
 ancient Egypt and 78
 interpretations 10
 Julius Caesar and 139
- Historical Records (Sima Qian) 147, 164
- historical significance 6, 7, 10, 14, 68
- historical sources, evidence and 9–10, 111
- historical theories, Australian Aboriginal settlement and farming 30–1
- historic sites, preservation of 46
- Histories, The* (Herodotus) 103, [H1, 22]
- history 1–15
 ancient Greek civilisation and 111
- History of the Peloponnesian War (Thucydides) 86, 89, 107, 108
- Hittites, ancient Egyptians and 61, 73, 74
- Hobsbawn, Eric 4
- holistic medicine, ancient India [H1, 28]
- home altars, ancient China 162
- homelessness 347
- Homer 111
- Homo sapiens 24, 25
- honey harvesting, Australian Aboriginal and Torres Strait Islander peoples 31
- hoplites* (foot soldiers), ancient Greek army 100–1
- horsedrawn chariots 64, 70
- horse sacrifice, Aryans [H1, 6]
- Horsham, inundation 260
- Horton, David R. 281
- Horus 57, 66
- hospitality services 386
- hospitals, large cities and 288
- householders, ancient Indian society [H1, 15]
- households, water-saving 234–5
- household water use, Australia 222, 223, 225, 234–5
- house prices, rural areas 289
- housing 370
 ancient China 157, 158
 density 295, 302–3
 Egyptian craftworkers 60
- Huang He (Yellow River) 148, 149, 160
- human bones, repatriation of 47
- human geography 173, 175, 178
- human impacts
 floods and 259
 Murray-Darling Basin 237–8
- humanitarian aid 346
- human remains 15
- human rights 271, 346
 choice and 273
 water and 190
- humidity 189, 190
- hunter-gatherers
 ancient China 149
 Australian Aboriginal and Torres Strait Islander peoples 17, 28, 30–1, 34, 35
- hurricanes 250
- hydro-electricity 197, 206, 229
- hydrological hazards 240–69
- hydrosphere 175, 176, 196
- Hyksos 51, 72
- hyperthermia 241, 262
- I**
- 'I Am Australian' (Woodley) 332
- ice caps 19, 199, 210
- ice crystals 198, 199
- 'ideal wife', ancient Indian texts [H1, 15]
- ideation 376, 377
- identity
 citizenship and 330–47
 traditional lands and 280
- IGA Supermarkets 381
- Iliad, The* (Homer) 15, 83, 94, 100, 110
- Illinois 78, 255

- immigrants 331
 home locations 273, 274
 national identity and 332
 post-war Australia 337, 340
- Immigration Restriction Act 1901 332
- impacts
 drought 264
 heatwaves 262
 natural hazards 244
 water cycle 197
- imperial expansion, Roman Empire 136–7, 140
- imperium 113, 120, 123
- incense 70, 72
- inclusion, Australian citizens 345
- income level 363
 liveability choice and 274
 location and 278
 profit and 367
- independent lives, Spartan women 91
- independent schools 339
- India 2, 102, 110, 148, 340, 343
 ancient [H1, 1–29]
 Han dynasty and 165
 immigrants to Australia 342
- Indigenous Australians, *see* Australian Aboriginal and Torres Strait Islander peoples
- indigenous cultures, water and 191
- indirect (long-term) causes and effects 13
- individual rights, ancient Greeks and 110
- Indo-Aryan tribes [H1, 3, 5, 7, 9, 20]
- Indonesia 218, 282, 343, 388
- indoor gardens 309
- Indus River [H1, 1, 4, 6, 23]
- Indus Valley civilisation [H1, 2, 5, 23]
- industrial use, water 196, 222, 234
- inequality of outcomes 293
- infiltration 196, 232
- infrared imaging equipment 15
- infrastructure 177, 295
 cold waves and 263
 costs 305
 heatwaves and 262
 lack of 212
 liveability and 292, 299
 urban sprawl and 302, 304
- inhumanity 331, 347
- initiation ceremonies, Australian Aboriginal and Torres Strait Islander peoples 42–3
- initiative 373, 374
- injury risk reduction, product withdrawals 371
- inland lakes, Australia 19, 215
- inner-city lifestyle 272, 312
- Innisfail 252
- innovation 373, 374, 376, 387, 388
- inputs 349, 357, 358
- inquiry questions 352
- Instagram 290, 291, 328
- instant messaging systems 290
- integrated shopping–residential centres 309
- interdependence 361, 363
- interest rates, ancient India [H1, 14]
- Intergovernmental Panel on Climate Change 268
- internal warfare, ancient India [H1, 20]
- International Olympics Committee 111
- internet use 384, 312, 313, 324, 337
- interpretation 1, 10
 data 353, 354–5
 sources 4–5, 325
 topographic maps 186
- interviews 315, 324
- introduced religions, Australian Aboriginal and Torres Strait Islander peoples and 40
- inundation 49, 59, 60, 241
 ancient Egypt and 52–3
 storm surges 252
- Invasion Day, Australia Day versus 14, 333–4
- inventions, ancient China 170–1
- investigation skills 322–3
- investment 374, 377
- Ionian Greeks 87, 102, 105
- Iraq, Roman invasion of 12, 115
- iron ore, pricing 2012–15 355
- iron plough 171
- iron weapons, ancient China 160
- ironworking, ancient India 5
- irrigation 206
 ancient China 151
 Libya 230
 Murray–Darling Basin 237
 paddy rice (Bali) 218–19
 salinity and 232
 technological improvements in 208
 water resources and 229, 232, 234
- Isis 57, 66, 78, 121, 137
- isobars 184
- issues discussion 320
- isthmus, Greece 84, 95
- Italian peninsula 116, 132
- Italy 82, 263
 ancient Rome and 134, 142
 Fascist 142
- J**
- jade objects, ancient China 163
- Jainism [H1, 1, 6, 8, 9, 11, 25]
- Japan 226, 244, 277, 293
 Chinese invasion 165
 martial arts skills 386
- jati* (birth group), ancient India [H1, 7, 19]
- jewellers 58
 southern India [H1, 14]
- Jhelum River [H1, 6, 23]
- Jim's Group 381
- joblessness 347
- Judaea, Roman annexation of 135
- Judaism
 food customs 343
 ritual washing 190
- juice bars 374
- Julia, banishment of 141
- Julius Caesar 114, 115, 138–9, 140
 assassination 122
 end of Roman Republic and 134, 135
- Juno 119, 127
- Jupiter 119, 127, 137
- jury duty 346
 Athens 89
- justification (conclusions) 319, 322
- Justinian, Emperor 143, 167
- K**
- Kadesh, Battle of 64, 73, 74
- Kakadu National Park 25, 282–3
- karma*, Upanishads [H1, 9]
- Karnak (Luxor) 56, 78
- Kautilya [H1, 25, 26]
- Kelly, Lynne 44
- Kelly, Rodney 47
- Kenya, water shortages 213
- key (legend), maps 180, 183
- key skills 384
- Khufu, Pharaoh 50, 69
- Kimberley–Perth Canal 208
- kingdoms
 Ancient Egypt 49
 Sparta 88
- Knossos 5
- Koori peoples 34, 280
- Korea, Chinese invasion of 165, 166
- Kow Swamp 19
- kowtowing 150
- kransky sausages 387
- Krishna [H1, 18]
- kshatriyas* (warriors), ancient India [H1, 7, 11]
- Kulin nation (Victoria) 26, 280, 341
 spiritual beliefs 40
- Kurnell tornado (2015) 256
- L**
- labour force 361
 ancient Egypt 59
 ancient Rome 121
 machines and 383
 resources 367
- Lake Alexandrina 238
- Lake Condah 30, 31, 34
- Lake Eyre Basin 32, 215, 232
- Lake Mungo 19, 22–3
- lakes 210
- Lancefield 32, 33
- land, Australian Aboriginal and Torres Strait Islander peoples and 38, 280–3
- land clearing 264
 Murray–Darling Basin 237
 reduction of 239
 water and 197
- landform features 184, 185
- Land of the Seven Rivers, ancient India [H1, 6]
- landowners, ancient China 151
- landslides 242
- land use 361
 maps 305, 315
 resources 367
 surveys 314, 317
 Australian Aboriginal and Torres Strait Islander peoples 28–9
- language groups
 ancient Greek influence on 110
 ancient Roman influence on 143
 Australian Aboriginal and Torres Strait Islander peoples 26, 280–1, 340
- language standardisation, Qin Shi Huangdi 169
- La Niña 266
- Laozi 155, 166

