JACARANDA

HUMANITIES AND SOCIAL SCIENCES 8

FOR WESTERN AUSTRALIA

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FOR WESTERN AUSTRALIA

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

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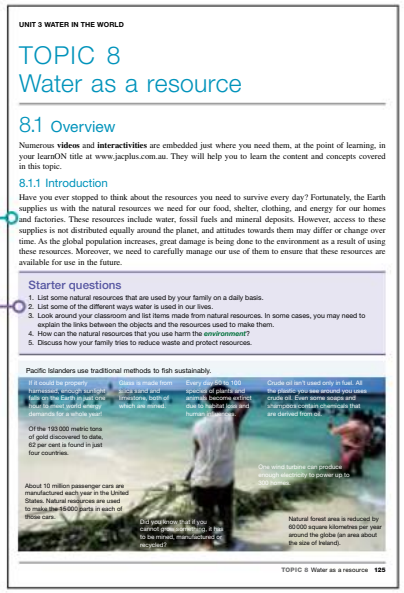
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OVERVIEW

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

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


UNIT 3 WATER IN THE WORLD

TOPIC 8
Water as a resource

8.1 Overview

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

8.1.1 Introduction

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

Starter questions

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

Pacific Islanders use traditional methods to fish sustainably.

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

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

Every day, about 100 species of plants and animals become extinct due to habitat loss and human interference.

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

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

One wind turbine can produce enough electricity to power up to 300 homes.

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

Did you know that if you cannot grow or recycle it, it has to be mined, manufactured or recycled?

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

TOPIC 8 Water as a resource 125

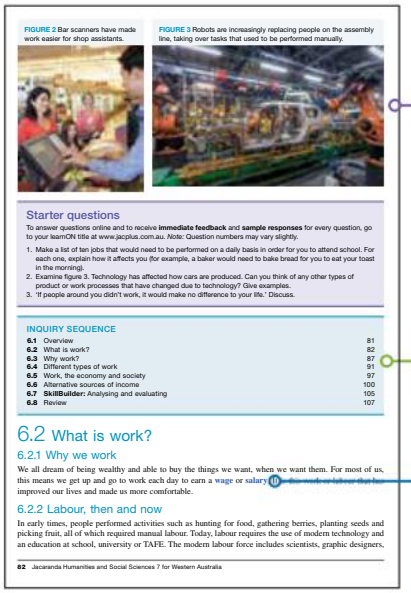

FIGURE 2 Bar scanners have made work easier for shop assistants.

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

Starter questions

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

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

INQUIRY SEQUENCE

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6.2 What is work?

6.2.1 Why we work

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

6.2.2 Labour, then and now

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

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12.12 SkillBuilder: Creating and analysing overlay maps

online

WHAT ARE OVERLAY MAPS?

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

FIGURE 1 Base map with overlay

Go online to access:

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

learnON RESOURCES — ONLINE ONLY

Watch this eLesson: Creating and analysing overlay maps (eles-1645)

Try out this interactivity: Creating and analysing overlay maps (int-3141)

12.13 How could my community be made more liveable?

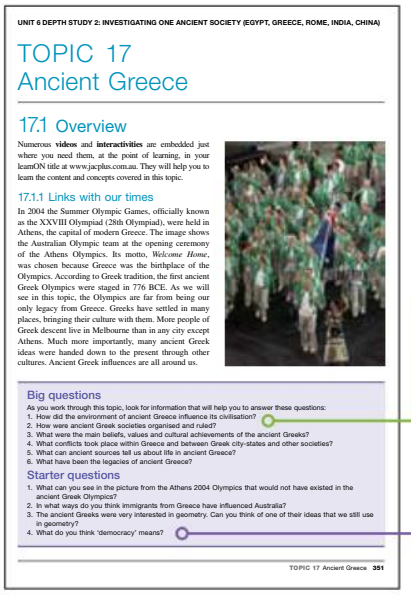
12.13.1 Transport strategies

FIGURE 1 Recreational riding along a trail mainly designed for bicycles

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

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

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UNIT 6 DEPTH STUDY 2: INVESTIGATING ONE ANCIENT SOCIETY (EGYPT, GREECE, ROME, INDIA, CHINA)

TOPIC 17
Ancient Greece

17.1 Overview

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

17.1.1 Links with our times

In 2004 the Summer Olympic Games, officially known as the XXVIII Olympiad (28th Olympiad), were held in Athens, the capital of modern Greece. The image shows the Australian Olympic team at the opening ceremony of the Athens Olympics. Its motto, *Welcome Home*, was chosen because Greece was the birthplace of the Olympics. According to Greek tradition, the first ancient Greek Olympics were staged in 776 BCE. As we will see in this topic, the Olympics are far from being our only legacy from Greece. Greeks have settled in many places, bringing their culture with them. More people of Greek descent live in Melbourne than in any city except Athens. Much more importantly, many ancient Greek ideas were handed down to the present through other cultures. Ancient Greek influences are all around us.

Big questions

As you work through this topic, look for information that will help you to answer these questions:

1. How did the environment of ancient Greece influence its civilisation?
2. How were ancient Greek societies organised and ruled?
3. What were the main beliefs, values and cultural achievements of the ancient Greeks?
4. What conflicts took place within Greece and between Greek city-states and other societies?
5. What can ancient sources tell us about life in ancient Greece?
6. What have been the legacies of ancient Greece?

Starter questions

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

TOPIC 17 Ancient Greece 351

Topic introductions provide context.

Start each topic with engaging questions and discussions.

Engaging images reinforce concepts.

See the learning sequence at a glance.

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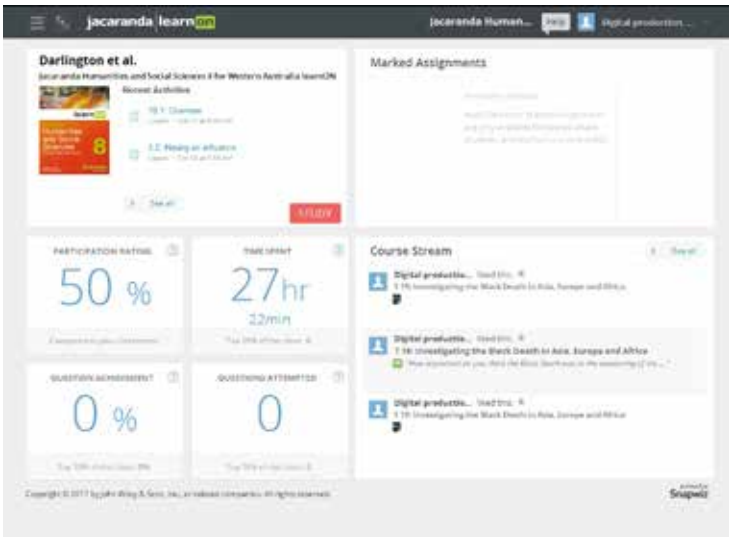
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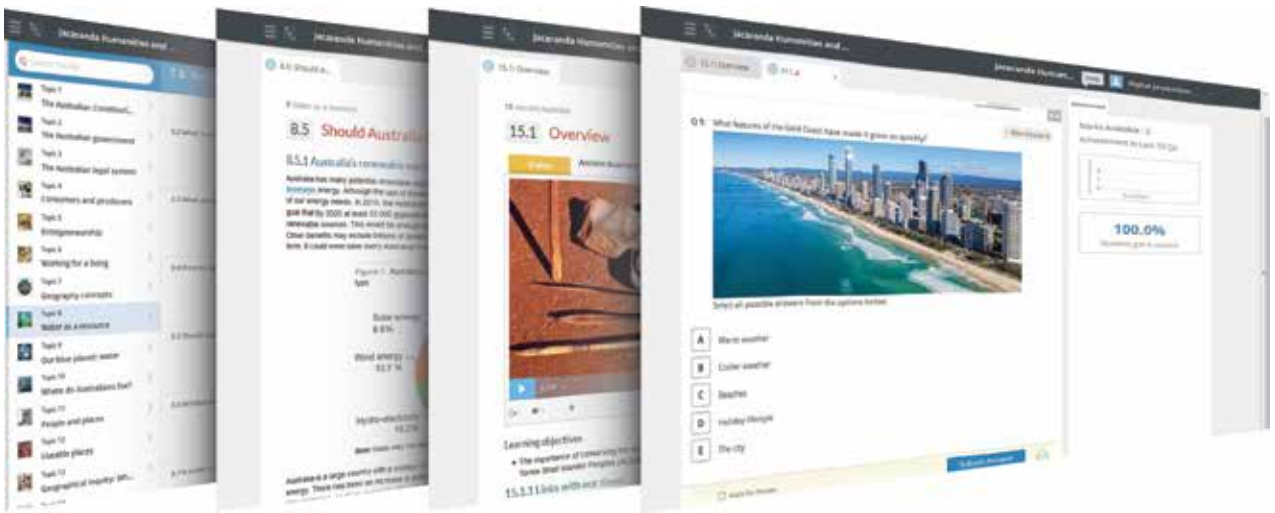
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The *Humanities and Social Sciences* series contains a free activation code for *learnON* (please see instructions on the inside front cover), so students and teachers can take advantage of the benefits of both print and digital, and see how *learnON*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

learnON includes:

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





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UNIT 1 DEMOCRACY AND LAW IN ACTION

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4 Australia's national identity 59

TOPIC 1
Your rights and freedoms

1.1 Overview

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

1.1.1 Everybody has rights in Australia

You have probably heard many people talking about protecting their rights, or complaining when they believe someone has interfered with those rights. What is a **right** and how are rights protected in Australia? When we speak of rights and freedoms, we are usually referring to the way individuals are treated in a particular organisation or community. These can include the rights that students and teachers have within a school community, or the rights that employees have within a particular workplace. Most importantly, it includes the rights we have as citizens of Australia.

FIGURE 1 Medieval rulers had the power to grant or take away the rights of ordinary people.



In Australia we are said to be governed by the 'rule of law'. This means that no person is above the law, no matter how rich or important they are. In ancient and medieval times, however, kings or emperors were above the law. They could make laws to suit themselves and to further their own wealth and power. Ordinary people only had whatever rights and freedoms their ruler felt like granting to them. A harsh or cruel ruler could take away ordinary people's rights whenever he or she wished.

Today in Australia, the rule of law means that we have a number of guaranteed rights and freedoms, and no government can take these away from us. In addition, governments in Australia have passed laws to ensure that the rights of all people are respected. Examples include laws that guarantee equal opportunity and those that make racial discrimination illegal.

Starter questions

1. List three rights that you have within your family and household.
2. List three rights that you have as a student at your school.
3. Can you think of ways in which your rights as a family member and school student are limited or restricted? Why do these limits exist?

4. List and explain three rights and/or freedoms that you believe Australians have today.
5. Outline any limits that could be placed on these rights and freedoms.
6. It is sometimes said that 'every right is balanced by a responsibility'. What do you think this means?

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Watch this eLesson: Rights and freedoms (eles-2260)

1.2 How are our rights and freedoms protected?

1.2.1 What laws protect us?

Under the rule of law, the protection of our rights and freedoms comes from a number of sources. The Australian **Constitution** includes provisions that protect some of our basic rights. In addition, state and federal governments have passed laws aimed at protecting many of our rights as citizens.

FIGURE 1 Our rights and freedoms unite us as Australians.



1.2.2 Rights contained in the Constitution

The Australian Constitution contains a number of sections that ensure that Australia must be ruled as a **democracy**. It also includes five specific rights. Because these five rights are written in the Constitution, they cannot be changed or taken away without a **referendum**.

Protecting democracy

The Constitution ensures that Australia must be governed as a democracy in the following ways:

- Representatives to both houses of parliament are elected by a direct vote of the people.
- Each person has only one vote for each house of parliament, so all voters are equal.
- Parliament is limited to a three-year term, so all the members have to face the voters on a regular basis to be judged on their performance.

- All laws passed by the parliament have to be agreed to by a majority of members, so they represent the wishes of the majority of voters.
- There is a division of powers between the federal and state governments, so power is spread between these two levels of government.
- The courts are independent of government, so they can enforce the law fairly and equally to all.

Five express rights

Our Constitution contains a small number of rights. Because they are clearly expressed in the wording of the Constitution, they are known as 'express rights'. The five express rights are as follows:

1. *Freedom of religion*. Under section 116 of the Constitution, the government cannot force anyone to follow any one religion, nor can it prevent anyone from freely practising his or her own religion.
2. *Trial by jury*. Under section 80 of the Constitution, anyone accused of a serious crime under Commonwealth law must by tried in court by a **jury**. This right only applies to Commonwealth law, so it is a very limited right. Most criminal law is decided by state governments, and criminal trials take place in state courts. Trial by jury in these state courts is not protected by the Constitution, but is covered by state laws.
3. *Compensation for acquired property*. Sometimes the Commonwealth Government may need to take over property from individuals or organisations. They may do this, for example, when they are building new freeways or railways. Under section 51(xxxi) of the Constitution, if the government does this, it must be on 'just terms'. This means that the person who owns the property must get a fair price for that property.

FIGURE 2 A direct vote of the people is required to elect members of parliament.



FIGURE 3 Freedom of religion is guaranteed by our Constitution. Out of 22 major world religions, 18 are practised in Australia.



FIGURE 4 Trial by jury is guaranteed by our Constitution for anyone charged with a serious offence under Commonwealth law.



FIGURE 5 If the government needs to take over property, the owner is entitled to a fair price under our Constitution.



4. *Residential non-discrimination*. Under section 117 of the Constitution, no state government can treat someone differently, or discriminate against a person, just because he or she is a resident of a different state.
5. *Interstate trade and commerce*. Under section 92 of the Constitution, all trade between the states must be completely free. This means that no government, or any other person or business, can do anything that interferes with the free operation of commerce across state borders.

FIGURE 6 Under our Constitution, all trade across state borders must be free from interference.



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Watch this eLesson: The Australian Constitution (eles-2076)

1.2.3 Rights protected by legislation

Federal, state and territory parliaments have all passed laws designed to protect the rights and freedoms of all members of the community. For example, they have all passed laws designed to make it illegal to discriminate against any person based on certain personal characteristics. This means that you cannot treat someone differently or unfairly because they happen to be different from yourself or from the majority of society. Under these laws, it is illegal to discriminate against anyone on the basis of:

- gender or gender identity
- sexual orientation
- pregnancy
- breastfeeding
- marital status
- status as a carer
- age
- race
- skin colour
- nationality
- ethnicity
- parental status (including childlessness)
- physical features (Victoria only)
- religious belief or activity
- physical impairment
- mental illness or disability
- a personal association with anyone having any of the above characteristics.

This means that an employer cannot refuse to employ someone because of any of the above characteristics. It also means that a business owner cannot use any of the above as a reason to refuse to do business with a person. For example, the owner of a restaurant cannot refuse entry to a person based on any of the above characteristics. These laws are designed to ensure that all members of Australian society are treated fairly and equally.

FIGURE 7 Employers interviewing job applicants must treat them all equally.



1.2 Activities

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

Remember

1. What is the meaning of the term 'democracy'?
2. In what way is freedom of religion protected in Australia?
3. In what circumstances does the Constitution guarantee a jury trial to an accused person?

Explain

4. Choose two democratic rights and explain what they are.
5. Identify and explain five ways in which the Australian Constitution protects our rights.
6. What safeguards does the Constitution provide for anyone who has his or her property taken by the Commonwealth Government?
7. Use internet resources to identify three laws, passed by either a state parliament or the Commonwealth Parliament, designed to make it illegal to discriminate against any person based on his or her personal characteristics.

Predict

8. Examine each of the following cases and determine whether or not there has been a case of discrimination, and explain your reasons:
   (a) A woman was unsuccessful in gaining a job because she was pregnant.
   (b) A real estate agent refused to rent an apartment to an Indigenous Australian family.
   (c) A man failed to get a job as a bus driver because he had no driver's license.
   (d) A taxi driver with a sign on his cab saying 'No dogs' refused to pick up a blind person with a guide dog.
   (e) A carpenter advertises for an apprentice to work with him, and specifies that only males should apply.
   (f) A menswear store advertises for a model for its advertising catalogue, and specifies that only males should apply.

learnON RESOURCES — ONLINE ONLY

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

Explore more with this weblink: Australian Human Rights Commission

1.3 How free is freedom of speech?

1.3.1 The importance of freedom of speech

One of the key freedoms enjoyed by Australians is freedom of speech. In most cases we have the freedom to express our opinions publicly. However, there are some legal limits on freedom of speech. This is because our right of free speech must be balanced against the rights of other people who may be harmed by what we say.

For us to be able to exercise our democratic rights in a free society, we must have the right to express our opinions without risk of punishment. In many countries around the world, and throughout history, this right has not always existed. In some

FIGURE 1 Australians highly value the right of free speech.



medieval societies, anyone who publicly criticised the king or the church could be executed. Even today, there are many countries where freedom of speech is very limited or non-existent, and people are punished for publicly expressing their opinions:

- In Russia in February 2012, members of a female punk–rock group known as Pussy Riot staged a performance in a cathedral in Moscow. The women were protesting against the policies of the Russian government and its close relationship with the Russian Orthodox Church. They were arrested and charged with 'hooliganism', and imprisoned. Their imprisonment led to widespread protests in Russia and other countries. Eventually they were pardoned by the Russian Parliament and released from prison in December 2013. Their case is seen as an example of the lack of freedom of speech in Russia.
- In North Korea, it is illegal to say or do anything that criticises the government or is seen to insult the country's leader, Kim Jong-un. It was recently reported that a man was thrown into prison for wiping up a spilt drink with a sheet of newspaper. Someone noticed that the newspaper featured a photo of Kim Jong-un and reported the man, who was imprisoned for insulting the leader.

1.3.2 Limits on our freedom of speech

Our right to freedom of speech in Australia is said to be limited by the 'bounds of law'. The word 'bounds' is an old-fashioned form of the word 'boundaries'. We understand boundaries to be limits on what we may do in any set of circumstances. The limits or boundaries on our freedom of speech are imposed by laws that prohibit (among other things) hate speech, bullying, defamation and obscenity.

Hate speech

Australia's laws against racial discrimination place a limit on our right of free speech. It is illegal in Australia to publicly use language that is likely to offend, insult, humiliate or intimidate anyone because of that person's race, colour or national or ethnic origin. Very few people have actually been brought to court under this law, but it sends a strong message to the community about using racially abusive language. In May 2013, a 13-year-old girl was removed from an AFL match at the Melbourne Cricket Ground for racially abusing Aboriginal footballer Adam Goodes.

After watching the video 'Je suis Charlie' in your learnON title, discuss as a class the meaning of the term 'Je suis Charlie': the phrase used by people showing support for free speech after the terrorist attack on the satirical magazine *Charlie Hebdo* in Paris in early 2015. Discuss whether you think there should be limits on free speech. What are the pros and cons of placing limits on free speech?

FIGURE 2 The imprisonment of members of the Russian punk–rock group Pussy Riot led to many protests calling for their release.



FIGURE 3 A teenage girl was removed from a football game for racially abusing AFL footballer Adam Goodes.



Bullying

In recent years, state governments have acted to protect people from bullying, particularly in the workplace. In February 2010, four men and the company they worked for were fined a total of $335 000 for bullying a young waitress who later killed herself. The waitress, Brodie Panlock, committed suicide after months of bullying at the café where she worked. Much of the bullying involved name-calling and using offensive language towards Ms Panlock, who was 19 years old. Following the publicity surrounding Brodie Panlock's death, the Victorian state government brought in a new law against workplace bullying. It allows for workplace bullies to be prosecuted through the criminal law, and for prison sentences of up to ten years for those found guilty. The new law has become known as 'Brodie's law'. Some other state governments have now also acted to make bullying language illegal.

FIGURE 4 The suicide of 19-year-old Brodie Panlock led to a change in the law in Victoria regarding workplace bullying.



Defamation

Defamation occurs when one person writes or says something likely to damage the reputation of another person. Any communicated material that harms the reputation of another person is said to be 'defamatory'. If you believe someone has defamed you, you can take legal action (that is, you can sue that person). For your legal action to be successful, you have to prove the following:

- The defamatory material was published or communicated to someone other than yourself. It is not defamatory if the person communicates it only to you, and no-one else sees or hears it. It would be defamatory, though, if someone published it on his or her Facebook page, or anywhere likely to be read by other people.
- It has to be clear that it is you as an individual the person is referring to. If someone said that members of your sports team were cheats, you could not sue them unless they clearly identified you in person.
- There has to be some clear damage to your reputation. If the material is likely to prevent you getting a particular job, or in some other way can be seen to disadvantage you, you may have a good legal case.
- The material must be untrue. If someone communicates material about you that can be proven to be true, then that person has a strong defence if you try to take legal action for defamation. In this case, a court may rule that no defamation has occurred.

The law relating to defamation puts a limit on free speech but it also protects innocent people from having their reputations ruined publicly. It demonstrates that any right to freedom of speech imposes an obligation on all of us to use that right responsibly.

FIGURE 5 Spreading rumours likely to damage another person's reputation could be defamatory.



FIGURE 6 Sending obscene images on a mobile phone is illegal and can lead to the person responsible being charged with an offence.



Obscenity

Freedom of speech is also limited by the need for all written and spoken material to conform to reasonable

community standards. Laws against obscenity are designed to protect these standards. Obscenity laws vary by state and territory, but generally cover cases such as the following:

- *Offensive language.* If you are caught swearing loudly in public, you can be charged with using offensive language in a public place.
- *Sexually explicit or violent material.* A number of laws govern the publication or display of such material. In some cases, film and television classification authorities may place restrictions on violent or sexually explicit material by giving it an 'R 18+' classification. Some other material (such as child pornography) is banned completely, and people can be prosecuted and imprisoned for possessing it. Recently there has been a lot of publicity relating to the practice of 'sexting' by teenagers. This is seen as child pornography and has serious consequences for anyone caught participating in the practice.

Despite these limits, freedom of speech plays a significant role in Australia's democracy. Our right of free speech allows the open exchange of political ideas and policies. This means that when we vote to elect representatives to parliament, we should be fully informed about the promises and policies of all candidates. No-one can restrict the rights of political parties and their candidates from getting their message out to voters.

1.3 Activities

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

Remember

1. What is meant by the term 'bounds of law'?
2. Outline the purpose of laws against obscenity.
3. In what ways do laws against racial discrimination put limits on our right of free speech?
4. What are the four elements you would have to prove to be able to successfully to take legal action against someone for defamation?

Explain

5. Explain why freedom of speech is important in supporting democracy in Australia.
6. A number of states are considering changing the laws dealing with sexting. Using internet resources, find out the following:
   (a) Which states have changed or are considering changes?
   (b) What changes are being considered?

Predict

7. What are the likely consequences of each of the following actions:
   (a) A group of employees in a factory engages in name-calling and using insulting language towards a workmate, who becomes afraid to go to work as a result.
   (b) A young man lies about his ex-girlfriend on his Facebook page, saying that she lost her job because she stole money from her employer. When the girlfriend applies for another job, she is unsuccessful because the prospective employer believes she is a thief.
   (c) A passenger on a bus begins harassing a family of African migrants, using racist language and telling them to 'go back where they came from'.
   (d) A 14-year-old girl sends a topless photograph of herself to her boyfriend's phone. The boy keeps the photograph on his phone and, when they break up, he resends it to all his friends with nasty comments about the girl.

learnON RESOURCES — ONLINE ONLY

Watch this eLesson: Je suis Charlie (eles-2430)

1.4 Some other democratic freedoms

1.4.1 The benefits of living in a democracy

In addition to freedom of speech, there are a number of other freedoms we associate with living in a democracy. These include freedom of association, freedom of assembly, freedom of movement and freedom of conscience. All of these freedoms have been included in international **treaties** that have been agreed to by Australian governments. Any attempt to limit these would be seen as an infringement (a violation or restriction) of our democratic rights.

1.4.2 Freedom of association

It is generally accepted in Australia that we have the right to have anyone we wish as a friend. It is also accepted that we can socialise with any individual or group of people we choose. This is freedom of association at its simplest level, but our right to freedom of association goes further than this. Fundamental to freedom of association is the right to join any group, club or organisation we wish. This means that we have the right to join any political party, religious group, sporting club or **trade union**. While we take this right for granted, it has not always been protected. At different times, in different countries, it has in fact been severely limited.

- Much of our legal and constitutional system comes from Britain. Trade unions were banned in Britain in 1799 under laws known as the Combination Acts. Although these laws were repealed in 1825, there were still strict limitations on what unions were allowed to do. In 1834, a group of six men from the village of Tolpuddle in southern England formed an association to campaign for better wages for farm workers. They were prosecuted, found guilty and sentenced to seven years' transportation to the colony of New South Wales. They became known as the Tolpuddle Martyrs, and were regarded by many as heroes for standing up for the right to freedom of association. Following public protests, they were released in 1836 and allowed to return to England.

FIGURE 1 Between 50 000 and 60 000 people gathered outside London to protest at the transportation of the Tolpuddle Martyrs in 1834.



DEMONSTRATION AT COPENHAGEN FIELDS, LONDON

- In 1951, the Menzies government in Australia tried to ban the Communist Party by holding a referendum to change the Australian Constitution. Because the Communist Party believed in the overthrow of existing society, many people viewed it as a dangerous organisation. The Communist Party had only a relatively small number of supporters and members, and most Australians were strongly opposed to communism. Nevertheless, the referendum failed and the Communist Party remained a legal organisation. It appears that most Australians were not prepared to sacrifice the right to freedom of association — not even to ban an organisation they did not support.

Freedom of association is an important part of our democracy. Having the right to elect representatives to make laws on our behalf works most fairly when we have a number of alternative candidates from which to choose. Freedom of association allows anyone to form a political party (or any other organisation) to campaign for new laws or changes to existing laws. Anyone can join such groups and, if they gain enough support, their ideas and proposals can eventually become law. Australian democracy is stronger because we have many different groups and ideas to choose from when we vote.

1.4.3 Freedom of assembly

Related to freedom of association is freedom of assembly. This gives individuals and groups the right to assemble (or come together) for a meeting, or the right to assemble in public to protest against actions by a government or other organisation. Freedom of assembly can be limited, depending on the type of assembly and its location. In Australia, there is no specific law that protects freedom of assembly. It is included in international treaties that have been agreed to by Australian governments, and is therefore regarded as one of our natural democratic rights. State governments are usually responsible for dealing with public order, and so will make laws that deal with public protests. In this way, freedom of assembly is subject to the bounds of law.

FIGURE 2 Freedom of assembly includes the right to public protest.



While there are generally no restrictions on any group holding a meeting in a hall or similar space, assembling in a public space may limit the access of others to that space. For example, a protest march along a busy main road may cause severe traffic problems. It is for these reasons that some state governments have placed restrictions on freedom of assembly. Most people would accept that, for any assembly or protest to be legal, it should be peaceful and not threaten bystanders. In most cases, the organisers of public protests in Australia make sure their activities are well publicised in advance, so they can attract the largest number of supporters to their actions. This means that the authorities can plan to ensure minimum disruption to people going about their normal business.

Freedom of assembly, including the right to public protest, provides many groups with a means of having their views heard by the broader public. If these views then gain support among large numbers of people, they can influence a government to change laws or make new laws to deal with the issue under protest. (See subtopic 1.5 for further discussion of this issue.)

1.4.4 Freedom of movement

As with other rights, freedom of movement is limited by the bounds of law. We have the freedom to move freely within most public spaces in the community, but obviously we do not have the right to trespass on someone else's private property. The right to freedom of movement allows us to move freely between different towns and cities, and to move between the states of Australia without restriction — a right reinforced by the constitutional right of free trade and commerce between the states. Freedom of movement also gives us the right to leave Australia for work or a holiday, and to return at any time.

FIGURE 3 Freedom of movement includes the right of Australians to leave the country and return at any time.



Freedom of movement is sometimes restricted as a means of protecting the public. Before trial, a person accused of a crime may be prevented from leaving the state or country. After floods or bushfires, people may be lawfully prevented from entering an area declared a natural disaster area. When parents are in dispute over the custody of children during a divorce, courts may restrict the movement of those children to ensure they have regular access to both parents.

Any general attempt to restrict people's right of movement could limit their rights to participate in Australian democracy. If we wish to attend a meeting or public lecture to find out more about a political issue, we should be free to do so. Similarly, we must be able to get to a polling place to vote in an election. Freedom of movement therefore enables us to exercise our democratic rights.

1.4.5 Freedom of conscience

Freedom of conscience means that we have the right to hold opinions and to express those opinions freely. It applies to religious views, political views, scientific ideas or any other beliefs or ideas we may have. It means we can hold our own beliefs and not be forced to accept the beliefs of others.

As we know from the discussion in subtopic 1.2, freedom of religion is protected by the Australian Constitution, but the broader concept of freedom of conscience is included in international treaties agreed to by Australian governments. Freedom of conscience has not always been guaranteed, and is still not guaranteed in some countries:

- In some Muslim countries (including Saudi Arabia and Iran), anyone who converts from Islam to another religion (such as Christianity) is guilty of a crime. The person will usually be imprisoned and may be subject to the death penalty.
- In February 2014, an Australian Christian missionary called John Short was detained in North Korea for distributing Christian pamphlets. Christianity is banned in North Korea along with most other religions, and Mr Short faced the possibility of a 15-year prison sentence. He was eventually released after about ten days, and required to make a public apology to the government of North Korea.

In Australia, expressing one's own conscientious beliefs is subject to the same bounds of law that apply to freedom of speech generally (see subtopic 1.3). Freedom of conscience is important in a democracy because we need to have choices when we vote. The free exchange of political ideas can help us to decide who we want to represent us in parliament and make laws on our behalf. We will usually vote for people whose beliefs and values are as close as possible to our own because they are more likely to make laws we agree with.

FIGURE 4 Freedom of conscience gives us the right to think and believe differently from those around us.



FIGURE 5 Galileo Galilei was imprisoned by the Catholic Church because he published scientific findings that were different from accepted beliefs.



1.4 Activities

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

Remember

1. Who were the Tolpuddle Martyrs?
2. Why did the Menzies government try to ban the Communist Party in 1951?
3. Outline one way in which freedom of assembly might be restricted by the bounds of law.
4. Describe two circumstances when it might be reasonable to restrict a person's freedom of movement.
5. List two examples of freedom of conscience.

Explain

6. Why is each of the following important in maintaining Australia as a democratic society?
   (a) Freedom of association
   (b) Freedom of assembly
   (c) Freedom of movement
   (d) Freedom of conscience

Predict

7. In October 2013, the Queensland government brought in new laws directed at members of motorcycle clubs, particularly those labelled as members of 'criminal motorcycle gangs'. The laws prohibit any gathering of those members in groups of three or more. They also ban such members from going to certain declared locations, promoting their organisation or recruiting new members.
   (a) Identify two rights or freedoms that may have been breached by these laws.
   (b) The Queensland government has claimed that the laws are designed to protect innocent people from violent bikie gangs. Explain whether or not you agree with this argument, and give reasons for your response.
   (c) The government that brought in these laws was democratically elected by a huge majority of the voters. Do you believe this gives the government the right to make any laws it wishes, or should there be some limits on the power of governments to restrict basic rights and freedoms? Give reasons for your answer.

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Watch this eLesson: Dangerous ideas (eles-2427)

1.5 Dissent in a democracy

1.5.1 The right to disagree

Not everyone will agree with actions taken by our governments. In a democracy — where we all have freedom of conscience, freedom of speech, freedom of association and freedom of assembly — we have the right to express that disagreement. When a person (or group of people) expresses that disagreement publicly, it is known as dissent. In a democratic country like Australia, the right to dissent is one of our basic rights.

1.5.2 Expressing dissent

Expressing dissent is one of the ways in which we can participate in a democratic society. While we are required to obey the law, we are not required to blindly follow whatever a government tells us. Every individual is free to undertake a range of activities in an attempt to have a particular law changed — for example, to organise and participate in a demonstration or public rally, or to sign a petition supporting a change in the law. (Details of such activities are discussed in topic 2, subtopic 2.5.) In recent years in Australia, we have seen examples of very successful campaigns of dissent aimed at different government actions. Each of these has resulted in a change in government policy or even a change of government.

CASE STUDY

The WorkChoices campaign

In 2005, the Liberal–National Party coalition government led by John Howard brought in new laws to deal with the way in which wages and working conditions were to be decided in Australian workplaces. These laws, known as the WorkChoices laws, reduced the ability of unions to act on behalf of their members. They were also designed to remove some of the entitlements that many workers were used to enjoying as part of their working conditions. It would be made easier for workers to be dismissed from their jobs, and many employees feared that their jobs would be less secure as a result.

FIGURE 1 The campaign against WorkChoices contributed to a change of government in 2007.



The Labor Party and the Australian Greens opposed the WorkChoices laws being passed in parliament. However, the government had the majority of members in both the Senate and the House of Representatives, so the laws were passed. The trade union movement then entered the fight, launching an advertising campaign designed to turn the majority of Australian voters against the new laws. Protest marches were held in every major city as part of the effort to change these laws. This campaign was very successful as it made many employees worried about maintaining their wages and working conditions.

WorkChoices became a major issue in the 2007 federal election. It was a significant factor in the defeat of the Liberal–National Party coalition government and the victory of the Labor party, led by Kevin Rudd. The new Labor government quickly moved to **repeal** the WorkChoices laws and replace them with a different set of laws to deal with wages and working conditions.

CASE STUDY

The mining tax

In 2008, the federal Labor government led by Kevin Rudd set up a committee to review the taxation system. In December 2009, the review committee presented its report to the government. In May 2010, the government decided to adopt one of the report's recommendations for tax changes. It was announced that a Resource Super Profits Tax would be introduced. This tax was to be paid by mining companies, but was strongly opposed by those companies. The mining companies conducted a strong advertising campaign across all media, claiming that the tax would destroy the mining industry.

FIGURE 2 The mining industry conducted a strong campaign against the original mining tax in 2010.



This advertising campaign worked very well, and the tax became deeply unpopular. The Liberal–National Party coalition came out in opposing the tax and supporting the mining companies. In June 2010, the Labor Party members of parliament voted to remove Kevin Rudd as their leader and to replace him with Julia Gillard. This meant that Julia Gillard became prime minister as she was now the leader of the government party. The new prime minister decided to negotiate with representatives of the mining companies to make changes to the tax. The name of the tax was changed to the Minerals Resource Rent Tax, and only the largest mining companies had to pay it. The leader of the Liberal Party, Tony Abbott, maintained that his party would repeal the tax if it won government at the next election. In September 2013, the Liberal–National Party coalition won the federal election. The new government then set out to introduce new laws into parliament that would remove the tax on mining companies. In September 2014, legislation to repeal the mining tax was passed by the Senate. Go to the **Anti-mining tax campaign** weblink in the Resources tab for more information on this issue.

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Explore more with this weblink: Anti-mining tax campaign

CASE STUDY

The carbon tax

Over the last 20 years or so, there has been growing concern in the community over climate change caused by excessive emissions of carbon dioxide into the atmosphere. At the 2007 Australian federal election, both sides of politics promised to introduce an emissions trading scheme to deal with the problem. During the next three years, the Labor government led by Kevin Rudd attempted to introduce such a scheme but was unsuccessful.

After the 2010 federal election, neither major political party had a majority in the House of Representatives. This meant that neither party could form a government without the support of smaller parties and members who did not belong to any political party. As part of the negotiations with these representatives, Prime Minister Julia Gillard agreed to introduce a carbon tax. Because they now had to pay a tax on carbon emissions, businesses were expected to reduce those emissions. It was hoped that this would eventually provide a solution to climate change. Before the election, the prime minister had promised that her government would not introduce a carbon tax, so she was attacked as having broken an election promise. Opposition Leader Tony Abbott promised that he would repeal the laws setting up the carbon tax, and began a campaign against the tax. Other opponents of the Labor government joined in the anti–carbon tax campaign, with some of them protesting outside Parliament House in Canberra. After winning the 2013 election, Prime Minister Tony Abbott began the process of repealing the laws that had set up the carbon tax. In July 2014, the Abbott government successfully passed a bill through parliament to remove the carbon tax.

FIGURE 3 Anti–carbon tax: protests against the carbon tax took place on the lawn in front of Parliament House in Canberra.

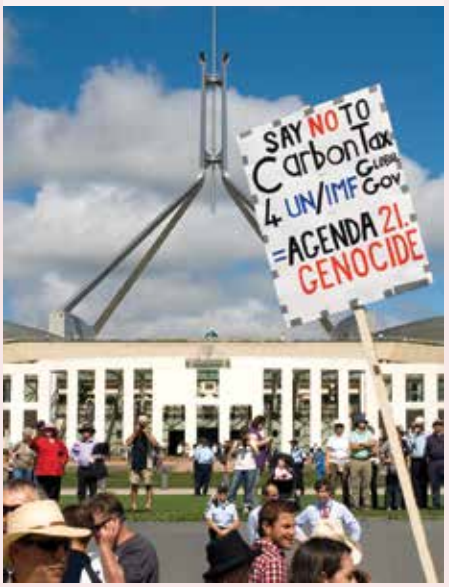


FIGURE 4 Pro–carbon tax: many people came out to support the carbon tax as the most effective way of tackling climate change.



1.5 Activities

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

Remember

1. Identify which groups expressed dissent towards each of the following:
   (a) WorkChoices
   (b) the mining tax
   (c) the carbon tax.

Explain

2. Describe one way in which each group expressed its dissent.
3. Why is it reasonable for groups and individuals to express dissent towards government policies and actions?
4. Give two examples of limits or bounds of law, and explain how they could reasonably be placed on dissent in Australian society.

5. Using internet resources, identify who has been involved in expressing dissent towards the following government actions and the methods they have used to present their views:
   (a) Australia's involvement in the war in Iraq from 2003 to 2009
   (b) the detention of asylum seekers on Nauru and Manus Island
   (c) laws preventing same-sex marriage.

Predict

6. Is dissent directed towards government policies or actions a positive or negative influence on Australian democracy? Give reasons for your answer.

1.6 SkillBuilder: Questioning and research

1.6.1 Tell me

When carrying out your own research, the steps shown online in the interactivity 'How to carry out your own research' can provide a useful guide.

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Try out this interactivity: How to carry out your own research (int-5661)

1.6.2 Show me

Many countries throughout the world have a 'bill of rights' or 'charter of rights' to protect the rights and freedoms of their citizens. Imagine you have been asked to find out what a bill or charter of rights is, and how it protects people's rights and freedoms.

Your first step is to clearly identify the essential key questions. These could be expressed as follows: 'What is a bill or charter of rights? What is a good example of a bill or charter of rights? What rights does it actually protect? How does it protect these rights?'

It is now necessary to break this down into a series of more specific questions. These could include:

1. What is a bill of rights?
2. What is a charter of rights?
3. Is there any difference between a bill of rights and a charter of rights?
4. What is one major country that has a bill or charter of rights?
5. How did that country get a bill or charter of rights?
6. What rights or freedoms does that bill or charter protect (for example, freedom of speech; freedom of association)?
7. Can those rights be easily taken away by a government repealing them? Or are they like the rights protected by the Australian Constitution, and need a referendum to be changed?
8. What can people do if they think their rights under that bill or charter have been affected by the actions of the government or someone else?
9. How well does the bill or charter work? Are there any examples of occasions when someone has successfully taken legal action to protect his or her rights?

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

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

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

1.6.3 Let me do it

Practise the skill

Using the above process as a model, devise a series of questions and carry out the research to produce a report on the following two key questions: 'In Australia, the state of Victoria has brought in a Charter of Human Rights and Responsibilities, and the Australian Capital Territory has a bill of rights known as the *Human Rights Act*. Select one of these and prepare a report explaining (1) what rights are protected by the bill or charter you have selected; and (2) what actions can be taken by a person to protect his or her rights under that bill or charter.'

1.7 Review

1.7.1 Summary

When we speak of rights and freedoms, we are usually referring to the way individuals are treated in a particular organisation or community, including the democratic rights we have as citizens. Today in Australia, the rule of law means that we have a number of guaranteed rights and freedoms, and no government can take these away from us.

- The Constitution guarantees certain democratic rights, such as the right to directly elect members of parliament, and a requirement that elections must be held every three years.
- The Constitution also contains five express rights, including freedom of religion and a right of free trade between the states.
- Federal and state parliaments have also passed laws to promote equal opportunity and to make it illegal to discriminate against individuals.
- The right of free speech is an important right but it is limited by the bounds of law.
- Freedom of association, freedom of assembly, freedom of movement and freedom of conscience are all important freedoms enjoyed in Australia. These are also limited by the bounds of law.
- In a democracy such as Australia, we all have the right to dissent against laws passed by parliament. We can express our dissent publicly and vote for political parties that promise to change those laws.

1.7.2 Your turn

A number of people have expressed concern about section 18C of the *Racial Discrimination Act*. This is the law that makes it illegal in Australia to publicly use language that is likely to offend, insult, humiliate or intimidate anyone because of his or her race, colour or national or ethnic origin. Individuals opposing section 18C argue that it is an unnecessary restriction on freedom of speech. Others believe that it is an important safeguard to protect people against hate speech.

Carry out the following tasks in groups of four:

1. Use internet resources to locate material on this law. You will find many websites that discuss the issue.
2. Divide your group into two pairs. One pair should find arguments in favour of keeping section 18C, and the other pair should find arguments in favour of repealing it.

3. Once this is done, bring your group together and discuss the arguments in favour of and against retaining this law. Which arguments are the strongest? Can you reach agreement as a group or not?
4. Each group should present its findings to the rest of the class. Your teacher may be able to make a summary of the arguments.
5. After considering all the arguments gathered and presented by each group, is there a point of view supported by the majority of the class? Have a vote to determine this.

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Try out this interactivity: Your rights and freedoms crossword (int-5316)

TOPIC 2 Participating in an Australian democracy

2.1 Overview

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

2.1.1 Australians have the right to protest

What do all of the following groups have in common?

- In late 2013 and early 2014, police clashed with protesters in the inner-northern suburbs of Melbourne. The protesters had gathered to oppose the Victorian state government's proposed road tunnel to link two of the city's busiest freeways.
- On 26 January 2014, more than 2000 protesters gathered in a Brisbane park. They were there to protest against the Queensland state government's laws to restrict the activities of bikie gangs.
- On 23 February 2014, about 15 000 people around Australia commemorated the death of an asylum seeker in an Australian-operated detention centre on Manus Island, Papua New Guinea. In Melbourne, 5000 people gathered in Federation Square; in Sydney, 4000 gathered outside the town hall; smaller numbers gathered in other cities and towns. They all lit candles in memory of the dead man, and to protest over the Australian government's treatment of asylum seekers.
- Knitting has taken on a new purpose as groups of women, known as 'knitting nannas', have been protesting peacefully at sites across Australia. In the northern rivers region of New South Wales, the knitting nannas are protesting against the possible damage that coal seam gas mining could do to local farmlands. In the Toolangi forest region of Victoria, they have been protesting against the logging of native forests. In the town of Tecoma, east of Melbourne, the protest was directed against the building of a fast-food restaurant.

All these groups have been participating in Australia's democracy.

What makes Australia a democracy? Most people would probably say that the right to vote for our government is the answer to that question. While voting in elections is important, it is certainly not the only way of participating in the democratic process. There are many other ways in which we can have our voices heard and influence the future of our country.

FIGURE 1 People throughout Australia held a candlelit vigil to protest against the Australian government's treatment of asylum seekers.



Starter questions

1. Are you aware of any protest rallies or marches that have taken place recently? When and where were they, and what were the people protesting about?
2. Think of any changes you would like to see in your community or in Australia as a whole. What do you think you could do to achieve that change?

INQUIRY SEQUENCE

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Watch this eLesson: You can make a difference (eles-2263)

Explore more with this weblink: Norty Knitting Nannas

2.2 Having an influence

2.2.1 How to have your say

One of our key rights as Australian citizens is the right to actively take part in the democratic processes. We can do this in a number of ways. First, there is our right to vote — a right that can be exercised by all Australian citizens over the age of 18. Then there is our right to freedom of speech, which allows us to express our opinions through a variety of methods. We can write letters to the newspapers, we can phone in to talkback radio, and we can publicise our views on social media using Facebook or Twitter, or even create our own website or blog. In addition, there are opinion polling companies that conduct surveys of ordinary people on all sorts of issues. They then publish the results of these surveys.

2.2.2 The electoral system

Our system of government is a democracy. This means it is based on the idea that we elect representatives to make laws for us. Because we vote for them, these representatives would be expected to make laws that we agree with. If they do not do that, then we can vote for different representatives at the next election. Those with the right to vote have the opportunity to elect representatives to:

- the Commonwealth Parliament in Canberra
- the state or territory parliament sitting in each capital city
- local councils in the city, town or shire in which the electors live.

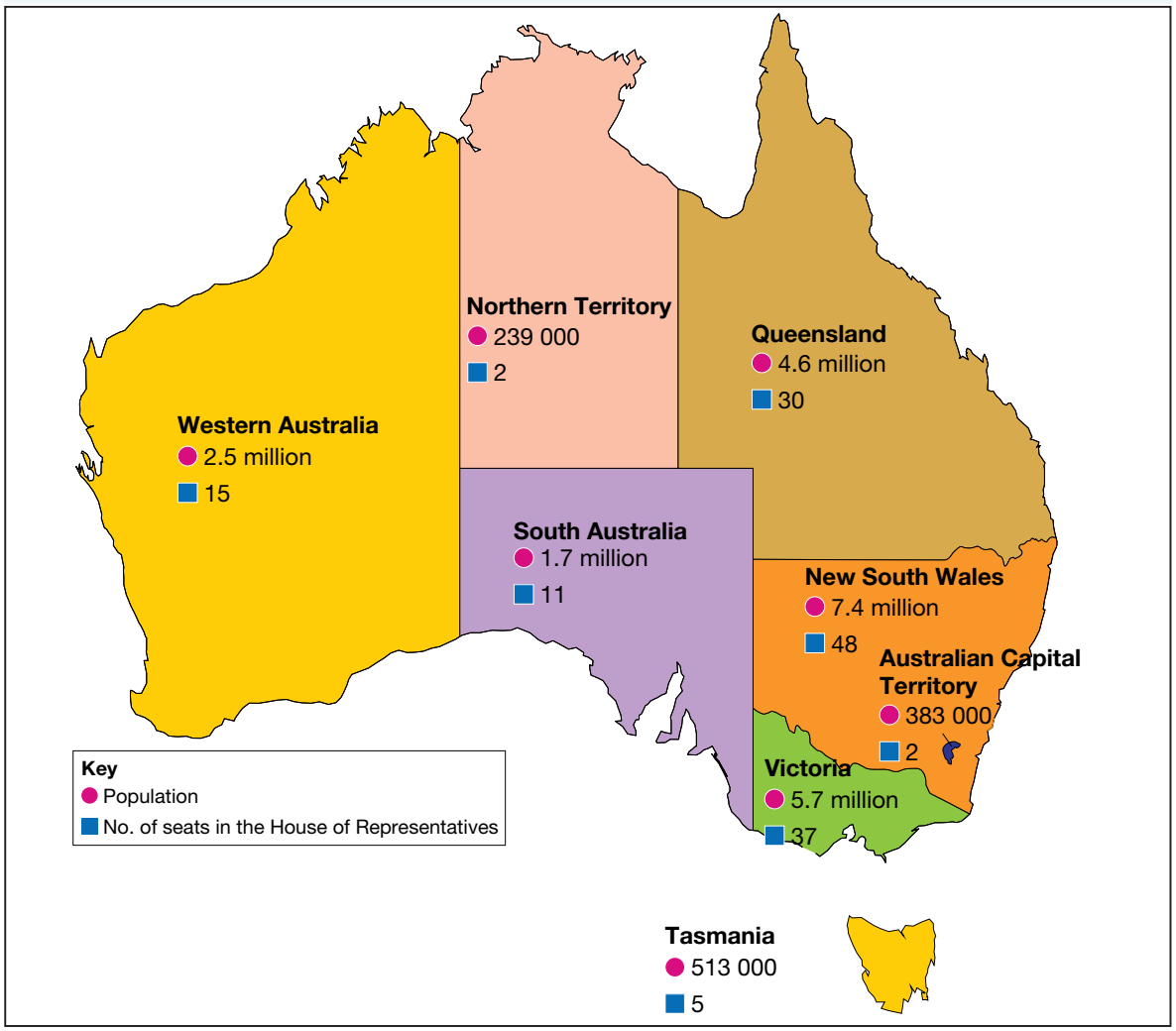
Voting is compulsory in Australia, and all Australian citizens aged 18 years or over are legally required to enrol to vote. You can actually enrol any time after your sixteenth birthday, and you can do so online or by filling in a paper form. Go to the **Voting enrolment form** weblink in the Resources tab to view the paperwork you need to complete in order to register to vote.