- Laplace, Marquis de [H1, 28]
 Latin language, English language and 143
 latitude
 climate and 192, 193
 location and 276
 law, respect for 345
 law and order, liveability rating 299
 lawgivers, ancient Greece 88, 89
 law reforms, Augustus and 141
 laying out of the body, Greek burial rites 99
 leadership qualities, Australian Aboriginal
 and Torres Strait Islander peoples cultural
 groups 27
 leakage 235
 least liveable cities ranking 292
 Lebanon, wood supplies 70
 legacy
 ancient China 170–1
 ancient Egypt 78–9
 ancient Greece 110–11
 ancient India [H1, 28–9]
 ancient Rome 142–3
 Ashoka's philosophy [H1, 13]
 legal equality, Athens 89
 Legalism 145, 154, 155, 171
 conscript army and 160
 Qin dynasty and 164
 Shi Huangdi and 169
 legal rights, corporations 380
 legal services 286, 386, 387–8
 legal status, Egyptian women 61
 legal system 357
 ancient China 154–5
 ancient India [H1, 12–13]
 ancient Rome 119, 123, 126, 143
 changes 382
 respect for 346
 Shi Huangdi 169
 legend (key), maps 180
 legions, ancient Roman army 130
 letter writing 324, 327
 levee banks 261, 269
 libations 81, 94
 Library of Alexandria 110
 Libya 85, 136, 292
 piped water supplies 230
 life, water and 190
 lifecycle, tropical cyclones 250
 lifecycle stage, neighbourhoods and 272, 314
 life expectancy 293
 lifestyle
 liveability and 284
 location and 272, 273
 lighting, energy efficient 309
 lightning 246, 248
 lineage, Australian Aboriginal and Torres
 Strait Islander peoples 17, 24
 Linear A script 4, 5
 literature, ancient Greece 110
 live burial, tomb craftsmen 163
 liveability
 enhancement of 294–317
 place and 270–93
 surveys 292–3, 317
 urban consolidation and 305
 livestock deaths, drought and 265
 'living water' 190
 local history 317
 local library 324
 local members of parliament, contact
 with 327
 local parks 273, 315
 local participation 320, 324
 local services survey 315
 location 173, 179
 Australian population
 distribution 288–9
 Australian rainfall 201
 liveability and 272–3
 maps 182
 services needs and 287
 water loss and 210
 locks 261
 lodestone compass, ancient China 170, 171
 London 9, 278, 306
 longbows, ancient Indian [H1, 20]
 long-term success 382
 Lothal [H1, 5, 18]
 lotus battle formation [H1, 21]
 Louvre Museum 67, 79, 96
 low pressure systems 192, 250, 252, 255
 low-density housing 302, 303, 306
 lowest recorded rainfall (2006–09), Victoria
 and Tasmania 267
 Luxor 56, 73, 74, 78
 luxury items, Chinese 166
 lyre 81, 92
 Lysander 105, 106
- ## M
- Macalister Demonstration Farm 381
 macadamia nuts 31
 Macassan traders 19, 282
 Macedonia 84, 106, 110, [H1, 23]
 Macedonian Greeks 102
 Madjedbebe rock shelter 24–5
 Madura [H1, 3, 14]
 Magadha [H1, 12, 24]
 magistrates, ancient Rome 120, 123
 Mahabharata [H1, 11, 18]
 Mahavira, Vardhamana [H1, 3, 11]
 managed environments 173, 174, 177
 management 374
 changes in style 384
 floods 261
 water resources 220–39
 Mandate of Heaven 145, 150, 160
 mandatory standards 371
 Many Nations exhibit (Museum Victoria)
 20
 maps 173, 178–9, 180–1
 Mara nation (Victoria) 26
 Marathon, Battle of 102
 marble buildings 87, 117
 Mardonius 102, 103
 Maribyrnong, medium-density housing
 in 304
 Maribyrnong River 301
 marine ecosystems, desalination and 231
 marine resources, Torres Strait Islanders 29
 maritime trade, ancient Greeks 84
 market gardens 342
 market research 369, 389
 markets, ancient Chinese towns 158
 market system 349, 366–7, 370–1, 378, 381,
 382, 384
 marriage arrangements
 ancient Egyptian politics and 73
 ancient Rome 124
 Kulin nation 26–7
 Mars 115, 118, 127
 masks, Greek drama 97
 master-planned housing estates 295, 302
 mathematics
 ancient Greek 111
 ancient Indian [H1, 28]
 matriarchal society, Tamils [H1, 14]
 Maurya, Chandragupta [H1, 12, 24–5]
 Mauryan Empire [H1, 3, 4, 12, 24–5]
 mausoleums 145, 162
 media literacy 332, 378
 mediation 319, 326
 medical skills
 ancient China 170
 ancient Egypt 73
 ancient India [H1, 28]
 ancient Rome 126
 ancient Greece 111
 Mediterranean region 70, 72, 73, 132, 133
 Mediterranean Sea 1, 53, 84, 85, 87, 108, 109,
 113, 116, 117, 134, 137, 165
 medium-density housing 296, 302, 304, 309
 megafauna, extinction 25
 Megasthenes [H1, 24–5]
 Melbourne 11, 27, 40, 43, 198, 232, 286, 293,
 298, 300, 301, 309, 313, 341, 361
 bicycle use 307
 central business district 312, 389
 heatwave (2013) 262
 housing density 302–3
 Sports Precinct 277
 urban density 305
 Melbourne Metro Tunnel 296
 members of parliament (MPs) 319, 322
 men's lives
 ancient Egypt 60–1
 Athens 92–3
 Mencius 168
 merchant class
 ancient China 151, 152
 ancient Egypt 58
 Mercury 72, 73
 Messenia 86, 87
 metalsmiths 58
 meteorological events 244, 264, 268
 metic 81, 87, 108
 Metropolitan Museum of Art 62, 75
 Meurs, Stephen 389
 Middle Ages 3, 143
 Middle East 102, 142, 165
 Muslim immigrants from 342
 Middle Kingdom 51, 72, 148
 military society, Sparta 86, 87, 90
 milk, cheese and 357, 358
 Millennium Development Goals (UN) 213
 Minerva 119, 127
 mining industries 386, 388
 Minoan civilisation 5, 72, 82, 84, 98, 111
 Mitanni 71, 73
 Mithraism 137
 mixed-use buildings 307, 309