Electing a Commonwealth Parliament

The Australian parliament is bicameral, which means it consists of two 'houses' — the House of Representatives (the lower house) and the Senate (the upper house). Elections for both houses are usually held at the same time, but members of the two houses are elected in a different way:

- The House of Representatives has 150 members, each elected for three years. Each member represents an **electorate** or 'seat' that covers a particular geographic area. All electorates have roughly the same number of electors, about 90 000 each. States with larger populations, such as New South Wales and Victoria, elect the largest number of members. States with smaller populations, such as Tasmania and South Australia, elect much smaller numbers.
- The Senate has 76 members. Each of the six states elects twelve senators regardless of size or population, and the Northern Territory and ACT each elect two senators. In contrast, the members of the lower house are elected on the basis of population. Because there are so many representatives from New South Wales and Victoria, they could out-vote all the other members combined. The Senate was therefore created with equal numbers from each state to act as a safeguard against this happening in the upper house.

FIGURE 1 Population and the House of Representatives



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Explore more with this weblink: Voting enrolment form

Try out this interactivity: Population and the House of Representatives (int-5654)

Electing a state or territory parliament

Five of the six states also have bicameral parliaments, while the Queensland and two territory parliaments each have only one house. Each parliament has its own electoral system, but the basic principle remains similar to that of the Commonwealth Parliament: representatives are elected to reflect the wishes of the voters. If the voters do not believe that their representatives are doing a good job, they can vote them out at the next election.

FIGURE 2 Many young people have not registered to vote, so they are allowing others to make decisions for them.



Because Australia has a democratic form of government, the most basic way in which we participate is by exercising our right to vote. Recent figures have suggested that as many as 25 per cent of young people aged 18 to 24 have not enrolled to vote. This means they are missing out on an opportunity to participate, and are allowing other people to make decisions for them.

2.2.3 Social media

In today's world, it seems that millions of people are almost constantly connected. Your ability to access websites, emails and social media from almost anywhere through your smartphone means that you can express an opinion on any issue, to almost anyone, anytime, anywhere. In the same way, you can access the opinions of others or seek information almost continuously if you wish. Social media has allowed individuals and groups to participate in the democratic processes in a variety of ways. Here are some examples:

- The activist group GetUp! has conducted online campaigns on political issues including Australia's migration laws, the Murray–Darling Basin environment, and coal seam gas mining. GetUp! uses its website as a means by which its members and followers can express their opinions and call for changes in the law.
- The online organisation Change.org allows people to create petitions and get others to sign them on its website.
- In 2011, protest groups in different cities throughout the world set out to occupy significant public places to promote their views on the need for change in society. These groups, known as the 'Occupy movement', set up their own Facebook pages and Twitter accounts. These were used to allow members to express their opinions on political and social issues, and to keep followers updated. Social media also allowed the Occupy movement to bring large numbers of people to its protest activities. Watch the video 'Occupy Wall Street' of the Occupy movement protesting in New York.
- In March 2014, protest marches took place around Australia under the banner of 'March in March'. The

FIGURE 3 The Occupy movement used social media to inform supporters of the location of protest activities.



FIGURE 4 Everyone can use social media to get his or her message across.



stated aim of the organisers was 'a vote of no confidence in the Abbott government'. The participants were protesting against certain policies of the federal Liberal–National Party coalition government. The protest began with a Twitter account set up in December 2013 followed by a Facebook page, which was used to provide information to supporters. By the time the protest marches actually took place, the campaign had 45 000 online followers. It was estimated that as many as 100 000 protesters participated across Australia, with the largest crowd of 30 000 being recorded in Melbourne.

- Almost every member of parliament in Australia today has a Twitter account. One of the first to do so was the former prime minister, Kevin Rudd. At its peak, his Twitter account had over 1.3 million followers. Prime Minister Malcolm Turnbull has over 700 000 Twitter followers.

Members of parliament, supporters of particular political parties, opponents of the same political parties, as well as people campaigning for new laws can all use social media to get their message across. The amount of information available enhances everyone's ability to participate in Australian democratic processes.

learnon RESOURCES — ONLINE ONLY

Explore more with these weblinks: GetUp!, Change.org

Watch this eLesson: Occupy Wall Street (eles-2431)

2.2.4 Opinion polls

Opinion polls are surveys of people from all over Australia and all walks of life. They are conducted by a number of different polling companies. Most of these companies conduct their surveys by phoning people and asking them a series of questions. While conducting their surveys, the polling companies often also ask the people being surveyed their age and level of income in order to make sure the survey includes a broad range of people.

Polling companies conduct many different surveys in their attempts to measure people's opinions. They can be hired by businesses to survey what potential customers think about new products. They can also conduct surveys to find out whether a particular advertising campaign has been effective by asking people about their awareness of certain advertisements shown on television.

A small but important part of their business is to conduct surveys on people's attitudes to government policies and actions. To achieve this, they will survey people to find out whether they support or oppose a proposed law or other government action. When an election is close, they will also conduct surveys to find out who people intend voting for. Such opinion polls play an important role in our democratic processes.

The major polling companies often have an arrangement with the daily newspapers in Australia's

FIGURE 5 Opinion polling companies conduct surveys by phoning large numbers of people.



FIGURE 6 Daily newspapers regularly publish the results of opinion polls.



capital cities to provide information about the popularity of political parties and their leaders. Polling company Nielsen Australia has such an arrangement with *The Age* in Melbourne and *The Sydney Morning Herald*. These newspapers publish poll results conducted by Nielsen. Melbourne's *Herald-Sun*, Sydney's *The Daily Telegraph*, Brisbane's *Courier-Mail*, Adelaide's *The Advertiser* and Hobart's *Mercury* all publish political polling carried out by Galaxy Research. The slightly different method used by each company means they sometimes get different results, but they can still be a valuable way for people to participate in the democratic process.

Effectiveness of opinion polls

Opinion poll results can tell members of parliament whether or not the decisions they have made, and the laws they have introduced, are acceptable to voters. Polling companies regularly survey people to find out who they would vote for if an election were to be held immediately. In the months leading up to an election, they carry out surveys every week. These will often tell both the politicians and the public whether the government is likely to be re-elected or whether a change of government is likely. They are also a good way of finding out what the average citizen would like a government to do in the future.

2.2 Activities

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

Remember

1. What is an electorate?
2. What is the estimated percentage of people aged between 18 and 24 who have not registered to vote?
3. How do opinion polling companies carry out surveys of people's opinions?
4. Why do polling companies ask about age and level of income?
5. Why do the major newspapers have close relationships with particular polling companies?
6. What particular right do Australians have that makes this country a democracy?
7. Why is the Senate elected in a different way from the House of Representatives?

Explain

8. Explain one way in which social media has been used to influence political debate in Australia.
9. Use the **GetUp!** weblink in the Resources tab to answer these questions:
   (a) Describe one issue the organisation has been campaigning on recently.
   (b) Identify an issue that the organisation claims to have campaigned successfully on in the past.
10. Use internet resources to find a newspaper report of an opinion poll.
    (a) Which newspaper published the report?
    (b) Which polling company conducted the poll?
    (c) When was the poll conducted, and how many people were surveyed?
    (d) What were the results of the poll?

Predict

11. Opinion polls on people's voting intentions are sometimes believed to influence the way people vote. One influence is called the 'bandwagon effect'. It suggests that if undecided voters see an opinion poll showing that a particular person or party is more popular, they will 'jump on the bandwagon' and decide to vote for that person or party. Another influence is called the 'underdog effect'. This suggests that if some people see a poll showing that a particular person or party is likely to lose an election, they will feel sorry for this 'underdog' and will therefore vote for that person or party.

    Which of these effects do you think is likely to be the most powerful? Give reasons for your answer. Compare your answers with others in your class.

2.3 What can my local member do?

2.3.1 Members of parliament in the local community

Members of parliament sit in the parliamentary chamber, debating legislation and voting to pass or reject it. However, this is only a small part of their work. As representatives of a particular electorate, they have an important role in the local community that is represented by that electorate. In this community role, they can often be approached by ordinary citizens requesting them to take some action and work to make improvements in that community.

Federal parliament sits for only about 18 to 20 weeks per year, so many members of parliament can often spend as much as 30 weeks of each year in their local electorates. It is during this time that a member will be engaged in a variety of electorate activities.

Helping the community

Because each electorate has a similar number of voters, the electorates can vary in geographical size depending on how densely populated they are. This means that an inner-city electorate will be smaller in area than a rural electorate because the population in the country is more thinly spread. For example, the smallest Australian electorate in terms of geographical size is Wentworth, which is in the eastern suburbs of Sydney. It has a total area of 30 square kilometres. The largest in area is Durack, which takes up most of country Western Australia. It covers more than 1.5 million square kilometres. This is approximately 60 per cent of the total area of Western Australia, equivalent to more than 20 per cent of the total landmass of Australia. Its voters are spread out on cattle stations, mining towns and remote Indigenous communities. As you can imagine, it is much harder for the member for Durack to maintain contact with the voters than it is for the member for Wentworth. Nevertheless, both members will attempt to perform similar duties in relation to their respective communities.

Every member of parliament maintains an office in his or her electorate. Members representing very large electorates such as Durack will probably

FIGURE 1 Many of the voters in the electorate of Durack live in remote locations.



FIGURE 2 Members of parliament are often called upon to perform official opening ceremonies in their electorates.



have electorate offices in more than one town. Those in large electorates also spend a great deal of time travelling around the electorate. Members are regularly called on to visit schools, sporting clubs and various other community groups. They often have the task of making presentations to individuals and groups, and performing opening ceremonies for new community facilities.

Members also take up issues on behalf of their electorates as a whole. An example would be a local project, such as the construction of a major road or the provision of some other community facility. The local member will often take up the case with the relevant government minister. A member might also raise the issue of a local industry that is under threat of closure, potentially causing unemployment in the area. In early 2014, the fruit-processing company SPC Ardmona in Shepparton, Victoria, was looking for government funding to help its business survive. The local member, Dr Sharman Stone, took up the case with the government at the time, but the funding was denied. Dr Stone was very critical of the prime minister and other government leaders for refusing the funding, even though she was a member of the same political party as the government. Supporting an industry in her community took priority for her as a local member.

FIGURE 3 Sharman Stone, member for the federal electorate of Murray, spoke up to support business in her electorate.



Ultimately, it is the voters in each electorate who judge the performance of their local members of parliament at every election. Members need to maintain strong links with their local communities and to publicly support the interests of their electorates if they want to be re-elected.

Helping individual voters

When they are in their electorates, members of parliament spend much of their time helping individual voters. They have a small staff in their electorate offices to help them do this. Voters may have problems dealing with Centrelink or some other government department. Or they may be seeking assistance with immigration or taxation issues, or dealing with problems concerning health or education matters.

FIGURE 4 A member of parliament can often help individual voters in his or her electorate.



The member can intervene personally in the issue and may write to the relevant minister or telephone a contact within the government department concerned. Members of parliament are influential people and usually have lots of contacts, including those in community groups as well as in government departments. If a member personally intervenes on behalf of someone in his or her electorate, this will usually get high priority attention from the government department.

Providing a direct link to parliament

Voters can sometimes raise issues that have significance beyond the electorate. When several members are approached on a similar issue, this may become a matter for the government to investigate further. In many country areas, farmers have expressed concern about the possible impact of coal seam gas mining on their farms. They are concerned that the extraction of coal seam gas may pollute water supplies and have other serious effects on agricultural land. As a result of citizens raising this issue with their local members, inquiries have been initiated by the Commonwealth Parliament as well as state parliaments in New South Wales, Victoria and Queensland. Some of these parliaments have introduced new laws to regulate the coal seam gas industry.

Members of parliament often make themselves available to meet people from their electorate who are visiting Parliament House in Canberra. This often happens when groups of people contact the member's office before travelling to Canberra. Members also regularly meet school groups from their electorates and will take the time to show them around the parliament. There is an education centre in Parliament House where visiting school groups can meet their federal members and learn all about the operation of parliament.

Helping with petitions to the House of Representatives

An important way in which voters can bring an issue to the attention of the parliament is to organise a petition. Members of parliament can provide advice on the preparation of petitions to be presented to the House of Representatives. Members will also make sure the petition goes through the formal processes that are necessary for the petition to be dealt with.

If an individual or group wishes to petition the House of Representatives, the petition needs to meet the following requirements:

- The petition must have a principal petitioner (that is, the main person organising the petition). This person's name and contact details should appear at the beginning of the petition.
- It must be formally addressed to 'The Speaker and the Members of the House of Representatives'.
- The petition must state the reasons the petition has been prepared. These are the issues or problems that have been identified by the petitioners.
- It must also contain the request for action desired by the petitioners. This is the action the petitioners want parliament to take to solve the problem.
- The petition must be written in moderate language that is not abusive or offensive.
- The main body of the petition should be divided into three columns to include the name, address and signature of each petitioner. Each petitioner should be numbered.
- The request for action should be repeated at the top of every page, and every name and address should be handwritten by each petitioner. Photocopied names and signatures are not accepted.

The House of Representatives has a Petitions Committee to deal with all petitions to be presented to the lower house. The local member will ensure that the petition is passed on to the Petitions Committee. The following procedure is then followed:

- The chairperson of the Petitions Committee usually presents petitions to parliament on the Monday of each sitting week.
- Details of petitions are published on the website of the Petitions Committee.
- The issues raised will usually be brought to the attention of the relevant minister, who is expected to arrange a response from his department.
- Details of ministerial responses to the petitions are published on the website of the Petitions Committee.

Helping with petitions to the Senate

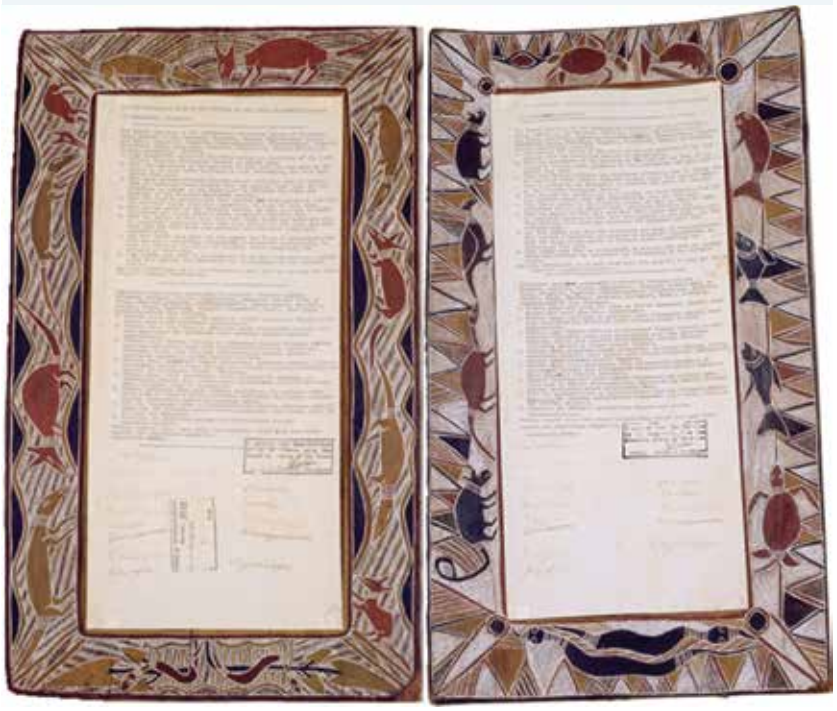
Petitions can also be presented to the Senate. The requirements for a petition to be presented to the Senate are similar to those that apply to the House of Representatives, with some differences in procedure. Only

senators can present petitions to the Senate, so voters will usually approach one of the senators representing their state or territory to present the petition for them. The Senate also accepts petitions that have been posted on a website, with people having 'signed' it by adding their names and addresses online. A petition such as this must still be presented by a senator, and it must take the form of a printout that includes the names and addresses of all the signatories. Go to the **Petitions** weblink in the Resources tab to find out what the Senate requirements are for this type of petition.

How effective are petitions?

Parliament receives hundreds of petitions each year and not all will result in action from the government. Petitions alone are usually not enough to force a government to take action, but they can be successful in drawing parliament's attention to an issue. Petitions can gain support because they are a peaceful means of effecting change. Any citizen can organise a petition, but petitions that gain more signatures are more likely to bring about change. Two of the most famous petitions presented to parliament were prepared in 1963 by the Yolngu people of Yirrkala, in the Northern Territory, raising issues relating to their dispossession from their traditional lands. These petitions were made on pieces of bark, with traditional designs painted around the outside and typed petitions glued in the centre. These are now on display at Parliament House in Canberra (see figure 5).

FIGURE 5 The famous Yirrkala petitions were presented on bark, with traditional paintings around the outside.



2.3 Activities

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

Remember

1. Roughly how many weeks per year are members of parliament likely to spend in their electorates?
2. What is the smallest federal electorate in Australia in terms of area?
3. Describe three ways in which members of parliament can assist people in their local community.
4. What is a petition?
5. Why do electorates vary so much in geographical size?

Explain

6. Explain three formal requirements of any petition that is to be presented to parliament.
7. How are petitions dealt with once they reach parliament?
8. Use internet sources to find out who is the member for Durack, how many electorate offices that member has and where those offices are located.
9. Who is your local member of federal parliament? Where is his or her office located?
10. Who is your local member of state parliament? Where is his or her office located?

11. Use the **Change.org** weblink in the Resources tab to identify a petition on the Change.org website that you believe is worth supporting. Prepare a one-minute speech to convince the rest of your class to support that petition.

Predict

12. Imagine you wanted to present a petition to parliament. Identify and explain three things that you might need to do if you wanted to increase the chances of that petition being successful.

learnON RESOURCES — ONLINE ONLY

Explore more with these weblinks: Petitions, Change.org

2.4 Lobby groups and others

2.4.1 What do lobby and pressure groups do?

While individuals and community groups may approach their local member of parliament to promote a particular issue, there are organisations set up to carry out this activity in a more professional manner. Known as lobby groups and pressure groups, they operate with the aim of influencing the decisions that governments make.

2.4.2 Lobby groups

Lobbying is a process of approaching members of parliament to argue a case for change in the law. Many organisations seek meetings with their local member or the relevant government minister to put forward a case for change. In recent years, lobbying has become a professional activity. Businesses have been set up to carry out lobbying on behalf of various clients, who pay the lobbying business a fee.

FIGURE 1 Former government minister Alexander Downer now runs a business that lobbies members of parliament on behalf of business clients.



The Commonwealth Government has established a special **code of conduct** for lobbyists, as well as a register of lobbying businesses and their clients. Almost 300 lobbying businesses are registered, employing more than 600 lobbyists. About 2000 organisations are registered as clients of these lobbyists, including businesses such as the major banks, and major manufacturing and mining companies; sporting bodies such as the Australian Football League and National Rugby League; educational organisations such as universities; and community organisations as diverse as the Salvation Army and the Wilderness Society. All are prepared to pay a fee to have a lobbyist present their views to members of parliament.

Employing the services of an expert to lobby for your cause can be effective because many lobbyists are former members of parliament or former government officials. These people know the workings of government and have personal contact with many serving members of parliament. The downside of using an organisation to lobby for your cause is that you must pay a fee for this service.

FIGURE 2 The big four Australian banks are all clients of lobbying businesses.



2.4.3 Pressure groups

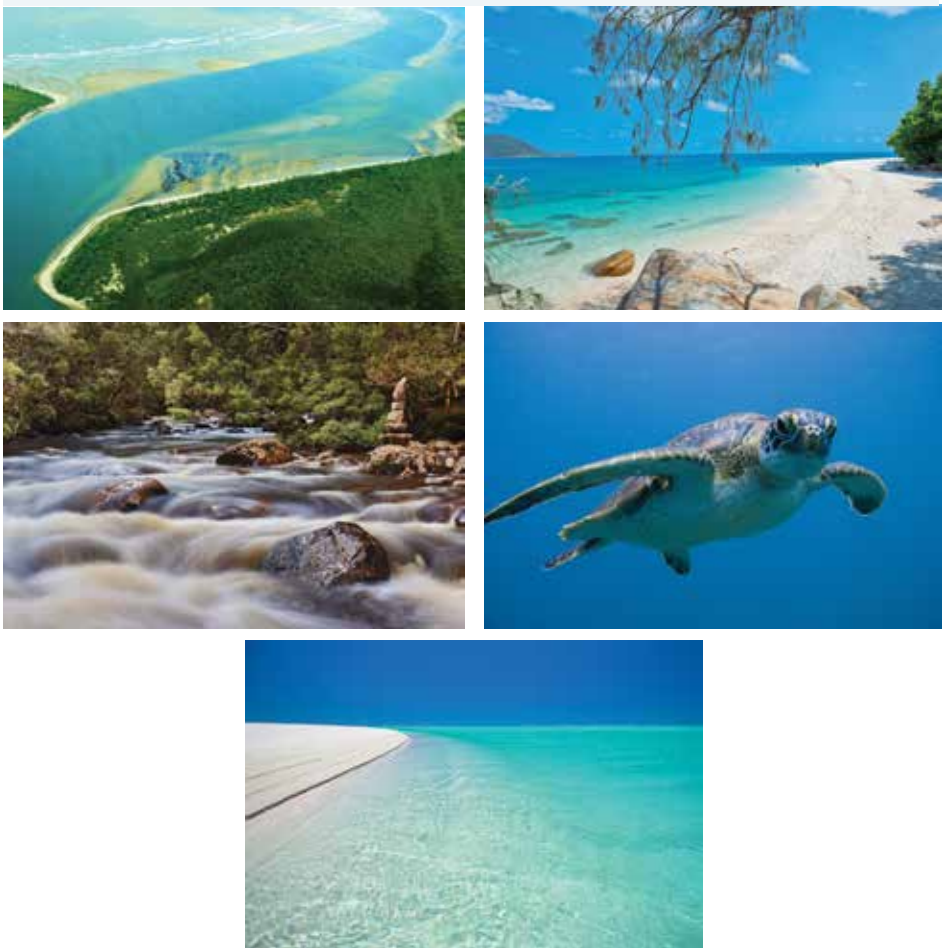
A pressure group is any group that attempts to influence public opinion on particular issues. Like lobby groups, pressure groups also try to convince governments to make or change laws to help achieve their aims. Examples of pressure groups include environmental groups, as well as groups formed to campaign for improvements in particular community facilities. Organisations representing the interests of employers and employees also operate as pressure groups.

Environmental groups

Organisations campaigning to protect the natural environment have been active in Australia since the 1960s. Generally, they aim to prevent the actions of business or government from damaging areas of

environmental importance. Organisations such as the Australian Conservation Foundation (ACF) and the Wilderness Society engage in fundraising to help them pay for these campaigns. The ACF began by campaigning for the protection of the Great Barrier Reef in the 1960s, and has run many other successful campaigns since then. The Wilderness Society came to national attention in 1982, when it led the campaign to save the Franklin River in southwest Tasmania from being flooded by a new dam. Since then it has campaigned to protect native forests in Tasmania and Victoria, and areas of natural beauty as widespread as the Ningaloo Reef in Western Australia and the Arkaroola Wilderness Sanctuary in South Australia.

FIGURE 3 Protecting Australia's natural environment



Employee and employer groups

Traditionally, employee groups such as **trade unions** have been set up to protect the interests of workers in a particular industry or workplace. Examples include organisations such as the Australian Workers' Union; the Shop, Distributive and Allied Employees' Association; and the Australian Services Union. Unions often conduct campaigns on issues that affect their members.

In the same way, employers in many industries have set up organisations to help them when they are negotiating wage and conditions agreements with their employees. Examples include Master Builders Australia and the Australian Retailers Association.

Both employer organisations and unions have also set up national organisations to protect their larger interests and to campaign on broad issues. The Australian Council of Trade Unions (ACTU) operates as a pressure group, campaigning on issues that affect all employees. The Australian Chamber of Commerce and Industry (ACCI) performs a similar function for employers.

An example of the way in which these organisations operate can be seen in the issue of penalty rates. Penalty rates are higher wages paid to employees who work on weekends or public holidays, or at other times outside traditional weekday hours. They were originally established to compensate employees for having to work at these more difficult times. Many people argue that, since so many businesses now operate seven days a week, having special rates of pay for weekends is out of date.

In early 2014, the federal government set up an inquiry to examine the operation of the laws that govern wages and working conditions. One of the areas to be looked at was the issue of penalty rates. The ACCI argued that penalty rates should be abolished because they impose an unfair cost on employers in restaurants, cafés and shops that operate seven days a week. The ACTU argued that penalty rates should be retained because they compensate people for having to work on weekends when they could be spending time with their families.

In campaigns like this, both sides try to influence the government in relation to any possible changes to the law. They also run advertising and publicity campaigns to try and influence the general public, knowing that governments will take notice of what the voters want. If opinion polls show that most voters believe that penalty rates are a good thing, the government would be reluctant to remove them. If opinion polls show that the majority of voters are opposed to penalty rates, the government would be more likely to change the law to abolish penalty rates. Pressure groups like the ACTU and the ACCI can have a strong influence on the final result.

In 2017, the Fair Work Commission, Australia's national workplace relations tribunal, reduced penalty rates on public holidays and Sundays in the retail, fast food, hospitality and pharmacy industries. The ACCI said that the decision delivered important reductions in excessive penalty rates. It claimed that this would help retail and hospitality businesses create more jobs and offer more hours, particularly for young people. By contrast, the ACTU said that the decision to cut Sunday and public holiday pay would give almost one million Australian workers a huge pay cut.

FIGURE 4 Unions often conduct campaigns on issues that affect their members.



FIGURE 5 Unions and employer organisations represent the interests of their members.



FIGURE 6 National union and employer bodies operate as pressure groups to further the interests of their members.



FIGURE 7 Workers in the hospitality industry are often paid penalty rates for working on weekends.



2.4 Activities

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

Remember

1. What is a lobby group?
2. List two different organisations that use lobby groups to present their views to members of parliament.
3. What is a pressure group?
4. What is the difference between the ACTU and the ACCI?
5. What are penalty rates?
6. Why do lobby groups often employ former members of parliament?

Explain

7. Identify and explain two examples where pressure groups have been successful.
8. Use either the **Australian Conservation Foundation** weblink or the **Wilderness Society** weblink in the Resources tab to identify two campaigns that your chosen organisation is focusing on.
9. Use internet resources to investigate the activities of Greenpeace and the Sea Shepherd organisation. What are these groups trying to achieve? What activities do they undertake to achieve these aims?
10. Use the **Australian Chamber of Commerce and Industry** weblink in the Resources tab to visit the ACCI website and identify one campaign that the organisation is currently engaged in.
11. Use the **Australian Council of Trade Unions** weblink in the Resources tab to visit the ACTU website and identify one campaign that the organisation is currently engaged in.

Predict

12. Working in small groups, identify two arguments in favour of people being paid penalty rates and two arguments against. Which arguments do you think are the stronger? Is your group opposed to or in favour of penalty rates? Compare your views with the rest of the class.

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: The road (int-5432)

Explore more with these weblinks: Australian Conservation Foundation, Wilderness Society, Australian Chamber of Commerce and Industry, Australian Council of Trade Unions

2.5 Taking direct action

2.5.1 Making their voices heard

Most of the time, people are prepared to participate in Australia's democracy by exercising their right to vote at state, federal and local government elections. Circumstances arise at other times when many feel that an issue requires immediate action, or they believe that the government is making the wrong decisions. In these circumstances, people will often take direct action to influence government actions. Direct action usually consists of some form of public demonstration, and can sometimes involve citizens deliberately breaking the law to bring their views to public attention.

2.5.2 Demonstrations

A demonstration is a public protest in which people take to the streets to protest against the actions of government, or to raise awareness of an issue of concern. The success of a demonstration depends on how many people participate. It also depends on how well they can capture public support. Most demonstrations involve marching through the city streets or protesting outside a significant public location.

FIGURE 1 A demonstration is a way different groups can make their views known to government and the general public.



Over the years, many causes have resulted in different types of demonstration. Not all involved street marches.

- In the late 1960s, demonstrations against Australia's involvement in the Vietnam War were relatively small, often with only a few hundred protesters. They were largely dismissed by government as the views of a small minority. As more people became aware of the issues, the size of the demonstrations grew, culminating in protest marches in all major cities and towns across Australia in May 1970. More than 200 000 demonstrators marched in total, with 100 000 of these in Melbourne. Within 18 months, Australian troops had been withdrawn from Vietnam. Go to the **Melbourne moratorium march** weblink in the Resources tab for more information on the protests against the Vietnam war.
- In 2007, the Victorian state government introduced new liquor licensing laws requiring all live music venues to have increased security. For many smaller venues, the additional cost made the provision of live music too expensive and they began closing down their live music activities. When one of the most popular venues, the Tote Hotel in Collingwood, faced closure in early 2010, between 20 000 and 50 000 demonstrators protested in the streets of Melbourne. This led to a relaxation of some of these laws, with small music venues allowed greater flexibility to organise their own security.

FIGURE 2 In May 1970, marchers outside the Melbourne Town Hall protested against Australia's involvement in the Vietnam War.



FIGURE 3 Protests against the closure of the Tote Hotel in Melbourne led to changes in the security requirements of live music venues.



learnON RESOURCES — ONLINE ONLY

Explore more with this weblink: Melbourne moratorium march

2.5.3 Defiance of the law

Another very public way of campaigning on an issue is to deliberately break the law. This is sometimes done when a group of people believe that a particular law is bad or unfair. They argue that if enough people

deliberately break the law, it will convince the government to change or repeal that law. On other occasions, protesters deliberately break the law because they realise that their arrest and trial will help publicise an issue.

- In the late 1960s, one of the main grievances arising from Australia's participation in the Vietnam War was the use of **conscription** to increase the number of soldiers that could be sent to fight in that war. Many of those conscripted chose to defy the law by burning their conscription documents and refusing to join the army. The court cases and imprisonment of many of these young men helped to turn public opinion against the war.
- In 1982, as protests grew against the proposed Franklin Dam, the Tasmanian government passed laws making much of the area around the construction site private property. It also began to prosecute anyone caught trespassing there. Protesters attempted to set up a blockade to prevent earth-moving equipment from being used on the dam site. Over 1400 people were arrested for trespassing, and more than 500 were imprisoned. In 1983, the newly elected federal government passed laws prohibiting construction of the dam. Go to the **Franklin River blockade** weblinks in the Resources tab to find out more information on this issue.
- In 2011, fast-food company McDonald's proposed the building of a fast-food restaurant in Tecoma, a small town in the hills to the east of Melbourne. Most of the local population of about 2100 people opposed the building of the restaurant because they felt it was not appropriate for the character of their community. They formed a pressure group to campaign against the building of the restaurant. The local council refused to provide a permit for the restaurant to be built. McDonald's appealed to the state planning tribunal and was granted a permit. When work commenced in 2013, protesters gathered to try and prevent the demolition of an old dairy that occupied the site of the proposed restaurant. People were arrested for entering the site illegally, including a woman who climbed onto the roof of the dairy in protest. McDonald's was able to continue with its building but local campaigners vowed to continue the fight. Go to the **Tecoma protest** weblink in the Resources tab for more detail on this protest.

FIGURE 4 Many of those conscripted to fight in the Vietnam War burned their conscription documents and refused to report to the army.

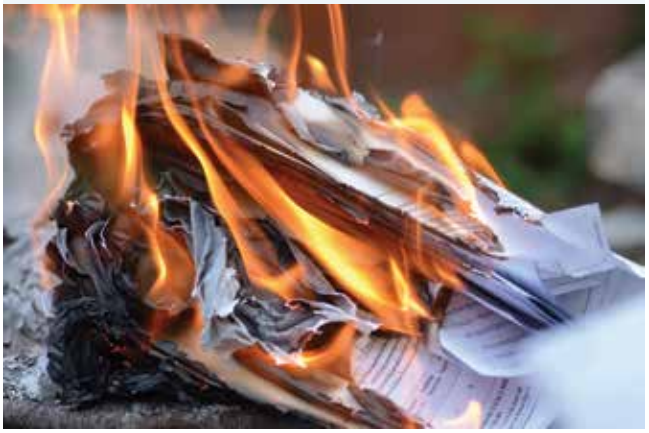


FIGURE 5 Protesters set up a blockade in 1982 to prevent earth-moving equipment being brought onto the dam site in Tasmania.



FIGURE 6 Residents of Tecoma campaigning against the building of a McDonald's outlet in their town in 2013.



learnON RESOURCES — ONLINE ONLY

Explore more with these weblinks: Franklin River blockade 1, Franklin River blockade 2, Tecoma protest

2.5.4 The effectiveness of direct action

Demonstrations can be effective if they attract media attention. This highlights the issue and can influence members of parliament, particularly if the cause gains public support. When Victorian nurses staged a protest in Melbourne in 2012, many patients and members of the public joined the protest to support the nurses in their bid for better working conditions. If demonstrations become violent, however, they may be less effective because they are less likely to win community support.

Disobeying the law can be effective if it raises media awareness of the issue. It can be particularly useful if it can show that the law is out of date or unfair, and needs to be changed. Breaking the law to highlight a cause, however, can lead to prosecution and may result only in turning public opinion against that cause.

2.5 Activities

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

Remember

1. What is a by-election?
2. How were voters able to influence the major political parties in the by-election in late 1982?
3. How were supporters of live music able to convince the Victorian state government to abandon its strict security requirements for live music venues?
4. What do we mean by 'direct action' as a form of political activity?
5. Why did some young men opposed to conscription break the law? How did they do this?
6. How did the Franklin River protesters defy the law during that campaign?

Explain

7. Why were so many people in Australia opposed to this country's involvement in the Vietnam War in the 1960s and early 1970s? Use internet resources to research the main reasons for this opposition.
8. Use internet resources to find out what eventually happened with the McDonald's Tecoma dispute.
   (a) Were the protesters able to continue any form of opposition once the outlet was built?
   (b) What has happened with the protesters more recently?

Predict

9. In both the anti-conscription campaign during the Vietnam War and the Franklin blockade, people broke the law to achieve their aims. Their campaigns were ultimately successful.
   (a) Is it appropriate for people to break the law to achieve the changes they want? Give reasons for your answer.
   (b) Can you think of occasions when it would definitely not be appropriate to break the law?

2.6 SkillBuilder: Communication and reflection

2.6.1 Tell me

An advertisement is designed to convince individuals or groups of people to take particular action. Most advertising we see is aimed at encouraging us to buy particular products, but advertising can also be used to encourage people to take action on a political issue.

A good advertisement:

- is designed to attract attention
- uses bold colours and simple images

- provides key information in bold print
- uses recognisable symbols and logos
- provides reasons for action
- makes use of simple, easy-to-read language.

An advertisement that aims to encourage participation in a democratic activity should include all these features.

2.6.2 Show me

The advertisement in figure 1 at right was used to encourage people to attend a rally at Federation Square to support the protest against the building of a McDonald's outlet in Tecoma. The advertisement has these features:

- It uses bright colours, including some of the colours used by McDonald's in its own advertising.
- The key information (time, date and location of the protest) is shown in the centre, in large print, using white lettering on a red background.
- The original poster included two logos widely used in the Tecoma anti-McDonald's campaign — a burger and the 'golden arches' logo — each with a circle and diagonal line. The circle and diagonal line are widely accepted as negative symbols. For copyright reasons we have been unable to reproduce the McDonald's logo here. However, you can see the original poster by using the **Burger off** weblink in the Resources tab.
- The slogan 'Burger off' was widely used in the Tecoma campaign and so has a level of recognition from that campaign. The phrases 'Tecoma goes to town' and 'No Maccas in the hills' also clearly identify the purpose of the protest.
- The information that the MC for the protest is Rod Quantock (a well-known Melbourne comedian), and the phrases 'See the film', 'Hear the music' and 'Meet the people' are all designed to encourage people to attend. It is particularly designed to attract those who do not live in Tecoma but wish to show their support for the campaign.
- The addresses of two websites for further information is also an important part of the advertisement.

FIGURE 1 An advertisement to encourage people to attend a Tecoma McDonald's protest rally.



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Explore more with this weblink: Burger off

2.6.3 Let me do it

Using the above model, design an advertisement to encourage more young people to enrol to vote before they turn 18. Your advertisement should contain the features discussed above.

2.7 Review

2.7.1 Summary

Australia is recognised as a democracy because we have the right to elect representatives to parliament to make laws on our behalf. If we do not like those laws, we can vote for different representatives at the next election. While voting in elections is important, it is not the only way of participating in the democratic process. There are lots of other ways in which we can have our voices heard and influence the future of our country.

- All citizens over the age of 18 have the right to vote in Australian elections, although they need to register to take full advantage of this right.
- Social media can be used to spread ideas and opinions, and to gain support for changes in the law.
- Participating in opinion polls allows us to have our views communicated to our members of parliament, and may influence some of their decisions.
- Local members of parliament can assist individuals in their electorates, and can ensure that petitions from the voters are tabled in parliament.
- Lobby groups attempt to influence members of parliament on behalf of businesses and other groups. They aim to have laws passed that favour the group they represent, or have laws changed if they disadvantage that group.
- Pressure groups are groups of people who try to influence public opinion on particular issues. They include groups such as environmental campaigners and trade unions.
- Some groups and individuals attempt to influence parliament by taking direct action. This can include demonstrations and protest marches, as well as defiance of the law.

2.7.2 Your turn

The state government has decided to build a new freeway to connect two existing freeways. The planned route of the new freeway is through parkland that contains sporting grounds, as well as a nature reserve. The local council decides the freeway is inappropriate and votes to not allow it. The local state member of parliament is a government minister, and supports the freeway. The local federal member of parliament has strong links with some of the sporting clubs based in the parkland. The state government is hoping that the federal government will help pay for the cost of the new freeway. Local sporting club members, and supporters of the nature reserve, vow to do everything they can to protect the parkland.

1. How could the people opposed to the freeway use the electoral system to encourage the state member of parliament to change his or her position?
2. If an opinion poll was taken of local attitudes to the freeway, how might that influence the debate over the issue?
3. How might the federal member of parliament be able to assist those opposed to the freeway?
4. The local sporting clubs wish to organise a petition to the federal parliament.
   (a) Write the wording you think they could use at the start of the petition. (This is the request for action that is repeated at the top of each page in a formal petition to parliament.)
   (b) Explain what will happen to that petition once it is sent to Canberra.
5. How can the state government use lobbying to convince the federal government to help fund the freeway?
6. The opponents of the freeway join together to form a pressure group to campaign against the freeway. What might they call their group? Create a slogan and a logo for the group.
7. Identify two ways in which the newly formed group might use social media to help its campaign.
8. The group decides to stage a demonstration on the site of the proposed freeway. What should its members do to make sure the demonstration is effective?.

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Try out this interactivity: Participating in Australia's democracy crossword (int-5317)

TOPIC 3
Where do our laws come from?

3.1 Overview

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

FIGURE 1 Laws are created to discourage wrongful behaviour such as rioting and, if it occurs, to punish any person who participates in it.



3.1.1 Laws protect us

What would happen if there were no **laws**? People would do as they pleased. There would be riots, crime and chaos. It would not be safe to go anywhere.

Laws are the legal rules that act as guidelines for behaviour. We have laws to protect us and to settle disputes. Laws are also used to give consequences to people who break them. But who actually makes these laws? How are our laws made?

Starter questions

1. How do you feel when you look at the image in figure 1 above?
2. List the laws that you can see being broken.
3. Why do we need laws?
4. Who do you think makes these laws?

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Watch this eLesson: What if we had no laws? (eles-2264)

3.2 How do parliaments make laws?

3.2.1 The law-making process

A parliament consists of the law makers at the state and federal levels of government. Most laws in Australia are made by our federal and state parliaments. These laws are called **statute laws**. Most parliaments in Australia have a lower house and an upper house. Parliaments make laws by passing a **Bill** through both houses.

A law made by parliament is called **legislation**, a statute or an **Act**. Before any proposed laws can become Acts of Parliament, they have to be debated and passed by both houses of parliament and then approved by the **Crown**. During the debate in parliament, the government explains why the law is needed and why it will be good for Australia. The **Opposition** may try to argue why this is not the case. Let us see, step by step, how all of this might happen in federal parliament.

FIGURE 1 How laws are made in Parliament



STEP 1: A proposed new law, or changed law, is discussed in Cabinet, Often, people in Australia put pressure on the government to change something. A decision is then made on what to do



STEP 2: If the government decides to proceed, government lawyers are asked to draft a Bill. A Bill is basically a 'first draft' of an Act of Parliament.



STEP 3: Copies of the Bill are given to all members of the lower house *(House of Representatives)*. The members read the material in their own time. This is known as the 'First Reading'.



STEP 4: The Bill goes through a 'Second Reading'. During this stage, the responsible minister (for example the Minister for Immigration if the Bill is to do with migrants) describes the main purpose and likely benefits of the Bill. Speakers from the government and opposition say what they think about it. Debates may take weeks. Then there is a vote. If the majority vote in favour, the Bill moves to the next stage in the process.

(*continued*)

FIGURE 1 continued



STEP 5: The Bill is debated again, this time bit by bit. This stage is known as Consideration in Detail as each part of the bill is discussed in detail. Changes to the Bill may be made.



STEP 6: The Bill, including any changes made during step 5, goes through a 'Third Reading' in the house. A vote is taken. If the majority vote for it, the Bill is passed through to the Senate.



STEP 7: The upper house (the Senate) goes through similar processes to those outlined in steps 3 to 6. If the Senate decides to change something, the Bill is referred back to the House of Representatives for another debate and vote. Sometimes the Senate may refuse to approve a Bill. If the Senate votes to approve the Bill, it is sent to the Governor-General for royal assent.



STEP 8: If the Governor-General approves and signs the Bill, it becomes an Act of Parliament. It is proclaimed and legally binding for all Australians.

CASE STUDY

The carbon tax

The federal parliament in 2011 passed laws introducing a price on carbon, called a carbon tax. The tax was proposed by the Gillard government to address climate change. Under the carbon pricing mechanism, the businesses that emit the largest amounts of greenhouse gases (including electricity generators, gas suppliers, and resources and manufacturing companies) pay for each tonne of carbon they release into the atmosphere. The cost was initially set at $23 per tonne, to be increased gradually until 2015.

The Labor Party introduced several bills into the parliament, including the Clean Energy Bill, to support the carbon tax legislation. The bills passed the lower house and the upper house at the end of 2011, so the carbon pricing mechanism became law. However, when the Liberal Party was voted into power in 2013, Prime Minister Tony Abbott promised to remove the carbon tax and in July 2014 he successfully passed legislation in the Senate to do so. The Abbott government's repeal of the carbon tax makes Australia the first country in the world to abolish a price on carbon.

FIGURE 2 Legislation establishing the carbon tax was introduced by federal parliament in response to the need to address climate change.



3.2 Activities

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

Remember

1. What is statute law?
2. What is the difference between a Bill and an Act of Parliament?
3. What is meant by the term 'royal assent'?

Explain

4. Use a flowchart to explain how a law is made in parliament. Draw your flowchart using eight boxes joined by arrows. Number each box from step 1 to 8. In each box describe what happens to the proposed law in that step, using no more than ten words. For example: Step 1—government (in Cabinet) discusses the idea of a new law.
5. Read the case study 'The carbon tax' in this section and answer the following questions:
   (a) Who had the idea for the laws that established the carbon tax?
   (b) What government policy did this law address?
   (c) How did this idea become a law?
   (d) Research the development of the legislation to create the carbon tax. Write down the arguments supporting the tax and the arguments opposing it.
   (e) What arguments were used by the Abbott government to abolish the carbon tax in 2014?
6. Working in pairs, use the **Commonwealth Parliament** weblink in the Resources tab to find out about a new law that is going through parliament at the moment.
   (a) Briefly describe the law you have found and explain what stage it has reached on your flowchart.
   (b) In your opinion, will this proposed law be changed much on its way through parliament? Give reasons for your answer.
   (c) Share your findings with another pair of students.

Predict

7. Use internet resources to help you to discover which new or proposed laws your local member of parliament (MP) is involved with. Use this information to email your MP your ideas about this new or proposed law.
8. What would happen if the Governor-General refused to give royal assent to a Bill?
9. In your view, is the process of law making in Australia fair? Does law making by parliament give ordinary people enough opportunity to have their say when new laws are being made? Explain your answer.
10. Propose a new school rule and debate it in class as follows:
    (a) Brainstorm as a class five rules you think would be good for your school. Using a show of hands, vote to decide on a rule to debate. Call this your Bill.
    (b) Divide the class in two, with government members on the right and the Opposition on the left. As part of the first reading of your Bill, debate the issues associated with introducing this proposed new law. Those on the government side should argue for the Bill and those on the Opposition side should argue against it. Appoint a Speaker to ensure that the debate is orderly. When debating, stand to speak, and obey any instructions given to you by the Speaker.
    (c) At the end of the discussion, take a class vote on whether or not you think this proposed new law should be introduced. If you disagree with the decision of your side, you can 'cross the floor', moving from where you are to the right (yes) or the left (no) side of the classroom to register your vote. Did your proposed Bill pass its first reading?

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Explore more with this weblink: Commonwealth Parliament

3.3 How do courts make laws?

3.3.1 Common law

The main role of courts is to settle disputes, but courts also make laws. They do this as they interpret laws and make decisions to resolve the case they are hearing. This type of law is known as case law, judge-made law or **common law**.

Common law originated in England as judges travelled from village to village making decisions based on tradition, custom and **precedent**. The judges began to apply a law that was common to all people across the country, rather than using the customary law of each region. Common law is applied today when cases come to court where there is no legislation regulating that case. The judge needs to make a decision about the law on this type of matter. This process is illustrated in the following case study, 'Finders keepers'.

CASE STUDY

Finders keepers

The law relating to who has the right to own things that are found has changed over the years as judges have made new decisions. The judges in the following cases made decisions which became part of the common law because there was no existing law about possession that specifically applied to the cases.

Money found buried on private property

In 1964, a woman sold her New South Wales house to a couple. The couple hired a building company to work on the house. While digging, one of the owners of the building business found a tin with £8500 inside.

- The original owner claimed that she had buried the tin and therefore the money belonged to her.
- The couple who had bought the house claimed that the money was theirs as it was found on their land.
- The owner of the building business claimed the money belonged to him as he had found it.

No laws covered this dispute, so the judge hearing the case was required to make a decision that would create a new law. The judge decided that the couple who now owned the house were allowed to keep the money as they owned the land.