- modern roads, songlines and 44
 Mohenjo-Daro [H1, 5]
 moiety systems 17, 40
moksha [H1, 1, 8]
 monarchy 113, 339
 money management 350, 377
 Mongol invasion, ancient China 160, 165, 166
 monitoring stations, Bureau of Meteorology 204
 monks, Buddhism [H1, 11]
 Moore (Oklahoma), tornadoes (1998–2013) 256
 Moree heatwave (2016–17) 262
 Moscow 15, 133
 mosquitoes, diseases and 213
 most liveable cities index (*Monocle*) 293
 motion detectors 309
 mound springs, South Australian desert 216
 Mount Kilimanjaro 194
 Mount Olympus 94
 Mount Vesuvius 114
 Mount William quarry 32, 33
 mountain ranges
 climate and 194
 rainfall and 200
 Greece 84–5
 multiculturalism 319, 336–7
 multi-level homes 309
 multimedia presentations 315, 317
 multiple religions, Roman Empire 137
 multistorey apartment blocks 302, 304
 mummification 66–7, 79
 Mungo Lady and Mungo Man 19, 22, 23, 46
 Murray crayfish 239
 Murray–Darling Basin 208, 214, 217, 229, 233, 236–9
 Australian Aboriginal peoples and 216
 Murray Marathon 237
 Murri peoples 280
 musical education, Athenian boys 92
 music streaming services 366
 Musk, Elon 374–5
 Muslims 278
 immigrants 338, 342–3
 nineteenth century workers 343
 water rituals 190
 mussels, Murray–Darling Basin 236
 Mycenaean period 82, 100
myrnong (yam daisy) 28, 29
- N**
- Nakht 50, 62
 naming, ancient Egyptian beliefs 66
 Napoleon, Egypt and 78
 Narrm (Melbourne) region 27
 national identity, definition and description 332–5
 national issues, Australia 321
 national projects, Chinese peasants and 156
 national reconciliation, identity and 333
 National Tree Day 322
 nations, Australian Aboriginal and Torres Straits Islander peoples 26
 natural defences, ancient Rome 117
 natural diamonds 367
 natural disasters and hazards 241, 242–5, 268–9, 285
 natural resources
 ancient Rome 117
 liveability and 293
 water 188–219
 natural systems protection 234
 nature reserves 309
 necropolis (city of the dead) 68
 needs, wants and 361, 362
 Nefertari, Queen 61, 63
 neighbourhoods, research on 299, 314–17
 neoclassicism 81, 110
 Newcastle earthquake 243
 Newcastle storm (2007) 243, 248
 New Guinea 19, 24, 25
 New Kingdom 51, 64, 65, 72
 Newport Lakes Reserve 286
 New South Wales (NSW) 19, 22, 42, 44, 236, 244, 248, 258, 262, 342, 388
 drought 267
 tornadoes and waterspouts 255, 256, 257
 newspapers 321, 323, 324
 New York 12, [H1, 20]
 New Zealand 244, 292, 293, 340, 342, 389
 Ngarrindjeri people 216
 night purging windows 300
 Nile River 49, 52–3, 54, 55, 56, 60, 65, 66, 68, 78, [H1, 5]
 nimbus cloud 204
 nirvana [H1, 9]
 nobility, ancient Egypt 58
 ‘no-go’ areas (cities) 287
 nomadic lifestyle
 ancient Egypt 52
 Australian Aboriginal peoples 28
 Gobi Desert 149
 non-citizens, ancient Rome 118, 120
 non-profit enterprises 362
 nonviolence
 Ashoka and [H1, 12]
 Gandhi and [H1, 29]
 ‘non-white’ immigrants 342
 dictation test and 332
 North America 306, 307
 northern Africa 117, 142, 230
 Muslim immigrants from 342
 Roman invasion of 132, 133, 135
 water stress 212
 Northern India [H1, 4]
 northern New South Wales water scheme 208
 Northern Song dynasty 170
 Northern Territory 18, 19, 24, 25, 36, 39, 282, 365
 northings 182
 north Queensland 208, 282
 north-west Africa, Roman annexation of 136
 Notre Dame Cathedral 278
 Nourlangie rock paintings 282, 283
 novelists 4, 143
 Nubia, invasion of 70, 71, 72, 73
- O**
- obelisks 56, 78
 occupation, education and income and 278
 ocean currents, climate and 194, 195
 ocean levels, ancient Australia 21
 ocean surface, tropical cyclones and 250
 ochre mining 32, 33
 Octavian Caesar (Emperor Augustus) 122, 135, 139
 see also Augustus, Emperor
Odyssey (Homer) 83, 110
 offerings to the dead, ancient Rome 128
 officials, ancient Egypt 55
 oil discoveries (1967) 388
 Oklahoma, tornadoes (1998–2013) 256
 Olary rock paintings 18, 282
 Old Kingdom 50, 70
 older Australians, needs changes and 286, 287
 oligarchies 11, 88, 105
 Olympia 83, 95–6
 Olympic Dam 388
 Olympic Games 82, 94, 95–7
 modern 111
 online citizenship 378
 online marketing 384
 online services 380, 387
 open space learning 313
 open spaces
 cities 300–1
 liveability and 296
 opportunity costs 354, 384
 oracles 81, 88, 97
 oral tradition, Australian Aboriginal and Torres Strait Islander peoples 17, 20, 21, 44
 ore processing 388
 orientation, maps 180
 Orion Springfield shopping centre 308
 orographic rainfall 194, 200, 201
 Osiris 57, 66, 68, 78
 outline maps 314, 315
 out-of-Africa theory 24
 outputs 349, 357, 358
 over-allocations, water supplies 208
 overseas markets 383
 oxygen reduction, Murray–Darling Basin 238
- P**
- Pacific Ocean 25, 148, 266
 packs, Spartan boys 90
 paddy rice cultivation 218, 234
paidagogos (slave tutor) 92
 paintings
 ancient Egyptian royal tombs 69
 Australian Aboriginal and Torres Strait Islander peoples 19, 42
 Pakistan 292, 343, [H1, 4]
 Palatine Hill 116
 Palestine 70, 72, 73
 Panhellenic Athletics Games 95
 Pantheon 142
 paper making, ancient China 170
 Papua New Guinea 32, 282, 292
 parallel drainage 215
 Paris 67, 79, 96, 278