Gold found by the side of the road

In 1965, a Queensland police officer was walking to the place where he was going to direct traffic leaving a drive-in theatre. On the side of the road, on land belonging to the theatre, he found a gold ingot. The owner of the gold could not be found.

- The owner of the land claimed ownership.
- The police officer claimed ownership because he had found the ingot.
- The police officer's employer (the state) claimed ownership because the policeman worked for the state.

The judge hearing the case decided that the land was regularly accessed by the public and that the police officer could keep the gold ingot because his job was to direct traffic, not to find lost things. Any other member of the public might have found the ingot, and the fact that the officer was on duty was just a coincidence.

FIGURE 1 Does a gold ingot found on someone's property belong to the property owner or to the person finding it?

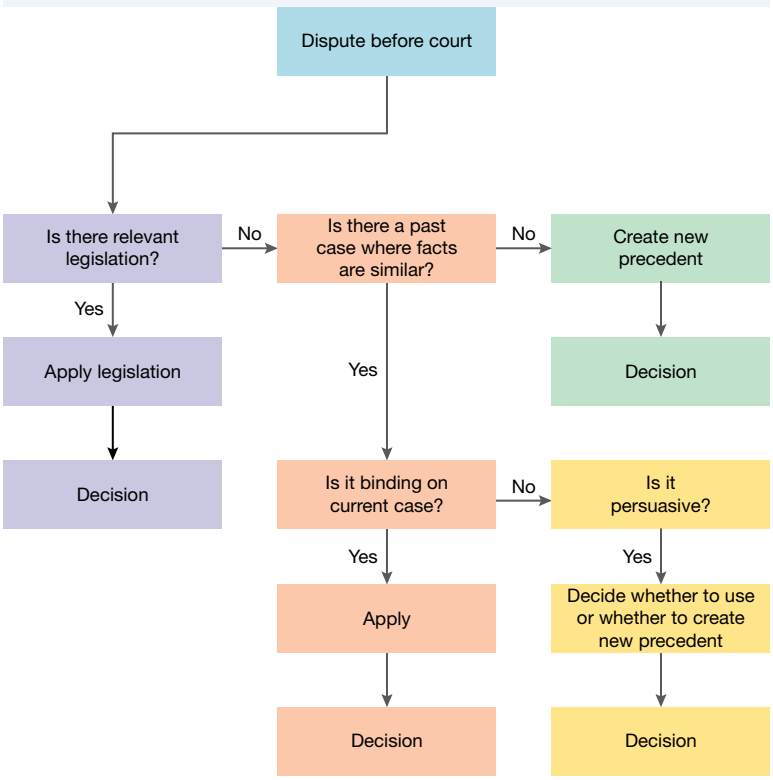


3.3.2 Precedent

Common law is developed through the legal principle of precedent. If your sister was given a car for her eighteenth birthday, you might expect your parents to do the same for you because your parents have set a precedent. Courts use the same idea. When a judge makes a decision in a court case, this decision will be recorded in a law report. Other judges hearing cases with similar facts will refer to these decisions. Just as you would expect your parents to follow their precedent, the people involved in legal cases expect the judge to follow the precedent of similar cases and therefore come to the same decision.

Precedent works because of our court hierarchy.

FIGURE 2 The decision-making process for settling disputes in court



3.3.3 Australia's court hierarchy

Australia's court system is made up of many different courts, which are arranged in levels in order of importance (a hierarchy). The higher courts, which hear the most serious matters, are at the top of the hierarchy. The lower courts, which hear less serious matters, are at the bottom of the hierarchy.

At the bottom of the court hierarchy are the magistrates courts (called the Local Court in New South Wales, the Magistrates' Court in Victoria and the Magistrates Court elsewhere). These courts hear more than 90 per cent of the cases that go to court, and they have a large number of courthouses. There is probably one in your local area. The District Court (called the County Court in Victoria) exists in most states and sits only in the main cities. There is only one Supreme Court in the capital city of each state, and only one High Court in Australia (in Canberra).

When superior courts (such as the High Court and each state's Supreme Court) settle disputes, they can create new legal principles that must be followed by the lower courts in their own hierarchy. Judges in each state have to follow only those decisions made in the higher courts in their state, and those made in the High Court. For example, a decision made by a judge in the Victorian Supreme Court does not have to be followed by judges in the District Court of New South Wales. However, the New South Wales judges could use the decision as a guide.

FIGURE 3 The Australian court system



FIGURE 4 If there is no existing relevant law, judges can create a new rule to settle a dispute.



3.3 Activities

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

Remember

1. What is common law?
2. What is precedent?
3. List the courts in your state's court hierarchy, from highest to lowest.
4. From where did common law originate?
5. Outline the similarities and differences between the cases in the case study, 'Finders keepers'.

Explain

6. Explain how the judges in the case study 'Finders keepers' made changes to the law.
7. Using the internet or newspapers, find an article that reports on a new principle of law being made through a landmark court case. Investigate how this case proceeded through the courts.
8. What would happen if a judge decided to ignore a precedent and make a completely new decision?

Predict

9. Consider the following cases:
   - Case 1 - a former barmaid sues the hotel where she used to work. She contracted throat cancer caused by breathing environmental tobacco smoke during the course of her employment. The court awards her compensation of more than $400 000.
   - Case 2 - a former pie-seller sues the sports stadium where he used to work. He contracted throat cancer caused by breathing environmental tobacco smoke during the course of his employment. The court uses case 1 as a precedent.
   - Case 3 - a waitress sues the restaurant where she works. She contracted throat cancer caused by smoking cigarettes for 30 years.
   - Case 4 - a former miner sues the mining company he used to work for. He was injured in a fall.

   (a) In case 2, should the former pie-seller receive compensation? Explain your answer.
   (b) In case 3, should the court use the first two cases as precedents and provide compensation? Explain your answer.
   (c) In case 4, are any of the first three cases a precedent for this situation? Should the court provide compensation? Explain your answer.

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Try out this interactivity: The courtroom (int-1206)

3.4 What is the difference between criminal law and civil law?

3.4.1 Criminal vs. civil

There are two main types of law in Australia:

- criminal law, which protects us and punishes offenders
- civil law, which protects our rights and property.

We have no choice over the use of criminal law because the state controls it, but individual citizens and groups decide how they will use civil law. The 'state' means society or the whole community, which is represented here by parliament, the judiciary and the police.

3.4.2 Criminal law

Criminal law protects innocent individuals from wrongdoers. It outlines the way people should act — what they can and cannot do. Some of the most common crimes are robbery, **homicide** (**manslaughter** and murder), rape, assault, theft and drug offences.

If a person commits a crime, this is treated very differently from other legal issues. For example, if you rob a bank, it does not remain a dispute between the bank and yourself. The bank does not have to try to catch you. Instead, your action is regarded as an offence against the state. It is the state that organises its

police to catch offenders. In criminal law, the bank does not take you to court — the police or representatives of the government do. They will also be the ones who **prosecute** you. It is up to the prosecution to take legal action against an accused person in order to establish the guilt of the accused because the prosecution has the **burden of proof**. This means that the prosecution must prove that the accused is guilty of the crime. It is not up to the accused person to prove his or her innocence.

During the court case, you as the accused will have the opportunity to tell your side of the story. If you are found guilty, you will be punished with a fine, imprisonment, some form of community service order or a combination of these punishments.

FIGURE 1 A criminal act is treated as an offence against the state, which deploys the police and courts to apprehend, prosecute and imprison the wrongdoer.



Indictable offences

Serious crimes (such as homicide, child abuse and rape) are called indictable offences. These offences are usually heard in a higher court such as the District or County Court, or the Supreme Court. For these offences, the guilt of the **defendant** is determined by a jury.

In a criminal case, the jury must be satisfied of the guilt of the accused 'beyond reasonable doubt'. This means that the jury cannot have any reasonable doubt that the person accused of the crime is guilty. The level of certainty that must be established before a legal case can be won is known as the **standard of proof**. It is up to the prosecution in criminal cases to prove that the accused is guilty beyond reasonable doubt. If a magistrate or jury is not convinced beyond reasonable doubt of the accused's guilt, the accused should be given the benefit of the doubt and found not guilty.

Summary offences

Less serious crimes (such as minor assaults, petty theft and traffic infringements) are called summary offences. These are dealt with relatively quickly and cheaply by a **magistrate** in a magistrates court.

3.4.3 Civil law

Civil law deals with non-criminal matters. It allows a person to bring actions against other people for a civil wrong done to him or her. Civil law involves such matters as disputes between friends, business partners, consumers and retailers, neighbours or an individual and a government department. Examples of civil wrongs include **negligence**, **trespass**, **defamation**, **nuisance** and **breach of contract**. Where a civil wrong is successfully proven in court, the wronged party will usually seek damages (money) as compensation. In such a case, the defendant will be found to have been **liable**.

For example, imagine you discover half a decomposed snail at the bottom of a soft-drink bottle from which you have just drunk. You are then violently sick and suffer serious stomach illness. You decide to sue the manufacturer for negligence — meaning that the manufacturer did not take enough care to prevent an

injury. You, the **plaintiff**, go to court to prove your case. You ask a judge to order the soft-drink manufacturer, the defendant, to pay you compensation. The plaintiff does not always win such cases. Sometimes the judge decides that the plaintiff's rights were not breached and can order him or her to pay the defendant's legal costs. As the case study 'Civil v. criminal law' later in this section illustrates, sometimes civil law is required to deal with a wide range of unusual circumstances.

There is a lower standard of proof in civil cases. The plaintiff has to show that the defendant was 'more likely than not' to have committed the breach. This is known as the 'balance of probabilities'.

FIGURE 2 A civil wrongdoing is treated as a private matter between the disputing parties, and the losing side is ordered by the judge to pay compensation or rectify the wrong done.



CASE STUDY

Civil v. criminal law

Case 1

The family of a young girl who became ill after eating a chicken wrap sued KFC in 2012. Seven-year-old Monika Samaan suffered severe brain damage as a result of salmonella poisoning. The family sued in common law negligence (for breach of duty of care). Monika's family was awarded more than $8 million in damages and costs by the New South Wales Supreme Court.

Case 2

Lynn Matia, a security guard, was found guilty of killing a man with a single punch following a brawl in 2012. The Sydney District Court heard that the victim, his brother and friends were refused entry into a hotel in Kings Cross. The Crown prosecutor told the court that after a fight broke out, the bouncer hit the victim, knocking him to the ground. The judge sentenced the security guard to a minimum of 18 months' jail.

3.4 Activities

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

Remember

1. Define civil law and criminal law.
2. List some common crimes. List some civil wrongs.
3. What is the difference between:
   (a) plaintiff and defendant
   (b) indictable offences and summary offences
   (c) burden of proof and standard of proof
   (d) beyond reasonable doubt and balance of probabilities?

Explain

4. Outline the differences between civil law and criminal law.
5. Use the case study 'Civil v. criminal law' earlier in this section to outline the differences between criminal law and civil law. Copy and complete the table below:

Case 1		Case 2	
Why is the case a civil matter?		Why is the case a criminal matter?	
Who is the plaintiff and what is he or she seeking in the action?		Who is the prosecution and what is he or she seeking in the case?	
What standard of proof applies?		What standard of proof applies?	
How successful was the legal action for the plaintiff and for the defendant?		How successful was the legal action for the prosecution and for the defendant?	

6. Select a partner and cut out three newspaper articles describing civil law cases and three describing criminal law cases. Paste these on a large sheet, then discuss and list the laws being broken in each case.

Predict

7. Do the following cases involve criminal law, civil law, or both? Copy and complete the table at right by writing each case into the appropriate column.
   (a) You are held up at knifepoint and your purse or wallet is stolen.
   (b) A woman slips on a wet supermarket floor and breaks an ankle.
   (c) A man is convicted of driving with a blood alcohol content of 0.08.
   (d) You find maggots in a tuna sandwich you just bought from a café.
   (e) A neighbour's loud music at 3 am is disturbing you.

Criminal	Civil	Both

8. Think of a case that might involve both criminal law and civil law. What part of the case is criminal law? What part of the case is civil law?

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Try out this interactivity: Time out — civil and criminal law (int-1402)

3.5 SkillBuilder: Group consensus

3.5.1 Tell me

What is a group consensus?

A group consensus is when a collection of people work together to make a decision that is agreeable to everyone in the group. Consensus is reached by using a **democratic** process where every group member's perspective is listened to and understood. A decision is made after evaluating all options and respecting everyone's different perspectives.

Why is a group consensus useful in civics and citizenship?

Decisions made by a group of people are usually better than decisions made by someone working alone. Reaching a group consensus helps us to problem solve and appreciate different points of view. Consensus is used in many areas of civics and citizenship. In parliament, consensus is reached when a Bill is passed through both houses. In a legal trial, jurors will need to reach consensus when they decide on the facts of a case.

Model

CASE STUDY

Find the crime

Yohan was caught by the police after he allegedly broke into an antique store. The owners of the store, who live next door, were woken up by loud banging to discover a man trying to open their safe. They chased him away and called the police. A police dog tracked the man down in a nearby park after police surrounded the area. Yohan was arrested and taken away for questioning. He has been charged and summoned to appear in court.

FIGURE 1 What crime has been committed?



Decide if a crime was committed

A group might look at this case study and decide that it involves a criminal action. Discussion might focus on what crime was actually committed. Was it breaking and entering, trespass or robbery? Someone in the group might point out that nothing was actually stolen. Yohan was trespassing, however, and he did break into the shop. The group might agree that Yohan could be charged with trespass and breaking and entering, or they might vote on each charge.

Decide if the defendant is guilty or not guilty

The group will now need to come to an agreement about whether or not they think the defendant is guilty or not guilty. A discussion would be held looking at the facts of the case. Someone in the group might claim that the fact that Yohan was found in the park after the police dog tracked his scent there is proof that he is guilty. Someone else might argue that this could easily be a case of mistaken identity. After discussing all possible solutions, the group will make a decision either by unanimous agreement (where everyone is in agreement) or by taking a vote. The group might decide that Yohan is guilty of both trespass and of breaking and entering. One person in the group might disagree with the final decision, believing that Yohan should be charged with robbery and not with breaking and entering, but everyone else believes that they can live with the decision.

Elements of a good group consensus

A good group consensus:

- clearly identifies what needs to be decided
- allows everyone to express his or her opinion and make suggestions
- discusses the advantages and disadvantages of possible solutions
- chooses a solution that everyone can support.

3.5.2 Show me

How to reach a group consensus

You will need:

- a sheet of lined paper
- a pen
- three to four people
- a problem or an issue to solve.

Procedure:

Step 1

Form a team of three or four people. Decide how your group will finalise a decision. Will you require unanimous support for a decision or will you vote? If you vote, is a simple majority all that is required?

Step 2

Outline what needs to be decided. Clearly state the issue so that everyone in the group understands it.

Step 3

Discuss the problem with the group. Allow everyone to express his or her opinion and make suggestions.

Step 4

Make a list of solutions that include everyone's suggestions.

Step 5

Discuss the advantages and disadvantages of each solution.

Step 6

Select the best solution, based on the discussion. This could be a unanimous decision or a vote. Consensus does not necessarily mean that everyone agrees with the final decision, but that everyone feels they can support the group's decision.

Step 7

Implement the group's decision. This might mean writing it down and presenting it to the rest of the class.

3.5.3 Let me do it

Developing my skills in reaching a group consensus

Consider the following case studies:

- Case 1 — Fred is talking to Bob over the back fence about his tomatoes and calls him a silly old fool. No-one else hears the comment.
- Case 2 — Phil is found asleep in the driver's seat of his parked car by a police patrol. He has been drinking heavily.
- Case 3 — Masako holds a black belt in karate. When stopped by a would-be mugger intent on robbery, she kicks the robber and breaks his arm.
- Case 4 — Petros likes to take a shortcut to work by cutting through Karen's vacant corner block of land. He has been doing this for over five years.
- Case 5 — Wayne is a spectator at a football match. On seeing a bad error of judgement by umpire Thompson, he verbally abuses Thompson in a loud and clear voice.
- Case 6 — Daniel gets involved in an argument with Martin. He becomes so angry that he threatens to punch Martin on the nose. Martin believes that he means it.
- Case 7 — While digging a garden in her backyard, Rachel breaks a water pipe and floods Mrs Paize's henhouse next door, drowning her prize rooster.
- Case 8 — Nerida's house has been burgled several times. She sets a trap and shoots Tom as he enters with the intent to burgle again.

1. Working in groups of three or four, choose one of the case studies. Decide whether the case involves a criminal action, a civil action (or perhaps both), or even no action at all. State the crime or the civil wrong that you think is involved. (Use the crimes and civil wrongs listed in subtopic 3.4 as a guide.)
2. As a group, come to an agreement about whether or not you think the defendant is guilty or not guilty, or liable or not liable.
3. Explain your decisions to the rest of the class, outlining how you reached a consensus on those decisions.

Questions

1. How did you make decisions in your group? Did everyone contribute equally?
2. How democratic were your group decisions? Did someone take charge while others stayed silent? Did everyone start by contributing ideas before someone with a more dominant personality won out?
3. In your opinion, what does reaching a consensus mean?

3.6 How is customary law used in Indigenous communities?

3.6.1 What is customary law?

Customary law refers to the guidelines for behaviour that have been developed by Aboriginal and Torres Strait Islander peoples. These laws are passed on by word of mouth and have not been written down. In what way is customary law significant to Indigenous Australian peoples? We will explore the answer to this question throughout the rest of this subtopic.

3.6.2 The Dreaming

Indigenous Australian peoples believe that their customary laws originated in the Dreaming. The Dreaming explains how the ancestors of Indigenous Australian peoples created the landscape and its features, as well as the laws necessary to survive in the harsh Australian environment. Aboriginal and Torres Strait Islander peoples have a very strong relationship with the Australian land. They believe that they do not own the land — the land owns them, so it is their responsibility to take care of it. The stories, songs and dances told about the Dreaming reveal the many ways in which Indigenous Australian peoples are connected to the land.

FIGURE 1 Indigenous Australian people believe that the Australian landscape and all its features were created by their Dreaming ancestors.



3.6.3 Dreaming stories

Elders passed on customary laws by telling Dreaming stories to other members of their community or language group. The stories provide guidance or instructions about how to behave and the right way to live. Indigenous people expect that the younger ones will listen to the old people, be obedient, and not be greedy or steal. Other customary laws concern what foods can be eaten, what rules apply to families, requirements for marriage, and spiritual responsibilities. Songs and dances were also used to pass down customary law.

3.6.4 Dispute resolution

Aboriginal and Torres Strait Island societies did not have governments, police or courts. Disputes were resolved by the elders, who would meet together to discuss the incident or dispute and then agree on an appropriate solution or consequence. Punishments might include shaming or public ridicule for less serious offences, or exile or spearing for more serious cases. Spearing involved stabbing a spear into the thigh of a person who had committed an offence. The scar left behind would always remind the offender of the wrong act they had carried out.

3.6.5 Recording customary law

Customary law has not been **codified**. It is not easy to record. This is because it is not always the same throughout Australia. Different language groups and communities have their own customary laws, languages, beliefs and traditions. The laws that apply to one group do not necessarily apply to another group.

3.6.6 Customary laws and Australian law

Some state and territory laws have been amended to specifically refer to customary law — the Northern Territory's Sentencing Act recognises customary law. Many courts have also taken customary law into account when considering sentences. Refer to the case study 'Court imposes customary punishment' in this section for an example.

CASE STUDY

Court imposes customary punishment

The 1993 case of Wilson Jagamara Walker was the first in Australia to include a customary punishment as part of a sentence. Walker was a 23-year-old Aboriginal man from central Australia who pleaded guilty to manslaughter. He had been walking home when he heard a cry for help from a person being attacked by a group. Walker went to assist, and ended up killing one of the attackers by stabbing him near the neck. The judge, Chief Justice Martin, initially sentenced Walker to three years' imprisonment. The sentence was then suspended and Walker was released on a two-year good behaviour bond with conditions, including that he be speared in the thigh by relatives of the victim.

In describing the customary punishment, Chief Justice Martin said that:

> When you return to Yuendumu, you will be called upon to face tribal punishment … by getting speared in each of your legs a couple of times in such a way that you will be pained for at least a couple of weeks … A hunting spear would be used. The punishment would be administered by the brother of the dead man.

Martin ordered police officers to witness the spearing so that they could verify that the sentence had been carried out. Walker was told to return to the court to have the sentence reviewed if this did not occur.

FIGURE 2 Wilson Jagamara Walker's case was the first in Australia to include a customary punishment as part of a sentence.



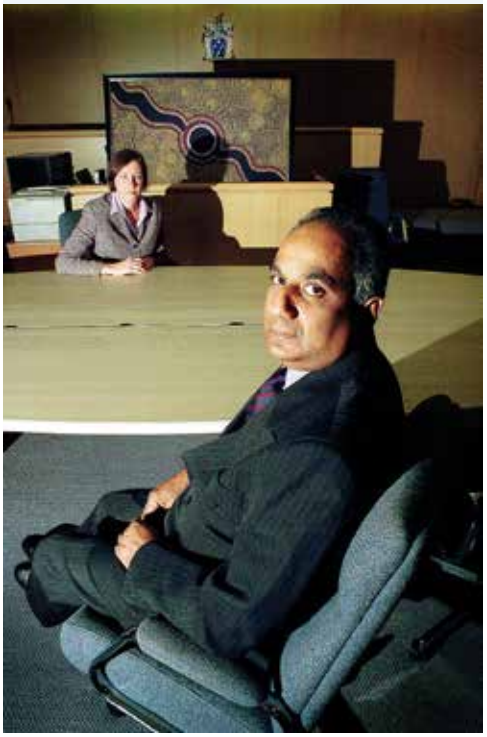
3.6.7 Alternative sentencing for Indigenous offenders

If found guilty of an offence, Aboriginal and Torres Strait Islander defendants have alternatives to having a sentence imposed by the court. One initiative is circle sentencing, a scheme operating in New South Wales that tries to avoid imprisonment for Aboriginal offenders. This is where a circle of people — including Aboriginal elders, the victim, the offender, the offender's lawyer, the prosecutor or police and a magistrate — will sit together to attempt to decide an appropriate sentence. The Indigenous offender must have pleaded guilty or have been found guilty of the offence.

The offence is considered first, and then the offender and his or her background is discussed as well as the effect of the wrongdoing on the victim and the community. The elders decide the sentence, which must be approved by the magistrate. The circle will often hand down a good behaviour bond with conditions attached, such as counselling or community service.

Other states have different names for similar programs. Victoria has Koori Courts, South Australia has Nunga Courts and Western Australia has Aboriginal Community Courts. The territories also have circle or community courts. All of these courts involve Aboriginal and Torres Strait Islander community members in the sentencing process, and the proceedings are less formal than in a traditional courtroom.

FIGURE 3 The Broadmeadows Koori Court in Victoria provides a more informal environment for Aboriginal offenders, who must plead guilty if they wish to be sentenced here.



3.6 Activities

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

Remember

1. What is meant by the term 'customary law'?
2. What is the Dreamtime (or the Dreaming)?
3. Give an example of legislation that recognises customary law in Australia.
4. List as many reasons as you can to explain why Aboriginal and Torres Strait Islanders find customary laws significant. Compare your reasons with other class members. Write down any new ideas.

Explain

5. Read the case study 'Court imposes customary punishment' in this subtopic. Outline the way in which the judge incorporated customary law into the sentence imposed on Mr Walker.
6. Use the internet or a newspaper to find a recent case where a court has recognised customary law when sentencing an Indigenous Australian.
7. Work in groups to investigate one of the circle sentencing courts.
   (a) How does the court work and what sort of cases does it sentence?
   (b) Identify one case that has been resolved by a circle sentencing court. Prepare a summary of the facts of the case and the judgement made by the court.

8. Create a list of pros and cons for recognising customary law as part of Australia's legal system. Do you think that customary law should be recognised?

Predict

9. Working in groups of three, consider whether new courts should be established to reflect the traditional laws of other ethnic or religious groups in Australia. For example, should an Islamic court be established so that Muslim offenders could be sentenced according to sharia law?

3.7 Review

3.7.1 Summary

Laws establish guidelines for behaviour, protect us and settle disputes. They are used to give consequences to people who break them. Laws are made by our federal and state parliaments (statute law) and by our courts (common law). Australia has two main types of law — criminal law, which protects us from individuals who break a law against the community or society as a whole; and civil law, which involves a dispute between individuals. Customary law is significant for Aboriginal and Torres Strait Islander peoples. It provides the guidelines for behaviour developed by Indigenous peoples over the course of many years, and has been passed on by word of mouth.

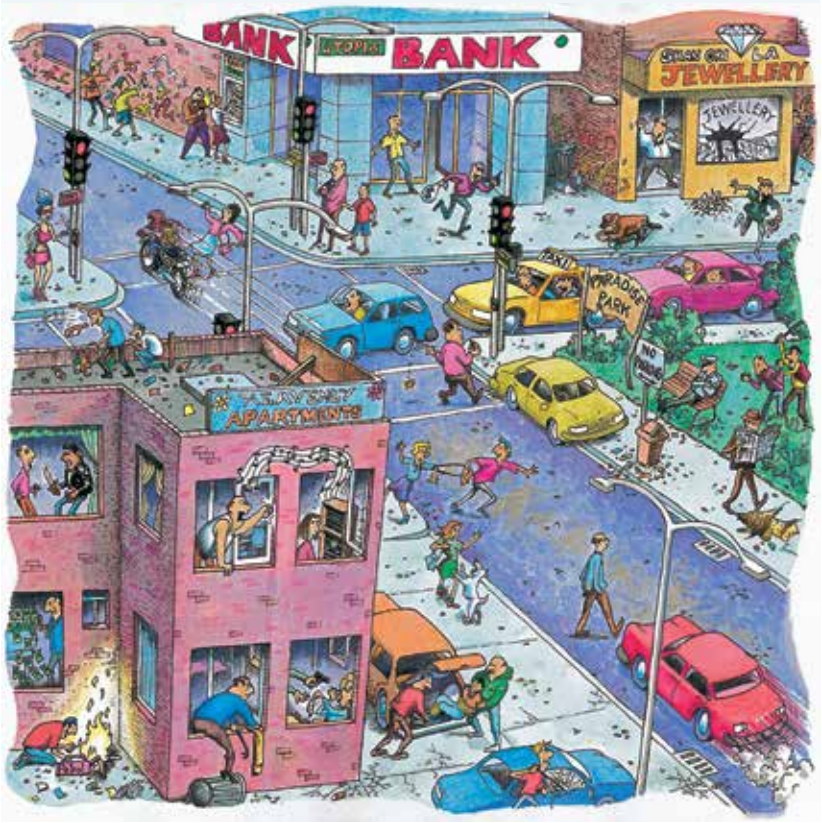
- Statute law (or an Act or legislation) must be passed through both houses of parliament in the form of a Bill, which must then be approved by the Crown.
- Courts make laws because they interpret laws and make decisions to resolve the cases they are hearing, and in doing so create precedents that will be followed by other courts.
- Criminal law protects the community as a whole. It incorporates crimes including robbery, manslaughter and murder. The police or a representative of the government (the prosecution) takes the accused (the defendant) to court. There, a consequence, such as a fine or imprisonment, may be imposed.
- Civil law protects the private rights of individuals. It incorporates civil wrongs including negligence, defamation and breach of contract. A person who feels that a civil wrong has been done to him or herself (the plaintiff) will sue the other party (the defendant) in court to repair the harm caused, often seeking damages.
- Aboriginal and Torres Strait Islander customary law originated in the Dreaming and provides guidance for how to behave and live. Disputes or incidents are resolved by the elders, who agree on an appropriate solution or consequence

3.7.2 Your turn

1. Go to the **Hoddle Street killer** weblink in the Resources tab to read an article about Julian Knight and then answer the following questions:
   (a) Who had the idea for this new legislation?
   (b) What was the purpose of this new law?
   (c) Explain what will need to happen before the idea for the law can actually become legislation.
   (d) What government policy do you think this new law is enacting?
   (e) Do you think everyone, including mass murderers, should have a chance to be released from prison at some point; or do you think some people's crimes are so bad that they should never be released from prison?

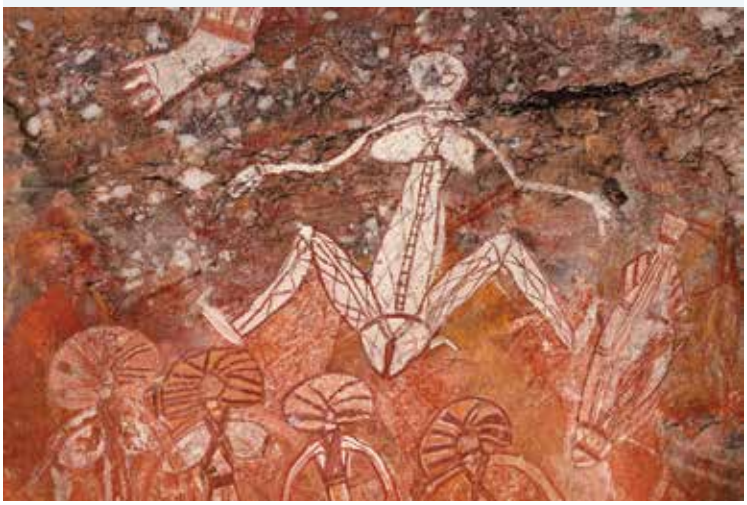
2. Look at the cartoon in figure 1.
   (a) List three criminal incidents you can see.
   (b) List all the civil wrongs that you can see.
   (c) What are the consequences of breaking criminal law? What are the consequences of breaching civil law?

FIGURE 1 Civil wrongs versus crimes



3. Examine the Aboriginal artwork in figure 2 at right. This artwork depicts stories from the Dreaming. In the image, you can see a female figure, Barrginj (pronounced barr-jeen). She is the wife of Namarrgon (narm-arr-gon), an important Creation ancestor. Their children, called the Alyurr, are shown below her. The children gave the local Aboriginal people their language and laws during the Creation time.
   (a) What is the Dreaming?
   (b) Explain how Aboriginal and Torres Strait Islander peoples believe that customary law originated from the Dreaming.
   (c) In what ways is customary law significant for Aboriginal and Torres Strait Islander peoples?

FIGURE 2 Artwork from Nourlangie Rock, Kakadu National Park, Northern Territory



4. You will role play a mock trial of the following cases in your classroom:
   - Case 1 — a student who attends a school with a no make-up policy arrives at class wearing bright pink lipstick. She is immediately sent home. The following day another student arrives at school wearing clear nail polish.
   - Case 2 — four boys attend a school that bans playing ball sports in the main assembly area. They are caught playing football in the assembly area at lunchtime. Their ball is confiscated and they are sent home. The following day, two boys use a tennis ball to play four square in the assembly area an hour before school starts. They were the only students in the school at the time but they were spotted by the deputy principal.

Begin your role play by dividing up the courtroom roles as follows:
- judge
- jurors (twelve)
- prosecutor (team of three)
- defence (team of three)
- accused
- witnesses.

In case 1, the defence team will represent the second student and argue that she should not be sent home because clear nail polish should be treated differently from bright lipstick. The prosecution team will argue that the student should be sent home because nail polish is still make-up.

In case 2, the defence team will represent the two boys and argue that they should not be sent home because playing with a tennis ball, at a time when no others are present, is not dangerous. The other team (the prosecution) will argue that they should be sent home because four square is still a ball sport.

learnon RESOURCES — ONLINE ONLY

Explore more with this weblink: Hoddle Street killer

Try out this interactivity: Where do our laws come from? crossword (int-5318)

TOPIC 4
Australia's national identity

4.1 Overview

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

4.1.1 A diverse culture

Casual day is always an interesting day at school. Given a day of freedom from uniform, students take the opportunity to demonstrate their identity through fashion. While many students simply choose their clothes for comfort or style, for others fashion is a deliberate statement. For these students, fashion indicates their membership of a particular social group. These groups provide students with a sense of belonging — a feeling that they are part of a larger community with shared values. A group's identity is how the members of that group present themselves to the rest of the world. In our casual day example, this representation occurs through fashion. Yet if we extend this example to an entire country, we will see many different representations of national identity.

In Australia, our national identity has always been complex. Our country is a diverse collection of nationalities and cultures. Because of this, isolating individual aspects of an Australian national identity is a challenging task. In this topic we investigate Australia's national identity, how it was formed, how it continues to evolve and how it creates a sense of belonging for the people who call this country home.



Starter questions

1. How has Australia's national identity been formed?
2. How does Australia's national identity continue to change?
3. What impact does national identity have on society?
4. How are Indigenous and Torres Strait Islander cultures represented in Australia's national identity?
5. What impact have migrants played in the development of Australia's national identity?
6. Do you show part of your individual identity through fashion? If so, describe how.
7. Choose a group to which you belong (for example, a youth group, friendship circle or sporting team) and describe how belonging to this group makes you feel.
8. Design a flag that you believe represents Australia's national identity.
9. Write a list of the elements of Indigenous society that you know about.
10. Discuss your family's migration history with the person next to you.

INQUIRY SEQUENCE

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learnon RESOURCES — ONLINE ONLY

Watch this eLesson: What is national identity? (eles-2291)

4.2 Australian identity — traditional v. changing views

4.2.1 What has influenced our national identity?

A singular Australian identity is hard to define. Since European settlement began, different countries have contributed aspects of their culture to form the multicultural identity we see in Australia today. Changes in Australian identity have been, and continue to be, reflected in our relationship with other countries. In colonial times, Australian identity closely mirrored that of Britain. When Australia moved away from British influence and towards the United States of America (directly after World War II), aspects of our national identity changed as well. Our identity now faces an interesting stage in its development as our focus turns toward our Asian neighbours. Australia's national identity continues to evolve as people from a vast array of nations make their contributions to our diverse and multicultural nation.

4.2.2 'We don't like cricket, we love it'

Love it or hate it, cricket is big part of Australian culture. Every weekend in summer, thousands of men, women and children around Australia hone their skills with the bat and ball. Yet how did this strange game find its way into our country?

Like many other aspects of Australian identity, our country's love of cricket is a legacy of our British roots. This connection was forged by early British settlers who introduced elements of their existing identity and traditions to their new Australian home. The British failed to understand or recognise the long-standing cultures of Aboriginal and Torres Strait Islander peoples. They simply ignored Indigenous identity and replaced it with their own. The British did so because they felt no connection to Indigenous culture. Introducing their own culture made them feel more comfortable in the new surroundings and increased their sense of belonging.

FIGURE 1 Children playing cricket in 1925 (top) and 2013 (bottom)



4.2.3 The mother country

The close relationship between Britain and Australia continued well into the twentieth century, despite **federation** in 1901. Evidence of the British influence on Australian identity can be seen in the culture, fashion and even foods which were popular at the time. Perhaps the clearest piece of evidence, however, was Australia's willingness to follow the 'mother country' into World War I. When that war began in 1914, British Australia was still a relatively young country. Without an official **foreign policy** of its own, Australia adopted the policies of Great Britain and also declared war on Germany.

Australia's involvement in World War I had an enormous influence on our national identity. This conflict saw the birth of the Anzac legend with its values of determination, sacrifice and mateship. These values have now become cornerstones of Australian national identity. The British influences on Australia can also been seen in our adoption of the British Westminster system of parliament, or in the simple fact that the Queen is still Australia's official head of state.

FIGURE 2 A World War I enlistment poster



4.2.4 Multicultural Australia

After World War II, Australia's relationship with foreign countries changed as we lessened our political connections with Britain. Though formal ties with the mother country were maintained, Australia sought to strengthen its alliance with the United States of America. This new direction was shown in Australia's willingness to support America in a number of global conflicts including the Korean and Vietnam wars. American popular culture also began replacing that of the British, with new genres of music, fashion and cinema introduced into Australian society.

Changes in Australian identity are reflected in changes to our government's foreign policy. Australia's foreign policy

FIGURE 3 Australian soldiers fighting in the Vietnam War in 1967



has recently changed again, this time with a focus on closer relationships with China, Japan and other Asian countries. The gradual removal of Australia's White Australia policy has enabled these new relationships to develop. These changes can be seen in schools such as your own.

The option to study Asian languages in school is much more common now than it was in your parents' era. In their time, the study of languages still had a significant **Eurocentric** focus. You may study a language to allow you to communicate with people if you ever visit that country. However, knowing a language will also help you to communicate with people within your own country. In this way, the languages taught in schools say a lot about a country's identity and where it is heading. You may be learning Chinese at school, like many thousands of Australian students do today.

FIGURE 4 Chinese characters



4.2 Activities

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

Remember

1. Why did the British feel the need to introduce their national identity to Australia?
2. Why is it so difficult to define Australian national identity?

Explain

3. During both the Korean and Vietnam wars, the people of Australia were under no direct threat or danger. Explain how Australia became involved in these conflicts.
4. Look at figure 2. Who do the lions in this poster represent?

Predict

5. How do you think Australian national identity will change in the next 50 years? For example, where do you think the next wave of immigration will come from?
6. List aspects of Australian national identity that have British origins.
7. Describe what being Australian means to you.

4.3 Reconciliation — contribution to national identity

4.3.1 Making amends

The original inhabitants of Australia suffered greatly from the British colonisation of their country. Years of conflict, disease and mistreatment have caused pain and suffering for Indigenous peoples and their cultures. In recent years, efforts have been made to mend the damage caused by previous governments. The **reconciliation** movement can be seen as an attempt to restore the importance of Indigenous culture in Australian society. Before we discuss how reconciliation contributes to Australian identity, we need to learn what reconciliation is and why it is necessary.

4.3.2 What went wrong?

Although the first interactions between Indigenous Australian peoples and the British were positive, relationships quickly deteriorated and conflict erupted. Using their resources and weaponry, the British expanded their settlement and pushed further into Aboriginal lands. The Indigenous owners of these lands saw this expansion as an act of aggression and responded with violence. A lack of understanding and respect for each other's culture fuelled the so-called Frontier Wars. However, this conflict was only the first event in a series of hardships faced by Indigenous Australian peoples following the arrival of the British in 1788.

FIGURE 1 A friendly first interaction between Indigenous Australian peoples and the British



The Stolen Generations

Can you imagine being forcibly taken from your parents as a young child, put into strange clothing, given strange food and told to never speak your language again? From as early as the 1860s, Indigenous and Torres Strait Islander children were forcibly removed from their homes and families by various Australian governments. Some historians argue that this program of removal had good intentions, and that the governments involved were motivated by the welfare of Aboriginal children. On the other side of the debate, historians claim child removal was a deliberate policy intended to weaken Aboriginal and Torres Strait Islander communities. Removed from their families, these children were also removed from their culture and identity. Children removed during this period of time have become known as the Stolen Generations.

Despite the reluctance of previous leaders, an official apology for this policy was eventually provided in 2008 by the then-prime minister, Kevin Rudd. It symbolised a major step in the journey towards reconciliation.

FIGURE 2 Homes were sought for these Aboriginal children after they were forcibly removed from their families.


Homes Are Sought For These Children

A GROUP OF TINY HALF-CASTE AND QUADROON CHILDREN at the Darwin half-caste home. The Minister for the Interior (Mr Perkins) recently appealed to charitable organisations in Melbourne and Sydney to find homes for the children and rescue them from becoming outcasts.

I like the little girl in centre of group, but if taken by anyone else, any of the others would do, as long as they are black

Whose land is it?

One of the most important aspects of Indigenous culture and identity is a connection to the land. Representing the past, present and future of Indigenous Australian peoples, this relationship is deeply spiritual. Upon arrival in Australia, the British failed to officially recognise Indigenous land ownership. They claimed the land as their own using the concept of ***terra nullius***. The subsequent battle for Indigenous **land rights** lasted more than 200 years. During this time, several legal actions were launched by Indigenous Australians with the goal of securing ownership of their traditional lands. This goal was finally reached in 1992 when the High Court of Australia officially rejected the concept of *terra nullius*, paving the way for Indigenous peoples to legally reclaim their land.

FIGURE 3 Indigenous land rights campaigner Eddie Mabo. Mabo and four other Torres Strait Islander people commenced legal action claiming customary ownership of their lands on Murray Island.



4.3.3 The path to reconciliation

As recently as the early twentieth century, Aboriginal people were not considered citizens of Australia. They could not vote in elections, and were not even counted in the population of the country when the census was taken. Over the next few decades, the rights of Indigenous people became increasingly important to all Australians. Their cause was assisted by other civil rights movements from around the world, which were also gaining popularity.

In 1948, Indigenous Australian people officially became British subjects and Australian citizens, although they were only granted voting rights in 1962. Perhaps the most famous of these victories was the 1967

referendum, after which Indigenous Australian people were finally recognised as part of the population. The referendum was a formal statement announcing that Indigenous culture and Australian culture were one and the same. This event had a significant impact on Australian identity.

Reconciliation began as an official movement in 1991 with the formation of the Council for Aboriginal Reconciliation. The term 'reconciliation' refers to repairing the damage of past events through better understanding of, and respect for, Indigenous culture. The inclusion of 'Welcome to country' speeches and smoking ceremonies are small-scale examples of what reconciliation looks like. Larger scale examples include a higher priority for Indigenous health and education programs, and a focus on the welfare of Indigenous children. Symbolic acts such as the 2000 Sorry Day march, and the official apology to the Stolen Generations offered by former Prime Minister Kevin Rudd, are other important events along the path to reconciliation.

Serious offences were knowingly committed against Indigenous Australian peoples by a sequence of Australian governments. Our identity as Australians should not be shaped by our guilt for these actions. Instead, we should help mend the damage of the past by celebrating Indigenous culture and identity as our own. In doing so, we can also increase the sense of belonging felt by the Indigenous community.

FIGURE 4 On the sesquicentenary (150th anniversary) of British colonisation in 1938, the Australian Aboriginal Conference declared a 'national day of mourning'.


AUSTRALIAN
Aborigines Conference
SESQUICENTENARY
Day of Mourning and Protest
THE AUSTRALIAN HALL, SYDNEY
WEDNESDAY, 26th JANUARY, 1938
(AUSTRALIA DAY)
ABORIGINES AND PERSONS OF ABORIGINAL BLOOD ONLY ARE INVITED TO ATTEND
TO ALL AUSTRALIAN ABORIGINES! PLEASE COME TO THIS CONFERENCE IF YOU POSSIBLY CAN! ALSO SEND WORD BY LETTER TO NOTIFY US IF YOU CAN ATTEND

4.3 Activities

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

Remember

1. Why did the relationship between British settlers and Indigenous Australians turn sour?
2. Who were the Stolen Generations?

Explain

3. How did declaring *terra nullius* allow the British to claim the land of Australia?
4. What is reconciliation?
5. Use the **Indigenous rights movement timeline** weblink in the Resources tab to create a timeline of the major events that occurred in the process of reconciliation.

Predict

6. What do you believe to be most important for Indigenous Australians?
   (a) Becoming citizens in 1948
   (b) Being given voting rights in 1962
   (c) Being included in the population count in 1967
7. Use the **National apology** weblink in the Resources tab to watch the video of Prime Minister Kevin Rudd's apology to the Stolen Generations. Imagine you are the relative of a member of the Stolen Generations and write a brief response to this speech.

learnON RESOURCES — ONLINE ONLY

Explore more with these weblinks: Indigenous rights movement timeline, National apology

4.4 Belonging to a new country — migrant experiences

4.4.1 Seeking a better life

Consider what you would do for the sake of your family. Now consider what you *wouldn't* do for the sake of your family. It is a sad truth that, every day around the world, families encounter terrible problems. Some are faced with hunger, poverty and disease; others must deal with violence, brutality and fear; and some are confronted with all of these challenges. Many families in these types of situations choose to leave their countries or traditional homelands in favour of the peace and freedom offered by Australian shores. Throughout Australian history, people from nearly every nation in the world have relocated to this diverse country in search of new opportunities. The experiences of these **migrants** is discussed in this section.

FIGURE 1 A Vietnamese brother and sister arriving in Australia, 1974



4.4.2 Migrant identity

Migrants are forced to quickly adapt to the national identity of their new homes. This is something they need to do without losing their connection to their own identity. In this way, their sense of **belonging** is split in two. Migrant groups cannot live in isolation of the new laws, customs and language of their adopted country, but neither can they forget the elements of their original culture and identity. Australia's well-established tradition of acceptance and diversity makes the balancing of identities easier for new migrants. As they celebrate their existing identity, migrant groups also reinforce Australia's multicultural identity. This helps new migrants to feel a sense of belonging to both their old and new communities.

FIGURE 2 Migrants must balance two cultures: their own and that of their adopted country.



As well as feeling emotionally connected to their old and new countries, migrants can be officially part of both countries through dual citizenship. This is possible in Australia and many other countries. Holders of dual citizenship have legal and moral responsibilities in both countries. These responsibilities include voting in elections. For example, a person who lives in Australia can be both a citizen of Australia and Greece. This person is required to vote in both Australian and Greek elections.

The federal government does not have statistics regarding the number of dual citizens, although it estimates the figure to be around 4 million Australians. Dual citizenship is another way in which people can maintain a sense of belonging to two separate nations and cultures.

4.4.3 Migrant case studies

The best way to learn about the challenges faced by Australian migrants is to read and listen to their experiences. The **Migrant case studies** weblink in the Resources tab contains fascinating stories from a diverse range of migrants. Read articles and watch video clips from a variety of migrants in order to get a more complete understanding of the challenges they have faced. Have a pen and paper handy while you read the stories and watch the videos so you can write down any information you find interesting and areas you want to investigate further.

FIGURE 3 The migrant experience in Australia



4.4 Activities

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

Remember

1. What is dual citizenship?
2. How can dual citizenship influence a person's sense of national identity?

Explain

3. Use the **Department of Immigration case studies** weblink and the **SBS case studies** weblink in the Resources tab to discover the stories of a diverse group of Australian migrants. Summarise the reasons why the people you learned about chose to migrate to Australia.
4. 'New migrants should abandon their existing national identity and adopt that of their new country.' Do you agree or disagree with this statement? Why?
5. Why is it important for people to feel a sense of belonging to their country?

Predict

6. Do you believe all people, regardless of reason, should be allowed to migrate to Australia? Justify your answer.

learnON RESOURCES — ONLINE ONLY

Explore more with these weblinks: Migrant case studies, Department of Immigration case studies, SBS case studies

4.5 SkillBuilder: Investigating national identity in another country

4.5.1 Tell me

A successful oral presentation starts before a single word has been spoken:

- *Preparation*. It is crucial that you research and plan your speech properly. Being organised and prepared will give you confidence in yourself and in your subject material.
- *Proper use of visual aids*. Are you going to use PowerPoint, Keynote or any other visual aids? If so, you need to consider the proper use of these tools. Avoid making the mistake of overloading the audience with a cluttered combination of visual and audio information.
- *Delivery*. The final key to a successful presentation is the delivery. Sustained eye contact and a confident, well-projected voice will help you deliver your intended message.

FIGURE 1 Preparation and delivery are key elements of a successful presentation.



4.5.2 Show me

How to give an oral presentation

Preparation

The following table will help you plan the elements of your presentation:

TABLE 1 Preparing for your presentation

Purpose of presentation	To explain how to deliver successful oral presentations
Key message	That through proper practice and planning, students can overcome their potential fear of public speaking
Secondary message	Explain the elements of successful oral presentations: • preparation — research and planning • proper use of visual aids • delivery — sustained eye contact and confident delivery of the speech.

Proper use of visual aids

Visual information can add to your presentation. However, it can also decrease the effectiveness and clarity of your message if used incorrectly. Make sure that any visual aids serve a clear purpose. Do not commit any of the mistakes shown in the **How not to use PowerPoint** weblink in the Resources tab.

FIGURE 2 Speaking in public can be daunting, but try to connect with your audience even if you are feeling nervous.