- parish maps, Aboriginal songlines and 45
parliamentary democracy 276, 339, 344
Parthenon 47, 81
partnerships 380
Pascoe, Bruce 4
Pasha Bulker 248
passive public spaces 296
Pataliputra (Patna) [H1, 24, 25]
patriarchal society
 Aryans [H1, 6]
 Legalism 155
patricians (nobles), ancient Rome 113, 118, 122, 123
Pausewang, Peter 389
Pax Romana (Roman peace) 113, 136, 141
peacetime army, ancient Egypt 65
pearl shell trade 32
peasants, everyday life
 ancient China 151–2, 156
 ancient Egypt 59, 60–1, 62
pedestrian malls 301, 308
Peloponnese 84, 97
Peloponnesian War 83, 86, 100, 104, 105, 106–7, 111
Penman, Jim 381
pentathlon 97
people's assemblies, ancient Rome 121
percentage values, pie graphs 245
perceptions 271, 273
Pericles 89, 93, 105
 life and influence 108–9
permafrost 210
permanent army, ancient Egypt 70
Persia 170, [H1, 23]
 Alexander's army and 110
 ancient Greek society and 107
 gods 137
Persian Period, ancient Egypt 51
Persian Wars 86, 100, 102–5, 109, 111, [H1, 22]
personal hygiene, water resources and 213
personal names, ancient Rome 124
personal safety, location and 273, 314
perspective 1, 319, 321
Perth 252, 382
 climate graph 209
 drought 208
 heatwaves (2011, 2013) 262
Perth Seawater Desalination Plant 209
petitions 321, 322, 327
petroglyphs (rock engravings) 18, 19
petrol consumption, population density and 307
pH, water 191
phalanx
 ancient Greek army 100–1
 ancient Indian army [H1, 23]
pharaohs, ancient Egypt 49, 50, 54, 55, 57, 60, 61, 64, 69
Pheidias 108
Pheidippides 102
philosophy, ancient Greece 110
Phoenicia 110, 132
physical features, ancient China 148–9
physical geography 173, 175, 178
pie graphs 245
pillar edicts, Ashoka [H1, 12]
Pillars of Hercules (Strait of Gibraltar) 84
Piltown Man, evidence about 9
piped water supplies 229–30
Piraeus 87, 108
Pi-Ramesse 73, 74
Pitjantjatjara people 280
Pixel Building (Melbourne) 300
Pixelcrete 300
place 174, 271
 attachment to 314
 liveability of 274–5
places of worship 278, 286
plague 105, 109, 213
Plan-Do-Study-Act (PDSA) cycle 352–3, 378
planning process 305, 352
plastic bag removal movement 364, 365
plastic bottles waste 222
Plato 108, 110, 111
playwrights, ancient Greece 110
plebeians, ancient Rome 113, 118, 119, 121, 122
plunder, Roman army and 130
Plutarch 138
Pluto 98, 127, 128
poets, ancient Rome 143
points of view, community 328, 329
police force, Muslim members 343
polis (city-state) 84–5
Polish community 387
political alliances, marriage and 124
political factors, environment 177
political party membership 321
political systems, ancient Greece 87, 88–9, 108
pollution 197, 322
 controls of 233
 liveability and 275, 285
polygamy 145, 153
polytheism, ancient Greece 94
Pompey 134, 135, 138
Poprawski, Marian and Nora 387
popular culture, ancient Rome and 143
population 382
 Australia 24–5, 288–9, 338
 resources and 350
population density 277, 304, 306
population disruptions, dam building and 229
population growth 234
 city living and 289
 water resources and 221
Portugal, heatwave 2003 262
Porus, battle with Alexander the Great [H1, 23]
Poseidon 83, 94, 95
power symbols, ancient Egypt 54
precautions, storm survival 249
precipitation 189, 192, 196, 197, 198–201
prehistory 1, 2
prevailing winds 194
price mechanisms 361, 366, 368
Pricep, James [H1, 12]
prices 354–5, 362, 366–9, 368
priests
 ancient Egypt 58
 ancient Rome 119
primary sources 1, 3, 4, 9, 352
princeps 113, 123, 135
prisoners of war, ancient China 153
privacy loss 305
private entertainment, ancient Rome 126
problem-solving skills 321, 326–7
Prochilo, Julianne 380
Procurator, Roman Republic 123
production process 349, 357–8, 360–71
productivity, technological change and 383
product testing 376
professional army, Sparta 100
professional roles, ancient China 158
profits 361, 362, 363, 377
 cooperatives and 381
 prices and 354, 366, 367
proof, historical 6
property rights, Egyptian women 61
protection of citizens, Kautilya [H1, 26]
Protector of Aborigines (Tasmania) 14
protest action 322, 326, 327
prototypes, design thinking and 376, 377
provenance, sources 9
provinces, ancient Egypt 55
Ptolemaic Era 5, 51, [H1, 23]
public baths, ancient Rome 126
public duties, Roman magistrates 120
public entertainment, ancient Rome 125
public housing estates 287
public law, ancient Rome 126
public opinion strategies 298
public safety 273, 274, 301
public service
 ancient Chinese model 150–1
 ancient Roman model 143
public spaces 274, 296, 298, 301
public speaking, ancient Greece 92, 108
public transport 274, 286, 301
 Seoul 311
 cars versus 322
 neighbourhoods and 314
 suburbanisation and 304, 308
 urban consolidation and 305, 306
pull factors, environmental quality 284–5
Punic Wars 11, 114, 115, 132–3
push factors, environmental quality 284, 285
pyramids
 ancient Egypt 49, 50, 69
 ancient Rome 128
 modern 79
 tourism and 78
Pythagoras' theorem 111
Pythian Games 95, 97
- ## Q
- Qin dynasty 147, 148, 153, 169
 burial customs 163
 warfare 164
quality control 358
quality of life 271, 284, 293
quantity of production, prices and 366–7
Queensland 42, 43, 208, 244, 255, 258, 261, 365
 floods (2011) 243
 Tropical Cyclone Yasi and 252–3
Queenslander house 276
questioning skills 321, 322–3
QuickStats website 316

R

- radar images 15, 253
 - radiocarbon dating 17, 20, 31
 - railyards reclamation, Melbourne 312
 - Rainbow Serpent 38, 39
 - raindrops 198, 204
 - rainfall 198, 204
 - distance from the sea and 194
 - measurement of 203, 204
 - ocean currents and 194
 - patterns 189
 - tropical cyclones and 252
 - types of 200–1
 - rainfall distribution
 - Australia (2006–09) 267
 - floods and 259
 - rainfall run-off 189, 196, 206
 - rainfall variability, Australia 209
 - rainfall zones, world 194, 195
 - rain gauge, making a 203, 204
 - Raining Spirit Dojo 386–7
 - rain shadow effect 194, 200
 - rainwater collection 225, 235, 308
 - raja* (king) [H1, 1, 6, 7, 26]
 - Ramayana [H1, 3, 11, 15]
 - Ramses II, Pharaoh 49, 51, 61, 64, 73, 74, 78
 - Ramses III, Pharaoh 51, 65
 - rapid-onset floods 241, 258
 - Rayner, Michael 268
 - Re (sun-god) 54, 66, 72
 - rebellions, ancient China 150
 - records, accuracy 377
 - recreational activities 274, 275, 286
 - improvements to 310–12
 - large cities 288
 - liveability and 285
 - reservoirs 229
 - urban consolidation and 305
 - water and 190–1
 - recycling 222, 309, 320, 322
 - redress rights 370
 - references, business report 359
 - reflections 328–9, 376, 377
 - refugees, compassion for 347
 - refund guarantees 370, 371
 - relative humidity 202
 - relative location 271, 276
 - reliability, sources 319, 321, 322, 323, 324, 325
 - relief agencies 251, 261
 - relief maps 184–5
 - relief sculpture, ancient Troy 15
 - religion, freedom of 339, 344
 - religious beliefs and rituals 3
 - ancient China 154–5, 166
 - ancient Egypt 54–7, 72–3
 - ancient Greece 92, 94–7
 - ancient India [H1, 8–11, 28]
 - ancient Rome 119, 126–7, 137
 - Australian population 338–9
 - location and 278
 - schools and hospitals and 339
 - renewable water resources 188–9, 228
 - repatriation 17
 - Aboriginal and Torres Strait Islander artefacts 47
 - representative democracy, ancient Roman model 143
 - republic (concept) 113, 118
 - research
 - business report 359
 - civics and citizenship issues 324
 - skills 321, 322–3
 - sources 329
 - reservoirs 197, 210, 221, 228, 229, 261
 - Libya 230
 - resources 349, 350, 357, 361
 - Census and 338
 - changes 382–3
 - land 280
 - prices and 367
 - respect for others 345
 - responsibility
 - Australian values and 346
 - consumers and businesses 370
 - restaurants 286, 382
 - retail business survey, local area 315, 317
 - retail mix 301, 386
 - reusable coffee cups 365
 - reusable shopping bags 322
 - revenue 373, 388
 - reverse osmosis (desalination) 231
 - revolution of Earth, temperature and 193
 - rewards system, Roman army 130
 - rice cultivation
 - ancient China 152, 156
 - ancient India [H1, 5]
 - Bali 218
 - Murray–Darling Basin 236
 - rich–poor gap 347
 - Rig Veda* [H1, 8, 16]
 - Ripanda, Jacopo 133
 - rishis* (sages), ancient India [H1, 1, 7]
 - risk taking 375, 376, 388
 - Sniggle and 389
 - river basins 189, 214–15, 221, 236
 - river flooding, ancient Egypt 52–3
 - river red gum forest, Murray–Darling Basin 217, 236, 237
 - river regulation, Murray–Darling Basin 238
 - river restoration, Seoul 311
 - river systems
 - ancient China 148
 - deterioration 208
 - drought and 264
 - road systems 286
 - ancient Rome 117, 136, 137
 - Robinson, George Augustus 14
 - robotics 383
 - rock art, Australian Aboriginal and Torres Strait Islander peoples 17, 18, 20, 30, 33, 42, 46, 282
 - rock edicts, Ashoka [H1, 12]
 - Roesch, Elisha 37
 - Romance languages 143
 - Roman citizenship 132
 - Roman coins, ancient India and [H1, 14]
 - Roman culture, Greek culture and 110
 - Roman Empire 14, 114, 115, 170
 - ancient China and 165, 166
 - ancient India and [H1, 22]
 - goddess cult 78
 - maximum expansion 136–7
 - origins 117, 134–5
 - Roman Republic and 122–3
 - timeline 8
 - Roman Forum 138, 142
 - Roman gods, Egyptian gods and 73
 - Roman Monarchy 114, 118–19
 - Roman Republic 114, 120–3
 - end of 134–5
 - Roman monarchy and 118–19
 - Rome, ancient 3, 6–7, 11, 15, 73, 112–43, [H1, 14]
 - ancient China and 147
 - ancient Egypt and 51, 78
 - ancient Greece and 83
 - religion 78
 - scripts 110
 - Romulus 114, 117, 118
 - roof gardens 300, 301
 - Rosetta Stone 5
 - Rouse Hill Town Centre 308
 - royal family, ancient Egypt 55, 61, 62
 - Royall, Meda 387–8
 - royalty, ancient Egypt 60
 - rubbish types, Victoria 365
 - Rubicon River 135
 - Rudd, Kevin 6
 - rule of law 344
 - rural and remote areas
 - decline of 265, 304
 - lifestyle 272
 - population distribution 289
 - technological access to 291
 - Russia 15, 85
- ## S
- sacred scriptures, Hindu [H1, 18]
 - sacred sites, Australian Aboriginal and Torres Strait Islander peoples 42–3
 - safety standards 370–1, 382
 - sage-kings, ancient China 168
 - St Paul's Cathedral 143, 278, 341
 - St Peter's Basilica 129
 - Salamis, Battle of 103
 - sales recalls 371
 - salts, soils and 232
 - same-sex couples marriage legalisation (2017) 347
 - samsara*, Upanishads [H1, 9]
 - sangams* (colleges) [H1, 3, 14]
 - sannyasin* (ascetics), ancient Indian society [H1, 15]
 - Sanskrit [H1, 8]
 - sarcophagus 49, 69, 77
 - satellite images 172–3, 187, 252
 - Australian heatwaves (2009) 262
 - Tropical Cyclone Yasi 253
 - sati* [H1, 17, 18]
 - Sayan village (Bali), water resources 218–19
 - scale, maps 173, 179, 180–1, 187
 - scarcity, resources 349, 350, 354, 355
 - Schliemann, Heinrich 15
 - scholar-gentry, ancient China 145, 150–1, 169
 - school design improvements 312–13
 - schools systems, Victoria 339
 - science, ancient Greek 111
 - scientific and technical services 386