Delivery

The effectiveness of your speech often relates to the connection you make to your audience. Eye contact and a confident delivery of your speech are two ways to boost this connection. Sustained eye contact requires more than simply looking up from your

notes every now and then. You need to make and hold eye contact with members of your audience. This will only be possible if you have practised your speech often and know the content extremely well. Sustained eye contact will also improve your delivery of the speech itself. Remember not to rush your speech, and be sure to explain your points clearly and carefully.

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Explore more with this weblink: How not to use PowerPoint

4.5.3 Let me do it

You have just learned about the skills required to successfully deliver an oral presentation. Now it is time to put these skills into action by investigating the national identity of a nearby Asian country. Working either individually or in pairs, you will need to deliver a five-minute oral presentation in which you discuss your chosen country and how its national identity is displayed.

Draw up a table (similar to table 1 on the previous page) to help you prepare and plan your speech. Then use the procedure discussed in this SkillBuilder to ensure that your presentation is successful.

4.6 Review

4.6.1 Summary

Australia's national identity is known for its diversity. Our communities are comprised of people from a large range of cultural and ethnic backgrounds. This cultural diversity unifies Australian society and creates a sense of belonging. Many of our laws and values have their origins in the religious traditions of European settlers. However, due to the secular nature of Australian government, religious freedom is still allowed and encouraged. In recent years, the mistreatment of Indigenous Australians has been formally recognised and steps to true reconciliation have begun.

- The diversity of Australian identity can be used to unify communities and create a sense of belonging.
- Judeo-Christian traditions have influenced the society in which we live.
- Proper understanding and respect for the culture and traditions of Indigenous Australians are important parts of modern Australian society.

4.6.2 Your turn

Congratulations! You've just been appointed as the prime minister's new immigration advisor. It is an extremely prestigious position and one that is taken very seriously. The prime minister is under pressure because some people believe that Australia allows too many immigrants to enter Australia. You know this is not true and so does the prime minister. Your task is to create a short five-minute presentation (in any format) that explains the positive role that immigrants play in Australian society and why they should continue to be allowed to enter Australia. Use the knowledge and skills you have learned in this topic to help you complete this task. Good luck!

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Try out this interactivity: Australia's national identity crossword (int-5230)

UNIT 2 PARTICIPATION AND INFLUENCES IN THE MARKETPLACE

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TOPIC 5
The market system and government

5.1 Overview

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

5.1.1 The Australian economy

On television news, current affairs programs and throughout the media, we frequently hear politicians and commentators referring to the 'Australian economy'. What is the 'economy' and how does it work? In simple terms, the Australian economy is the total of all activities undertaken for the purpose of producing, distributing and consuming the goods and services we require to satisfy our needs and wants.

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

We satisfy our needs and wants by acquiring goods and services. *Goods* are physical, tangible items that can be seen and touched. They include all those products we actually buy from shops. *Services* are the actions done for you by others that are designed to satisfy needs and wants. They include the services provided by doctors, dentists, banks, telephone companies, entertainers, mechanics and teachers, among others. Whenever we make use of goods and services we are said to *consume* those goods and services, and so are regarded as *consumers*. The process of using goods and services is known as *consumption*.

Goods and services have to be provided by someone, and we usually expect businesses to do this. Any activity within the economy that results in the provision of goods and services is known as *production*. Economists do not limit this term to the manufacture of goods in a factory, as many of us might think, but use it to include all goods and services. To the economist, the activities of a dentist filling teeth, a band performing at a venue, or a teacher in a classroom, are all included in the definition of production.

FIGURE 1 Consumers will seek to buy the goods and services that satisfy their needs and wants.



In order for us to be able to consume the goods and services that have been produced, we need systems of *distribution*. This means that the goods and services have to be supplied

at locations that are convenient for consumers. This could mean a local shopping mall, an office block in the city centre, or even through a website. The distribution process also includes the setting of prices to be paid for goods and services.

In Australia we live in a market economy. In this topic, we will examine what this means. What is a market economy? How well does a market economy perform the activities of producing, distributing and consuming the goods and services we require to satisfy our needs and wants?

Starter questions

1. List ten items you have bought in the last week, and then label whether each was to satisfy a need or a want.
2. Food, clothing and shelter are usually included as our basic needs as human beings. In what circumstances might each of these be seen as wants rather than needs? (Think about the *type* of food, clothing or shelter).
3. Look back at the time you spent between waking up this morning and arriving at school. Make a list of all the goods and services you consumed during this time.
4. When you send a text to a friend you are engaging in an economic activity. Who are the producers, who are the consumers, and what is the actual production process that is involved in this activity?
5. Explain why a bus travelling through your suburb would be regarded by an economist as a form of production.
6. As a class, make a list of all the businesses that operate at your local shopping centre. Group these businesses according to whether they supply goods or services, or both.
7. Make a list of any goods or services that are not supplied by businesses at that shopping centre. What might be the reasons for each of these goods or services not being available at your local shopping centre?

INQUIRY SEQUENCE

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Watch this eLesson: Development of the market economy (eles-1811)

5.2 Who is involved in the market system?

5.2.1 Consumers and producers

What do we mean when we speak of markets? In simple terms, markets consist of **producers**, who make and sell goods and services, and **consumers**, who buy the goods and services. Producers rely on consumers to buy from them, and consumers rely on producers to provide the goods and services they want. A market refers to the relationship between the buyers and sellers, rather than to any physical location. Of course, a shopping centre is a large market because it brings together significant numbers of producers and consumers in one location. However, as we can see with the growth of online shopping, a market can consist of buyers and sellers in cyberspace, where physical location is irrelevant.

Consumers and producers are at the centre of Australia's market system. All of us are consumers, and those of us who are employed are also producers. We satisfy our needs and wants by working to earn money, and then buying goods and services from businesses that produce those goods and services. When we are working, we are providing our **labour** to contribute to the process of producing goods or services

for other consumers to buy. When we are spending our money, we are consumers, purchasing goods and services that others have produced, in order to satisfy our needs and wants.

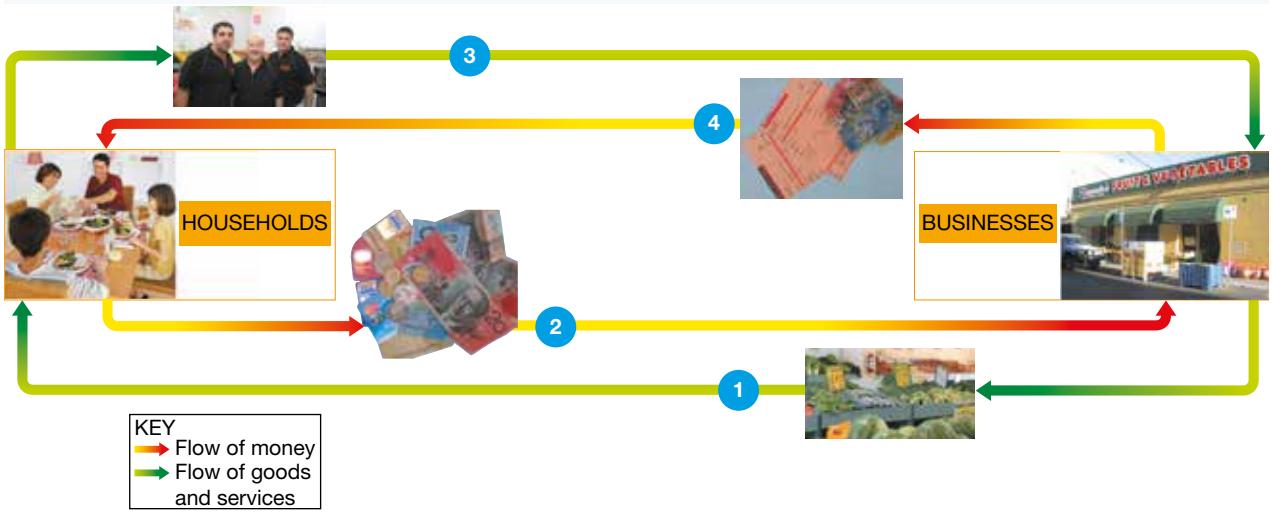
The total of all consumers in the economy is sometimes called the **household sector**. The total of all producers is sometimes known as the *business sector*.

We can examine the relationship between the business sector and the household sector by looking at the following model. It demonstrates how labour is exchanged for money, and how that money is used to purchase goods and services.

FIGURE 1 People who are employed are considered to be producers.



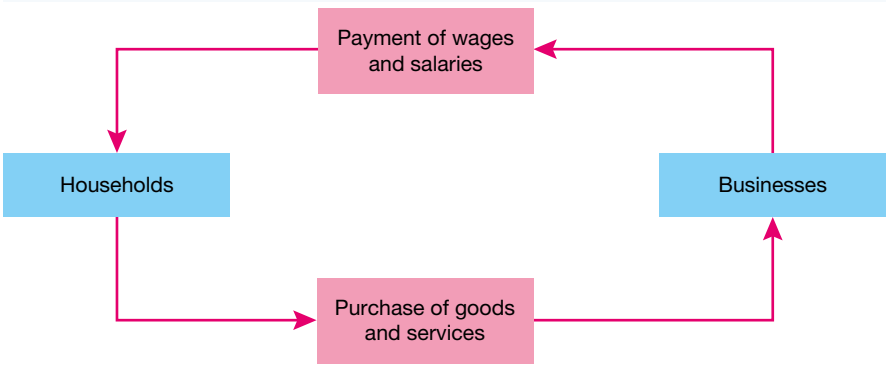
Model showing the flow of money, goods and services between households and businesses



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

We can simplify this model by removing the flow of goods and services, and simply showing the flow of money between households and businesses. This tells us about the financial relationship between consumers and producers in our market system. Economists sometimes refer to this as the circular flow diagram, because it illustrates how money circulates in a simple market economy.

The circular flow of money between households and businesses in our market system



5.2.2 The financial sector

FIGURE 2 Financial intermediaries are able to direct savings into investment in the growth of businesses.



Do you spend every cent you receive in pocket money or in return for any work you do, or do you set some aside as savings? While most people of your age don't save much, many others in the economy do put aside some of their income as savings. This money is usually deposited in a bank or similar **financial intermediary**.

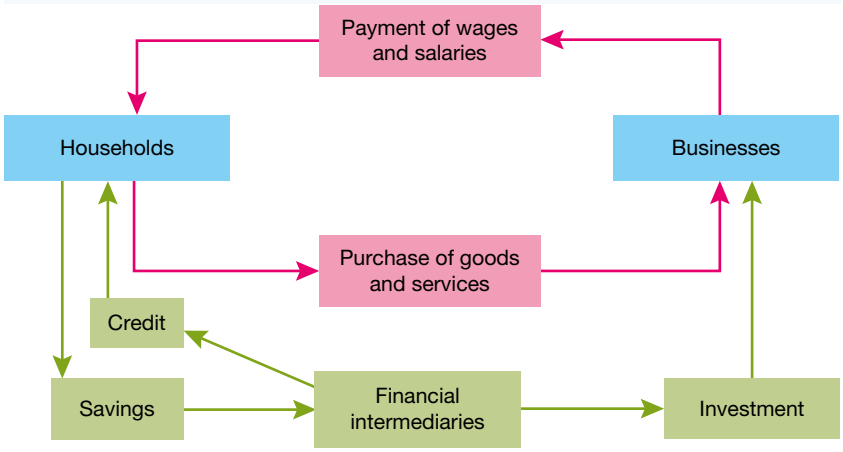
Banks and other financial organisations receive deposits, and use this money to lend out to others who need to borrow money. Most businesses will borrow money, particularly when they need to expand the business. This may involve buying new equipment, or even moving to bigger premises. Money spent in this way is known as **investment**. Financial intermediaries collect the savings of thousands of depositors, and then have large sums available for businesses to invest in growth.

These financial intermediaries make up what we sometimes call the *financial sector* of the economy. They perform an important role in our market system because they enable accumulated savings to be directed towards business growth. As businesses grow, they are able to employ more people, who in turn have more money to spend on goods and services.

Banks and other financial intermediaries also play an important role in providing credit for households. When consumers make large purchases, such as a house or a car, it is usually easier to borrow the money to pay for these than to save up for years to pay cash for them. When purchasing a house or land, most people take out a **mortgage loan**. This enables them to borrow to pay for the property, and pay back the loan over a relatively long period of time. The housing market depends on the amount of money available for mortgage loans. If more people are able to buy houses, more new houses are built, creating more jobs in the construction industry.

We can see how the financial sector plays its role in the market system by adding financial intermediaries to our basic circular flow diagram. As we can see, banks and other financial intermediaries receive savings from households. They use this money to lend to businesses for investment, and they lend back to households in the form of credit.

The circular flow of money between households, businesses and financial intermediaries in our market system



5.2.3 The government sector

FIGURE 3 When a government pays businesses to construct roads it helps those businesses to grow and employ more people.

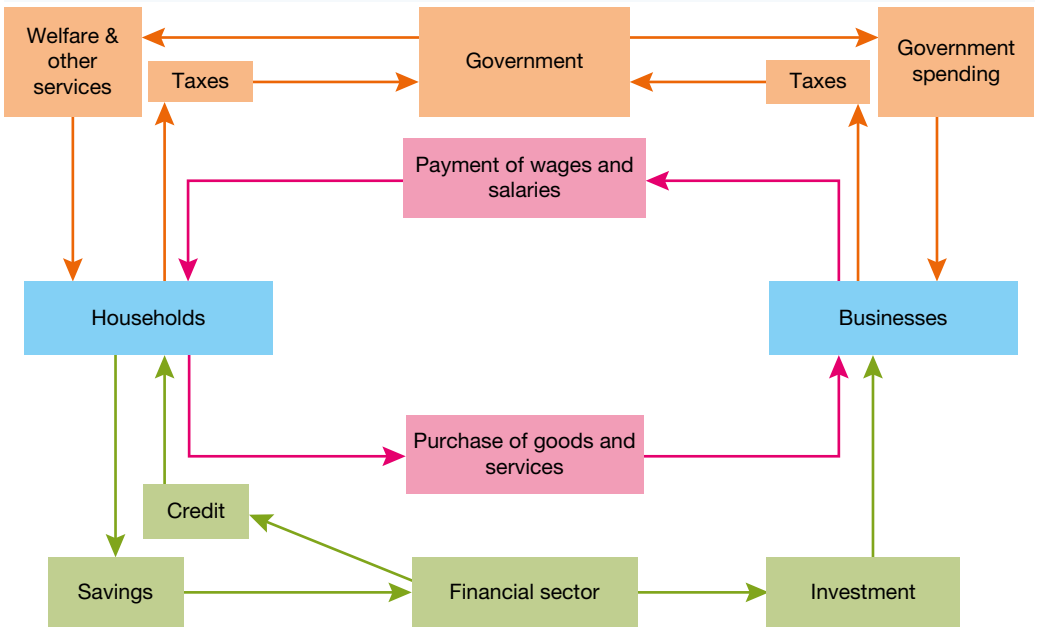


Another element involved in the market system is government. In Australia this refers to the federal government based in Canberra, state and territory governments based in capital cities, and local councils. As well as spending money on consumption and investing in savings, households and businesses pay money to government in the form of taxes and rates, and receive particular types of goods and services back from government. A detailed examination of the role of government can be found in subtopic 5.5. Government plays an important role in the market system for a number of reasons:

1. The level of taxation taken by government can affect the amount of money consumers have available to spend on goods and services. High levels of taxation can mean that consumers spend less, businesses cannot grow as quickly, and cannot employ as many people.
2. Money collected in taxes can be spent on providing welfare payments. These payments, in the form of pensions and unemployment benefits, allow many people to purchase more as consumers, providing more income to businesses, and creating more jobs as businesses grow.
3. Government also provides services such as schools and hospitals and these are paid for from taxes collected from both households and businesses.
4. When government spends money on building roads, schools and hospitals, it is providing money to the businesses that do the actual building, helping those businesses to grow and employ more people.

The involvement of government in our market system can be illustrated by adding government to our circular flow diagram. We can see that both households and businesses pay taxes to government. Some of this comes back to households in the form of welfare payments such as pensions, or as services such as

The circular flow of money between households, businesses, financial intermediaries and government in our market system



education and health care. Some of it is spent on buying goods and services from businesses, or paying businesses to build roads, schools or hospitals.

5.2.4 The overseas sector

FIGURE 4 Australia imports many goods from overseas and exports to many other countries.



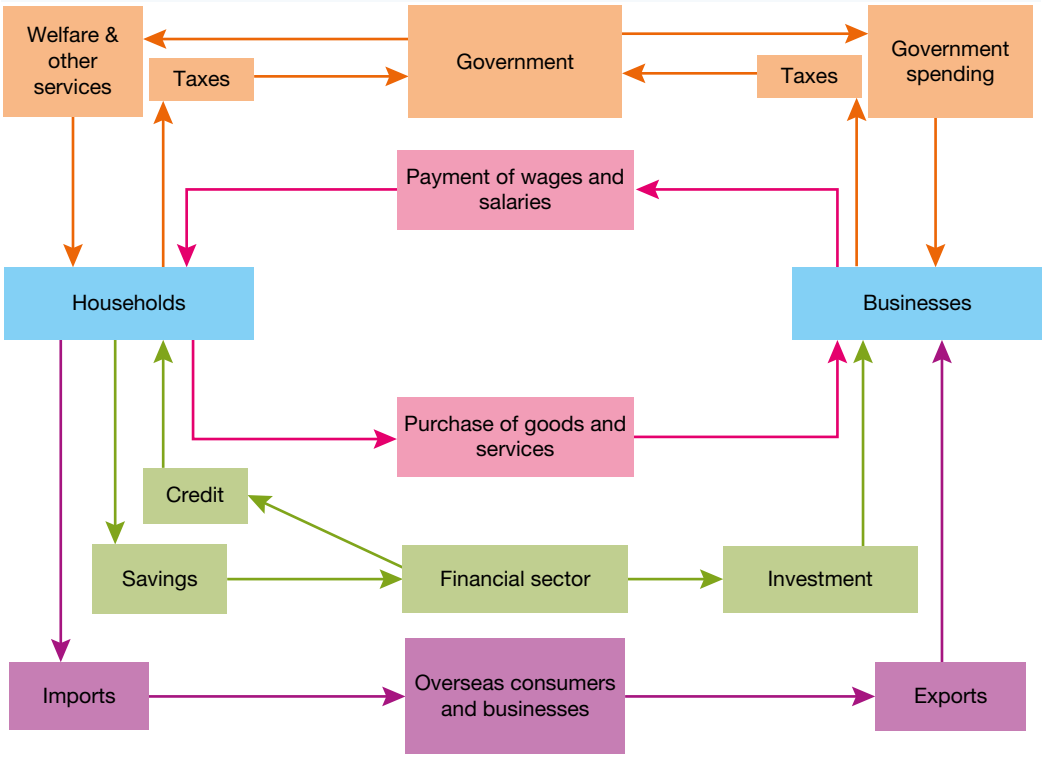
Australia is an open economy, in that we trade goods and services with other countries. Australian businesses **export** goods and services to both consumers and producers in other countries. Australian consumers buy many products that have been manufactured in other parts of the world and **imported** into this country.

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

1. Australia has a relatively small population, so if overseas consumers are willing to buy the goods and services we produce, this can help our local businesses to grow and employ more people.
2. There are some products that we are unable to produce with the same efficiency as can be achieved in other countries. A lot of the highly sophisticated machinery used in factories is imported, helping the factory to produce goods more cheaply.
3. Imported goods are sometimes cheaper than locally produced goods, which can make it difficult for local producers to compete with the imported products. This can lead to local producers going out of business. Australian clothing and footwear manufacturing has declined over the last thirty years as cheaper imports from Asian countries have increased dramatically. While this may not be good for those Australian manufacturers, it is a positive trend for consumers, who have access to cheaper clothing.

We can see the effects of overseas trade on the flow of money by adding overseas consumers and producers to our circular flow diagram. We can see that households spend money buying imports from

The circular flow of money between households, businesses, financial intermediaries, government, and overseas consumers and businesses in our market system



overseas businesses, while businesses can earn money from exporting goods and services to overseas consumers. Exports are good for the Australian economy because they bring money into our market system, while imports take money out of the country and pay it to overseas businesses.

We can see that there are five main sectors involved in our market system: the household sector, business sector, financial sector, government sector and overseas sector. The circular flow diagram at the bottom of page 78 allows us to see the financial relationships between each of these sectors.

5.2 Activities

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

Remember

1. Define the following and provide an example of each:
   (a) market
   (b) labour
   (c) household sector
   (d) business sector
   (e) financial sector
   (f) government sector
   (g) overseas sector.

Explain

2. Why is it possible for a person to be both a producer and a consumer?
3. How do financial intermediaries help markets to operate?
4. Explain one way in which a government can influence markets.
5. What is the difference between imports and exports?

Predict

6. Examine the circular flow diagram that includes household, business, financial, government and overseas sectors, and predict the impact that each of the following might have on the level of goods and services sold by Australian businesses.
   (a) Households decide to save a larger proportion of their income.
   (b) Financial intermediaries make it easier for consumers to acquire credit cards.
   (c) Governments decide to increase the level of taxation for households.
   (d) Governments increase the level of welfare payments.
   (e) There is a big increase in the availability of cheaper imported goods.

5.3 Different types of markets

5.3.1 Retail, labour, financial and stock markets

As we have seen, a market exists in any situation where buyers and sellers come together to exchange goods and services for money. A market can exist in a physical location, it can be spread across a number of locations, or can have no physical location at all, when buying and selling happens in cyberspace. It is the act of buying and selling, not the actual location, that creates the market. We will now look at a number of different markets that exist within the Australian economy: retail markets, labour markets, financial markets and stock markets.

5.3.2 Retail markets

We are all very familiar with retail markets. These are the markets that allow us to buy most of our goods and services. They include:

- the shopping areas in the central business districts (CBDs) of our large capital cities
- the huge suburban shopping malls such as Chadstone in Melbourne, or Westfield centres at Parramatta in western Sydney and Chermside in northern Brisbane

- local shopping centres with a supermarket and a number of specialty stores
- shopping strips located along major roads and near public transport hubs
- the groups of shops gathered in the main streets of country towns and regional centres
- online shopping websites.

The past fifteen years has seen a huge increase in online shopping. In 2015, online shopping in Australia was worth more than $19 billion, an amount equivalent to 6.6 per cent of all retail sales. About 80 per cent of this online shopping involved purchases from Australian retailers, and therefore around one-fifth of all online shopping in Australia saw goods imported directly from overseas businesses. Online shopping is likely to continue to grow, and the proportion of goods being bought from overseas businesses is likely to become larger as more people become aware of the wide range of choices available around the world.

FIGURE 1 Large shopping malls provide a wide range of retail businesses.



FIGURE 2 Online shopping has increased rapidly over the last 15 years.



5.3.3 Labour markets

At any given time there will be people who are looking for a job. Some of them are people who are unemployed and want to find work; some of them already have a job and are hoping to move to new or different work. At the same time there will be many businesses who are looking to employ new people to work for them. Prospective employees are hoping to *sell* their labour to employers. Those employers wish to *buy* the skills and effort of suitable employees. This combination of buyers and sellers of labour constitutes the labour market.

FIGURE 3 Online job boards such as SEEK are the fastest growing source of job advertisements.



Like many other markets, the labour market does not operate in a particular physical location. The labour market relies on a variety of means of communication between the sellers of labour (potential employees) and the buyers of labour (employers). These allow employers to advertise vacancies in their businesses, and potential employees to find out about job opportunities. The operation of the labour market can involve the following:

- The simple placement of a sign in a shop or café window indicating that the owner has a job vacancy
- Advertisements in newspapers, advertising job vacancies. This method has declined significantly in recent years, with relatively few vacancies advertised in this way today.
- Online 'jobs boards' such as Seek, Adzuna and Australian JobSearch are the fastest growing source of job advertisements, updated every day. Employers pay a fee to advertise their vacancies, and in many cases it is possible to apply online for the vacancies advertised.
- Any person receiving **unemployment benefits** from government is usually required to take an active role in looking for work. The government pays independent agencies to assist unemployed people to find work. Many of these are run by community organisations such as MatchWorks, Salvation Army Employment Plus and CVGT Australia.