- Scolari, Luis Felipe 161
- Scottish immigration 340, 341
- scribes 49, 58
- sculpture, Athenian 108
- sea, Torres Strait Islander peoples and 282
- sea battles, ancient Greece 100, 103
- sea changes 271, 289
- sea level increase
- ancient 25
 - Australian coast 19
 - climate change and 244
- seasons
- Kulin people and 28
 - rainfall and 206
 - temperature and 192–3
- sea surface temperatures, tropical cyclones and 250, 251
- sea travel, ancient Greeks 84
- sea walls 269
- Second Persian War 83
- Second Punic War 4, 133
- Second Triumvirate 135
- secondary sources 1, 4, 9, 352
- secularism, Australia 339
- sediment, floods and 258
- self-motivation 345, 373, 374–5, 376
- Senate, ancient Rome 118, 119, 120, 121, 122, 123, 124, 134, 135, 138, 139
- senet game 63, 76
- sense of place 271, 276–9
- Seoul 311
- separate legal entities 380, 381
- services access 286–7, 289, 350
- Servile Wars, Roman Republic 122
- Seth 57, 66, 72
- seven hills of Rome 116
- severe storms 244, 246–9
- sexual orientation, respect for 345
- Shang dynasty 148
- burial customs 146, 162, 163
 - silk and 170
 - warfare 160, 164
- Shanghai 306, 311
- shareholders 373, 380, 388
- Shearing the Rams (Roberts) 332–3
- sheep farming, *murnong* extinction and 29
- shell middens 17, 20
- shelter, Australian Aboriginal and Torres Strait Islander peoples 30–1
- Shi Huangdi, Emperor 147, 163, 164, 169, 171
- ship building 388
- shipping
- ancient Egypt 65
 - ancient Greece 84
 - ancient Rome 121
- shipwrecks
- Persian forces 102
 - Roman trade and 137
- Shiva [H1, 1, 8, 11, 17, 19]
- shopping centres 286, 309
- shopping malls, ancient Rome 126
- shreni* (guilds) [H1, 1, 14]
- Sicily 85, 105, 108, 114, 132
- Sidebotham, Steven [H1, 22]
- siege towers, Roman army 131
- Sikhism, growth of 342
- silk 146, 167, 170
- Silk Road 152, 165, 166, 170, 171, [H1, 22]
- Sima Qian 154, 163
- simple circular flow of income 363
- Singapore 293, 389
- single-use plastic bags 365
- site 271
- location and 276
 - Australian Aboriginal settlements 20
- skateboarding 310
- slaves
- ancient China 153
 - ancient Egypt 59, 70
 - ancient Rome 118, 120, 121–2, 124
 - Athens 87
 - captured Nubians 71
 - Sparta 87
- slope, contour lines 184, 185
- small businesses 380
- smart growth strategies 307
- smartphones 202, 313, 378
- Smith Woodward, Arthur 9
- smoked-meat products 387
- Sniggle 389
- snowflakes 198, 199, 200
- snow-making machines 197
- Snowy Mountains Scheme 229, 233, 238
- soccer, *Art of War* and 161
- social awareness, consumer demand and 364
- social connectedness 271, 290–1, 320, 321, 350, 386
- social enterprises 349, 350
- social factors
- environment 177
 - liveability 274
 - location 277
- social impacts
- droughts 265
 - floods 258
 - natural hazards 244
 - severe storms 246
- social isolation 305
- social media 290–1, 323, 324, 327
- ideas presentation and 328, 329
- social structures 49
- ancient China 150–3
 - ancient Egypt 54, 58–9
 - ancient Greece 86–7
 - ancient India [H1, 6–7]
 - ancient Rome 118, 120, 122–4
 - Australian Aboriginal and Torres Strait Islander peoples 26–7
- socio-economic drought 264
- Socrates 85, 108, 110
- soils 210, 221, 232, 234, 238
- solar energy 176, 192, 193, 352–3
- Solar System, ancient Indian knowledge [H1, 28]
- soldiers' conditions, Roman army 130–1
- sole traders 373, 380
- Solon 83, 88, 89
- songlines, Australian Aborigines 44
- sophists (professional teachers) 81, 92
- Sophocles 108, 110
- soul
- ancient Egyptian beliefs 66
 - ancient Greek Afterlife 98
 - Hindu attitudes [H1, 18]
 - Upanishad belief [H1, 9]
- sources 3–5, 6, 7, 319, 321, 324
- analysis and interpretation 325
 - maps 180
 - reliability 323, 324
- South America 179, 306
- South Asia, Muslim immigrants from 342
- South Australia 18, 20, 32, 215, 236, 239, 255, 282, 365, 388
- drought 208, 267
 - mound springs 216
- South-East Asia 24, 148
- south-east Queensland 208, 273, 308
- southern Greece, Roman annexation of 136
- Southern Hemisphere 193, 250, 251
- Southern Ocean 236
- South Korea 226, 311
- south-west Victoria 26, 30
- SpaceX 374, 375
- Spain 114, 117, 135, 142
- Roman annexation of 132, 140
- Sparta 84, 103, 105, 107, 109
- Athens versus 100, 105
 - governmental structure 88
 - Persian War and 102
 - social structure 86
- Spartacus 122, 143
- spatial patterns 271, 272, 277
- spears 24, 34
- special needs survey, local area 317
- Sphinx of Hatshepsut 49, 75, 78
- Spice Route [H1, 22]
- spiritual beliefs 341
- Australian Aboriginal and Torres Strait Islander peoples 38–40, 280
 - water and 190
- spoken sources 3
- sport
- English links 341
 - facilities 286
 - national identity and 335
 - social connectedness and 291
- spot height (maps) 184
- Sri Lankan culture 278
- stakeholders 319, 326, 327, 350, 352
- standardisation, ancient Chinese culture 169
- standard of living 286
- star maps, songlines and 44
- State Emergency Service 248
- State Library of Victoria 110
- statement of Australian values 344
- statistical profile, local area 315–16, 317
- steelworks, BHP 388
- stelae* (tombstones) 81, 99
- stewardship, Country 280
- Stitt, Nigel 384
- Stolen Generations apology (Rudd) 6
- Stonehenge 46
- stone quarries, Wurundjeri people 32
- stone tools 18, 20, 24, 42, 32
- storms 198, 200, 241, 242, 243, 248, 249, 250, 252, 254, 259
- stormwater drains 259, 269
- story structures 378
- stratus cloud 204

- streetscape improvements, liveability and 297, 301
- Styx River 98, 128
- subject-specific language 328
- suburbanisation 295, 302, 303, 304
- suburban shopping centres 308–9
- sudras* (manual labourers) 7
- Suetonius 138, 139
- Sumer, ancient 2, [H1, 5]
- supply
 - demand and 349, 354–5
 - diamonds 355
- support networks 376
- surgery, ancient India [H1, 28]
- Survival Day 334
- Susitna Glacier 172–3
- sustainability
 - Happy Planet Index 293
 - Pixel Building 300
 - promotion of 309
 - urban density and 306
 - water supplies 207, 234
- Sustainable Development Goals (UN) 213
- SWOT (Strengths Weaknesses Opportunities Threats) analysis 373, 384
- Sydney 232, 293, 308, 319, 337
- Sydney hailstorm (1991) 243
- Sydney heatwave (2017) 262
- Sydney Harbour Bridge 208
- symbols
 - cultural identity 343
 - maps 180
- symposia 92, 93
- synthesis, ideas 321
- synthetic diamonds 367
- Syracuse 85, 105
- Syria 72, 73, 83, 113, 134, 292
 - Roman annexation of 70, 71, 132, 135, 136
- systems approach 349, 357
- ## T
- Takara airbag, withdrawal 371
- Tamils 342, [H1, 14]
- Tarquinius 114, 118
- Tartarus (Hall of Fury) 98, 128
- Tasmania 19, 32, 178, 206, 365
 - Australian Aborigines and 14, 25
 - controlled burning in 36
 - lowest recorded rainfall (2006–09) 267
- taxation
 - Australia 382
 - Qin Shi Huangdi 169
- technology 378, 383
 - Australian Aboriginal and Torres Strait Islander peoples 34
 - irrigation and 234
 - social connectedness and 290–1
 - water saving 234
- telecommunications infrastructure 274, 275
- temperature zones, world 195
- temperature
 - factors affecting 192–4
 - recording of 202
- temples 49, 97
 - ancient Egypt 53, 55, 56
 - ancient Rome 138, 141, 142
- Daoist 146
- terraced farming
 - ancient Greece 84
 - rice paddies 177, 218
- terrace housing 302
- terracotta warriors, tomb of Shi Huangdi 163
- Tesla electric cars 374, 375
- testudo* (tortoise formation), Roman army 131
- theatre
 - ancient Greece 95, 97, 108
 - ancient Rome 125
- Thebes 59, 64, 70, 74, 76, 84, 106
- thematic maps 173, 178–9
- Thermopylae, Battle of 103
- Third Punic War 133
- Third Servile War 122
- Thirty Years peace treaty 109
- Thoth 57, 61, 72, 73
- Thracian Greeks 102, 125
- 300 Spartans, Persians versus 103
- Thucydides 107, 108, 111
- Thurii 108, 109
- Thutmose I 71
- Thutmose II, sudden death 75
- Thutmose III, Pharaoh 51, 71, 73
- Tiber River 113, 116, 117
- tides, floods and 259
- time management tools 377
- timeline 8
 - ancient Australia 18–19
 - ancient China 146–7
 - ancient Egypt 50–1
 - ancient Greece 82–3
 - ancient India [H1, 2–3]
 - ancient Rome 114–15
- Tokyo 277, 278, 293
- tolerance, cultural groups in Australia 343
- ‘tomahawk place’ (Mount William) 32
- tomb robbers, pyramids 69
- tombs 49, 58
 - ancient China 162–3
 - ancient Egypt 50, 69, 76
 - ancient Rome 128
 - construction 60
 - Tutankhamen’s 76–7
- toolkit
 - Australian Aboriginal and Torres Strait Islander peoples 34
 - civics and citizenship 318–29
 - economics and business 348–59
- tools and weapons, Australian Aboriginal and Torres Strait Islander peoples 19, 34–5
- topographic maps 173, 178, 182, 184–7, 275
- topography 173, 178, 210, 276
- tornadoes (twisters) 241, 242, 254–7, 268
- Torres Strait 19, 32
- Torres Strait Islander people 280, 282
 - Four Winds and 29
 - origins 25
- totemism, Australian Aboriginal and Torres Strait Islander peoples 38, 341
- Tou Wan, Princess 163
- tourism 276
 - Bali and 218
 - modern Egypt and 78, 79
 - Murray–Darling Basin and 237
- Rome and 142
- town dwellers, ancient China 158
- toys 371
 - ancient Egypt 62
 - Athenian 91
- trade routes 349
 - ancient China 152, 165, 166
 - ancient Egypt 70
 - ancient Greece 87, 105
 - ancient India [H1, 28]
 - ancient Rome and 117, 137, [H1, 22]
 - Australian Aboriginal and Torres Strait Islander peoples 32–3
 - Buddhism and [H1, 22]
 - southern India [H1, 14]
- traditional knowledge, Australian Aboriginal and Torres Strait Islander peoples 27, 280
- traditional landowners 216
- traffic congestion
 - city living and 289
 - liveability and 285, 297, 306
 - reduction of 301
- Trajan’s Column 130, 131
- transport
 - cities and 306–7
 - liveability and 296
 - location and 273
- transport standardisation, Qin Shi Huangdi 169
- tree changes 271, 289
- trends, triggers and 171
- Trevorrow, Tom 216
- tribal groupings
 - Aryans [H1, 6]
 - Athens 89
- tributaries 189, 215
- tribute system 55, 73
- trigonometry, ancient Indian [H1, 28]
- Triple J Hottest 100 countdown 334
- Tripoli, climate graph 230
- triremes 100–1, 103
- Tropical Cyclone Yasi (2011) 252
- tropical cyclones 241, 242, 243, 246, 250–3
- Troy, ancient 15, 82, 100
- true strength index (TSI) 355
- Truganini 14, 47
- tsunamis 242, 244
- tuber crops Australian Aboriginal and Torres Strait Islander peoples and 31, 37
- tumuli* (soldiers’ burials) 99
- turbidity 238, 239
- Turkey 15, 73, 85, 114, 137
- Turnbull, Malcolm and Lucy 318–19
- turning points, historical 14
- Tutankhamen, Pharaoh 51
 - tomb of 10, 76–7, 79
 - warfare 70
- Twitter 290, 291, 328, 334
- tyranny, ancient Greece 88
- ## U
- Ubirr rock paintings 283
- Ukraine 85, 292
- Uluru, disrespect for 46
- Uncle’s Smallgoods 387
- underground water 191, 206
- ‘undesirables’ 332

United Kingdom (UK), 9, 226, 298, 340, 389
 drought definition 264
 weather map 179
see also Britain

United Nations Educational Scientific and Cultural Organization (UNESCO) 46, 79

United States of America (USA) 221, 226, 229, 269, 310, 340, 374
 ancient Egypt and 78
 Australian identity and 337
 foreign policy 12
 legal system 143
 tornado frequency 255

University Hill 309

unlimited wants 362

unsustainability, water use 221

untouchables, ancient India [H1, 2, 7]

urban density 284, 288–9, 302–3, 305

urbanisation, water resources and 212, 232

urban renewal projects 311, 312

urban sprawl 295, 296, 302, 304–5, 307

V

Valley of the Kings 60, 69, 70, 76, 78

value adding 357

values, Australian 344–7

varnas (classes), ancient India [H1, 7]

Vatican 108, 121

Vedanta Upanishads [H1, 2, 3, 8–9, 18, 26]

Vedas [H1, 3, 7, 8, 9, 15, 26, 28]

Vedic period [H1, 2, 3, 6]

vegetation
 water loss and 210
 water table and 233

verification, sources 324

Victoria 18, 19, 33, 34, 42, 43, 236, 243, 244, 255, 322, 326, 339, 342, 365, 386, 387
 Australian Aboriginal peoples in 26–7
 consumer protections 370
 cooperatives 381
 floods 2011 260
 incidence of severe storms 247
 lowest recorded rainfall (2006–09) 267

video conferencing 378, 387

Vienna 292, 293

Vietnam 148, 166, 293

virtual toolkit 321

virtual water 221, 224, 226–7

visib (commoners) [H1, 6]

Vishnu [H1, 1, 8, 11, 16–17, 18, 19]

vision 373, 374

vizier 49, 55

volunteers 269, 320

Von Blü lipstick 380

vortex, tornado 254, 255

voting rights and responsibilities 318–19, 321, 327, 346
 Australian Aboriginal and Torres Strait Islander peoples 337

Vrankovic, Stefan 380

W

Waa totem 40

walking meetings 377

wants, needs and 361, 362, 377

war elephants, ancient Indian armies [H1, 22, 23]

wards, Chinese towns 158

warfare
 ancient China 160–1, 164–5
 ancient Egypt 64–5, 70–1
 ancient Greece 100–1
 ancient India [H1, 20–1]
 Han dynasty 167
 Mauryan [H1, 21]
 Ramses II and 74

warm fronts 179, 200

warranties 370

Warring States period 147, 155, 160, 164, 168

Washington, D.C. 47, 78, DC 143, 152, 156

wastewater, agriculture and 213

water allocations, Murray–Darling Basin 208, 239

waterborne diseases 213

water carriers
 Africa 188–9
 Athenian women 93

water cycle 189, 196–7

water demand, worldwide 222, 228

water extraction, Murray–Darling Basin 237

water footprint 221, 224–5

waterholes 216, 280

Watering Australia Foundation 208, 225

water loss 210–11, 234, 237

water management 207, 208, 225, 234, 265
 Australia 232–3
 Australian Aborigines and Torres Strait Islander peoples 216

water pipelines 229, 292

water pricing 191, 206, 209, 225, 234

water recycling 209, 232, 234

water restrictions 225, 232
 Australia (2006–09) 267, 268

water retention basins 269

water run-off 210, 229, 232, 234

water scarcity 189, 212–13, 285

watersheds 189, 214

waterspouts 257

water storages 206–7, 210, 264

water stress 189, 212, 213

water supplies
 ancient Roman model 143
 Australia 208–9
 conservation 234
 efficient usage 213, 225
 increases to 228–31
 renewable natural resource 188–219, 222
 safety 213, 292
 tropical cyclones and 251

water tables 221, 228, 232, 233, 238

water transportation 197, 209, 228, 220

water use 196, 220–39
 drought and 265
 increase 212

Wathaurong people 26, 280

wax masks, ancient Rome 129

wealth values 349
 ancient China 156
 Spartan attitudes 90

weather 189
 data 202–4, 316
 definition 192
 maps 179, 253

measurement of 202–5

websites, reliability 324, 378

wellfields 230

Wendrich, Willeke 22

Western Australia (WA) 32, 33, 46, 255
 canal proposals 208–9
 drought 267

Western Roman Empire 115, 167

Western thought, Greek civilisation and 110

wet-dry bulb thermometer 202

wetland management 217, 236, 239

wheel scythes, ancient India 20

White Australia policy 332, 337, 342

wildlife, heatwaves and 263

Willandra Lakes 22, 23, 46

wind direction 203

wind farms 231

wind speed 203, 254

Wiradjuri people 42

Woiwurrung (Wurrundjeri) language
 group 26, 27, 32, 312

women, franchising and 388

women's everyday life
 ancient Egypt 61–2
 ancient Rome 115
 Athens 93
 Sparta 91

women's status
 ancient Indian society 15
 ancient China 153, 157
 ancient Rome 121, 124

Wonga, Simon 27

Woolworths 368, 380

workers 361, 363, 364, 380

'working man's paradise', Australia 332

World Heritage List 23
 Australian sites 46
 Egyptian sites 79
 tomb of Shi Huangdi 163

World War I 14, 335

worst possible idea sessions 377

Wotojoballuk nation (Victoria) 26

wreath prize, ancient Olympic Games 97

writing, Greek 110

written sources 3, 20, 21

Wu, Emperor 165, 171

Wudi, Emperor 147, 150

Wurundjeri people 27, 43, 280, 312

X

Xi'an 149, 163, 168

Xia dynasty 145, 146, 164

Xuan Kong Si (Hanging Temple) 146

Y

Yam (Boigu) people 280

Yangzi River 148, 149, 164

Yarra River 214, 312

Yin and Yang 155

Yorta Yorta people 19, 217

Your Law Firm 387–8

youth market 389

Z

Zeus 94, 95, 97

Zheng, King 164, 169

Zhou dynasty 146, 148, 160, 163, 164, 170