The price paid by the employer as a buyer of labour is known as a wage or salary. Wages and salaries are quite highly regulated in Australia. There is a **minimum wage** that must be paid to all employees over the age of 21 years. It is adjusted every year to account for rises in the **cost of living**. At 1 July 2016, this was set at $17.70 per hour, or $672.60 for a standard 38-hour working week.

5.3.4 Financial markets

Just as there are a number of markets for goods and services throughout the economy, there is also an important market for money. While households earn money in the form of wages and salaries, they will often choose to borrow money to buy larger items such as a car or a house. Businesses make money from selling goods and services to consumers, and generally try to make a **profit** by doing so. Sometimes part of that profit will be invested in expanding the business, but if the profits are not large enough to do this, the business may also want to borrow money to help it grow.

The functions of money

Money performs four very important functions in our market system:

1. *Medium of exchange* — Money allows us to exchange goods and services using a common means of exchange we all accept. Employees exchange their labour for money, and all businesses accept money in exchange for the goods and services they supply.
2. *Measure of value* — We use money to put a price on the goods and services we exchange. The price is a measure of what we believe the goods or services to be worth, when compared with other goods and services.
3. *Store of value* — We are able to save our money to spend at a later date.
4. *Standard of deferred payments* — Using money allows us to purchase goods and services on credit, with both buyer and seller knowing how much has to be paid at a later date.

FIGURE 4 Money performs important functions in our economy.



The working of financial markets

Just as all goods and services have a price, so too does money. The price of having access to money that actually belongs to someone else is known as **interest**. When you deposit your money in a bank account, the bank will pay you interest on your savings. This is usually based on a percentage figure. If you deposit $100 in your account, and the bank is paying three per cent per annum (per year), the bank will pay you three dollars in interest after a year. Interest is often calculated monthly or even daily, so that if you withdraw your money before the year is up, you will be paid a lesser amount to cover the time the bank had the use of your money. Banks then lend out the money that they have deposited with them to other consumers or to businesses. They will usually charge a higher rate of interest to borrowers than they pay to their depositors. This is how they make a profit.

FIGURE 5 A bank account allows us to earn interest, while the bank can lend the money deposited to other individuals and businesses.



If you have money to deposit, it is often worth shopping around to get the best rate of interest. Sometimes it is possible to earn a higher rate of interest if you agree to leave the money in the bank for a fixed period of time. This is known as a *term deposit*, because the money is deposited for a fixed *term*, or

period of time. When borrowing money you want to pay the lowest possible rate of interest, so it is also worthwhile to shop around a number of lenders to get the best deal.

Financial markets operate like any other market, with sellers wanting to charge the highest price they can for their goods and services, and buyers wanting to pay the lowest price they can. If you are selling the use of your money (i.e. you are a depositor), you want to get the best price (interest earnings) you can for allowing someone else to use that money. If you are buying the use of someone else's money (i.e. you are a borrower), you want to pay the lowest price (interest payments) you can.

5.3.5 Stock market

Like other markets, the stock market is simply a relationship between buyers and sellers. In this case it is shares in companies that are bought and sold. A share is a unit of ownership in a company. Large companies divide their ownership into thousands of shares, which can be bought and sold through the stock market, known in Australia as the Australian Securities Exchange (ASX). The ASX was formed in 1987 by amalgamating the six capital-city stock exchanges. Today the ASX is based in Sydney, but also has offices in Melbourne and Perth.

There are over 2000 companies listed on the ASX. They include large retailers such as Woolworths and Wesfarmers (owners of Coles); the four big banks — ANZ, CBA, NAB and Westpac; and large mining companies such as BHP Billiton and Rio Tinto. The value of shares can go up and down, depending on the demand for those shares. When a company reports that it has had a successful year, many people may want to buy shares in that company. If there are more people wanting to buy than to sell, the price tends to rise. If the company appears to not be performing well, there may be more shareholders wanting to sell their shares than there are buyers, so the price is likely to go down.

As the price of a company's shares goes up or down, so too does the value of a shareholder's investment. The value of most shares has tended to rise over the past 50 years or so, even though they can fluctuate in price on a daily or weekly basis. People who hold shares for long periods of time generally benefit from **capital growth**. The ownership of shares means you can also benefit when the company makes a profit, as profits can be distributed to shareholders as **dividends** or in extra shares.

FIGURE 6 Buying shares listed on the ASX enables you to become a shareholder in a variety of different businesses.



The buying and selling of shares is usually handled by stockbrokers. These are licensed agents who have access to the ASX, and who conduct share transactions on behalf of the general public in exchange for a small fee. Most stockbrokers will recommend that their clients buy shares in a variety of different companies. If you only buy shares in one company and that company experiences problems, the value of your shares can drop and you lose money. Buying shares in a number of different companies reduces the risk, and you have a better chance of having some shares that will perform well. You have probably heard the saying 'don't put all your eggs in one basket', which means you should spread your risks among a number of ventures.

FIGURE 7 Stockbrokers buy and sell shares on behalf of their clients.



5.3 Activities

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

Remember

1. Describe three examples of retail markets.
2. What is the ASX?
3. Define each of the following in your own words:
   (a) unemployment benefits
   (b) interest
   (c) award
   (d) capital growth
   (e) enterprise bargaining
   (f) dividend.

Explain

4. What is being bought and sold on the labour market?
5. What is being bought and sold on financial markets?
6. Explain each of the four functions of money.

Discover

7. Use online resources to investigate a 'job board' website and search for each of the following jobs in your local area: nurse, bricklayer, hairdresser, taxi driver.
   (a) How many vacancies were available for each type of job?
   (b) What sort of information is provided about each job?
   (c) Explain the process for applying online for one of these jobs.
8. Use the **Fair Work** weblink in the Resources tab to answer the following questions.
   (a) What is the current rate of the minimum wage for workers over the age of 21?
   (b) By how much has the minimum wage increased from the previous year?

Think

9. Watch the **Share market basics** eLesson in the Resources tab and then answer the following questions:
   (a) What are you buying when you buy shares?
   (b) What would be the situation if you owned 100 per cent of the shares in a company?
   (c) What is the role of a stockbroker?
   (d) When is the stock market report published?
   (e) Copy the following table into your workbook and explain the meaning of each term as found in the stock market report.

Stock		
Close		
Move		
Turnover (100s)		
Quotation	Buy	
	Sell	
52 week	High	
	Low	

10. Examine the stock market report in a daily newspaper, and answer the following:
    (a) Identify two companies that experienced an increase in share price in the previous day's trading.
    (b) By how much did each increase in price?
    (c) How many shares were bought and sold for each company?
    (d) What is the highest and lowest price each company's shares reached during the last year?
    (e) Is the current price closer to the highest or lowest experienced during the past year?
    (f) From what you can see of the shares in these two companies, do you think they would be good value to buy right now? Explain your answer.

learnon RESOURCES — ONLINE ONLY

Explore more with this weblink: Fair Work

Watch this eLesson: Share market basics (eles-0256) and complete accompanying worksheet 5.1 'Share market basics'

5.4 Key economic questions for business

5.4.1 Market forces

A key factor in any market is the price charged for the goods and services sold in that market. Sellers will generally decide how much they wish to charge for the goods or services they are supplying, but they cannot do this in isolation. They must take into account the price that consumers are willing to pay. If there are a large number of sellers in any market, prices will tend to be lower because these sellers have to compete with each other to attract customers. When prices are influenced by the interaction between buyers and sellers, they are said to be influenced by *market forces*. These market forces can also have an impact on what goods and services producers choose to supply and the methods they choose to produce these goods and services. Market forces can also determine who the ultimate buyers of these goods and services will be.

5.4.2 Influencing prices

The prices paid for goods and services can be influenced by both sellers and buyers. Sellers can adopt a number of strategies to determine prices, including:

- applying a retail price recommended by the manufacturer of the goods being sold. Although it is illegal for a manufacturer to enforce such a price, it can provide a useful guide for the seller.
- following the prices set by other sellers in the same market. This may involve matching those prices, or setting a slightly lower price to attempt to attract more customers.
- adding a **percentage mark-up** to the cost of the goods to the business. The seller may calculate a sale price by adding a fixed percentage to the price that they paid for the goods. The selling price needs to be enough to help cover all the business expenses, and also provide a profit.

FIGURE 1 Sellers must set a price that will not turn customers away.



Whatever method is used, it is a general rule in all markets that sellers will attempt to charge as high a price as possible, while buyers will look for the lowest price they can find. A seller who attempts to charge too high a price will find that buyers will not buy from their business. The seller must cover all of his or her business expenses and make a reasonable profit, but cannot afford to charge too high a price if competitors are selling the same product at a lower price. A buyer who expects to pay too low a price may find that there are no sellers willing to sell at that rate, so has to be realistic about what constitutes a fair price.

FIGURE 2 Buyers can easily compare prices at a fruit and vegetable market.



A good example of the way in which markets operate can be found at large fruit and vegetable markets such as Paddy's Markets in Sydney, or the Queen Victoria Market in Melbourne. In these marketplaces, there are large numbers of different fruit and vegetable stalls, all competing with each other. Sellers can see what their competitors are charging for their stock, while buyers can move easily around the different stalls to compare the quality and prices of produce on sale.

We can see how the interaction between buyers and sellers can influence prices by taking an example from one of these markets. Imagine each fruit and vegetable stall sells apples, and most sellers agree that if they could charge

$10 per kg, they would happily supply 100 kg of apples for sale each day. If they could only charge $5 per kg, they would only be prepared to provide 50 kg a day. If they could only charge $2 per kg, they would only supply 20 kg for sale, and concentrate instead on selling other fruit and vegetables that would make a bigger profit.

Buyers have a different point of view. They want to purchase at the cheapest price possible. If apples cost $10 per kg, only a small number of people would buy them, and then only in small quantities — a total of 20 kg on any given day. If the price dropped to $8 per kg, buyers might be prepared to purchase a total of 30 kg a day. If the price fell to $6, they might buy 40 kg, at $4 they would buy 60 kg, and at $2 they would buy 80 kg.

How will the interaction of the different preferences of buyers and sellers help produce a price and a quantity for sale that is acceptable to both groups? We can start to answer this by putting the above data into tables.

TABLE 1 Sellers' preferences

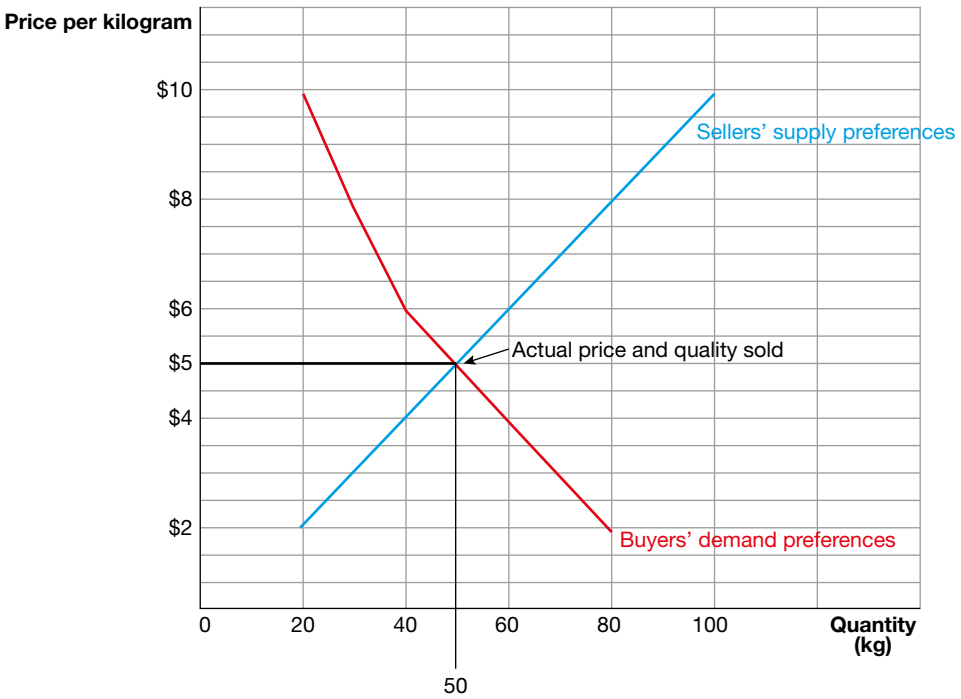
Price per kg	Quantity supplied
$2	20 kg
$5	50 kg
$10	100 kg

TABLE 2 Buyers' preferences

Price per kg	Quantity purchased
$10	20 kg
$8	30 kg
$6	40 kg
$4	60 kg
$2	80 kg

The data from these tables can now be entered into a graph. If we place the different prices along the vertical axis, and the different quantities along the horizontal axis, we can plot the preferences of both buyers and sellers on the graph (see figure 3 below). The sellers' preferences are shown by the blue line, while the buyers' preferences are shown by the red line. The point at which the two lines intersect will give us the price and quantity at which the preferences of both buyers and sellers are matched.

FIGURE 3 Supply and demand for apples



The market for apples will settle at a point where 50 kg of apples will be sold each day at a price of $5 per kg. Sellers know that if they have 50 kg of apples in stock on any given day, they will be able to sell them all at this price. If one seller decides to sell below this price, he or she will be likely to sell out his or her stock more quickly, but will make a smaller profit. If he or she wants to cover costs and make a profit, it is unlikely that the lower price will be maintained for long. A seller attempting to sell above the price of $5 per kg will be likely to sell less and so will be forced to bring the price down.

The interaction between the different quantities sellers are willing to supply and buyers are likely to demand at various prices can have an impact on a range of markets for many different goods and services.

5.4.3 The key economic questions

The aim of any economy is to provide goods and services to consumers in as efficient a manner as possible. We would expect consumers to buy goods and services that will satisfy their needs and wants, and that producers will want to make a profit by selling them those goods and services. In order for both consumers and producers to be satisfied, the economy has to answer three basic questions:

1. What goods and services should be produced, and in what quantities?
2. What methods should be used to provide those goods and services?
3. To whom should those goods and services be distributed?

Because the Australian economy operates largely as a market system, we would expect the interaction between buyers and sellers in a variety of different markets to answer these questions.

What to produce?

How does our market system help producers to decide exactly what goods and services to supply, and in what quantities to supply them? Up to a point, the market system operates largely by trial and error. A producer may make certain goods or services available to consumers and hope that these will satisfy the needs and wants of those consumers. If the goods or services fail to sell, the producer will probably go out of business. In Australia about 40 per cent of all businesses fail during their first four years – over half of them in their first year. This means that a lot of potential producers are entering the marketplace, but not selling the goods or services necessary to satisfy the needs and wants of consumers.

The market largely determines which businesses are likely to be successful. Some factors that can influence markets include:

- *established habits and experience*. Producers know from people's existing behaviour that there will always be a demand for certain types of goods or services. Families need to buy food on a regular basis, so a supermarket in a new suburb may well be successful. In any new shopping centre, businesses such as cafés and hairdressers will probably meet a demand from consumers if there are no similar businesses nearby. If a second or third café or hairdressing salon is established in the same shopping centre, the success of these businesses will depend on whether the level of demand from consumers is sufficient for all of them to survive. If not, then one or more will close. The operation of the market for those goods and services will determine how many similar businesses can survive in the same marketplace.
- *changing tastes and preferences*. An example of this is the market for Australian-made cars. For many years, family sedans and wagons such as the Holden Commodore and Ford Falcon were Australia's best selling cars. Car manufacturing was so successful that other manufacturers such as Toyota also set up factories in Australia. Over time, consumers' preferences have changed, and smaller imported cars have been preferred in the marketplace. This has led to a decline in car manufacturing in Australia to the point that it will cease altogether by 2018. Changing consumer tastes and preferences have influenced what is produced, and in what quantities.

FIGURE 4 Changes in the market will see the closure of the three remaining car manufacturing businesses in Australia by 2018.



- *marketing and advertising*. Any business introducing a new product or service into the market needs to ensure that consumers are aware of its availability. Television, newspaper and radio advertising have been used extensively for many years to persuade consumers to buy particular goods and services. Online advertising through search engines such as Google has increased dramatically, and today an online presence is essential for almost any business.
- *technological change*. Over the past twenty years, as a society we have become very enthusiastic about new technology. Whenever a new model iPhone is released into the marketplace, consumers queue up outside their nearest Apple store to be one of the first to buy it. Consumers monitor new developments in technology, and many will quickly replace outdated products with newer models. Producers can be quite confident that improvements in technology will quickly attract buyers to new goods and services.

FIGURE 5 Improvements in technology soon attract consumers.



How to produce?

The production of goods and services generally involves a combination of labour, equipment and raw materials. These are known as **inputs**, and any production process will involve different types and combinations of these three inputs. A factory producing frozen vegetables will be set up with different types of equipment, such as the machines that chop the vegetables, pack and seal them in plastic packaging, and freeze them. The same factory will employ workers to control those machines, and perhaps carry out some other tasks, such as management of the process. The raw materials are the vegetables that are processed during production.

At different times, the managers of the factory will have to make decisions about the best methods of producing their final product, and the operation of the market can influence these decisions. Competition from rival frozen vegetable companies will mean that the business will wish to keep its costs as low as possible. If new equipment becomes available that works more efficiently, it may be worthwhile changing the methods of production to take advantage of this new equipment.

Over the past fifty years or so, the use of robotics-based equipment has increased dramatically in most factory production. In most cases it enables a factory to employ fewer workers, saving in wages costs and allowing the prices of products to be kept at a level where they can compete in the marketplace. When one business in a particular market is able to cut costs by changing its methods of production, usually other businesses in the same market will make changes also, in order to remain competitive.

FIGURE 6 The use of robotics has changed the way manufacturers produce goods.



For whom to produce?

A business owner will make some decisions about who he or she intends to supply with goods and services. The market can also influence who receives these goods and services because purchasing will be affected by the level of prices when compared with the level of income of consumers. As seen in our circular flow diagram in subtopic 5.2, household income can consist of wages and some government welfare payments. Households can also gain access to credit for the purchase of some goods and services. Taxes and desired levels of savings result in a reduced amount available for spending.

The amount actually available for households to spend is known as **disposable income**. All consumers make decisions about what to buy by comparing their disposable income with the prices they will have to pay for the goods and services they want. The prices of different products can influence who buys them. Luxury motor vehicles cost much more to produce, but the manufacturers are not attempting to sell to the mass market. Their product is aimed at those with a high enough level of disposable income to be able to afford such a vehicle. Fast food restaurants such as McDonald's and KFC provide relatively cheap meals designed to appeal to large numbers of consumers. Other, more exclusive restaurants, charging $100 or $200 per meal, are producing for a completely different market.

FIGURE 7 Luxury motor vehicles cost much more to produce, but the manufacturers are not attempting to sell to the mass market.



5.4 Activities

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

Remember

1. Define each the following in your own words:
   (a) percentage mark-up
   (b) disposable income.
2. Outline two methods a business might use to determine the prices for the goods or services it sells.
3. What are the three different types of inputs that go into any production process?

Explain

4. Explain two factors that could influence which goods and services businesses decide to produce.
5. How do businesses aim to keep their production costs as low as possible?
6. Explain how markets can influence to whom different goods and services are distributed.

Think

7. In a fruit and vegetable market, bananas are subject to the following buyer and seller preferences.
   - Sellers agree that if they could charge $14 per kg, they would happily supply 140 kg of bananas for sale each day. If they could only charge $7 per kg, they would only provide 70 kg a day. If they can only charge $3 per kg, they would only supply 30 kg for sale.
   - If bananas cost $14 per kg, buyers would demand a total of 30 kg in any given day. If the price dropped to $10 per kg, buyers might be prepared to buy 40 kg a day. If the price fell to $8, buyers might purchase 60 kg, at $6 they would buy 80 kg, and at $4 they would buy 100 kg.

   (a) Draw up a table showing the different quantities of bananas that sellers would be prepared to supply at each price level.
   (b) Draw up a table showing the quantities of bananas that consumers would demand at each price level.
   (c) Use the data from these tables to construct a graph that shows both sellers' supply preferences, and consumers' demand preferences.
   (d) What is the price per kilogram at which buyers and sellers preferences would be matched, and what quantity would be sold at that price?

5.5 Government involvement in the market

5.5.1 Law and justice

Governments at all levels involve themselves in the market in a variety of ways. Politicians, commentators and the media often refer to the issue of 'economic management' as a responsibility of government. It is expected that government will take action to encourage growth in the economy and to avoid high levels of unemployment. Government activity within a market economy goes well beyond these aims. The successful operation of markets often depends on the level of government involvement.

FIGURE 1 Australian Consumer Law protects consumers from unscrupulous businesses that could try to cheat them.



Government provides a legal framework that allows the buying and selling in the marketplace to occur within a set of rules that should be fair to all participants. Australian Consumer Law protects consumers from unscrupulous businesses that could try to cheat them. Laws relating to the enforcement of legal contracts ensure that all buyers and sellers will be able to enforce their rights before the courts. The criminal law aims to provide protection from threats and intimidation in any business dealings. Our court system gives everyone the right to take legal action to enforce their rights.

5.5.2 Welfare

Government provides financial and other support to the disadvantaged in the community. The aged pension supports those who are beyond retirement age and no longer working. Unemployment benefits are designed to support those who cannot find work. The disability support pension assists those who are unable to gain employment because of physical or mental disability. Not only are welfare payments designed to provide fairness and support to those who need help, but they can also have a positive economic effect on markets. Those receiving welfare are likely to spend most of their money and so their spending adds to the circular flow of income throughout the economy. Businesses gain revenue from selling additional goods and services. This can in turn allow them to employ more people, who also spend their money buying goods and services.

FIGURE 2 Welfare payments help those who are not able to earn an income.



5.5.3 Provision of infrastructure

Government has a major responsibility for providing the **infrastructure** for the economy. This includes roads, railways and ports, and has traditionally included other means of communication, as well as energy supplies. Roads and railways are essential if goods are to be transported from place of manufacture to the shops where they are sold. Ports are not only required to allow for the import and export of goods in and out of Australia, but also for the transport of goods within Australia. Tasmania relies on shipping across Bass Strait to bring goods from mainland Australia, and to transport goods produced within the state to consumers in other states.

The government provides a postal service that supports correspondence between businesses, as well as the delivery of goods through a parcel delivery service. The telephone service was originally provided by government before Telstra was **privatised** and other providers were permitted to enter the market for telephone services. Even today, the national broadband network is an important infrastructure project being funded by government. Markets cannot operate without efficient systems of communication between consumers and businesses.

Traditionally, energy supplies such as electricity and gas also have been provided by government. These are not only essential for the domestic uses we are all accustomed to, but also for the functioning of businesses. In some states of Australia, electricity and gas supplies have been privatised and are now run by businesses rather than by government. Even where this has occurred, the original infrastructure was usually built by government before being sold to the business sector.

FIGURE 3 Government provides infrastructure to enable markets to function more efficiently.



5.5.4 Economic management

Government has a responsibility for ensuring that Australia experiences a sustainable level of economic growth from year to year. Growth is important because as the population increases, it is necessary to ensure there are sufficient goods and services for all consumers to buy. There also needs to be an increase in the number of jobs available to provide employment for a growing population.

FIGURE 4 Governments will use a variety of statistics to assist with decision making.



Governments can encourage economic growth by spending money, injecting more into the circular flow. This can provide more for consumers to spend, encouraging business to increase the supply of goods and services, and thus provide more job opportunities. However, if too much money is injected into the economy there may not be enough goods and services readily available to meet the increased demand. This is likely to force prices up, leading to **inflation**.

When this occurs, government will usually cut back on spending, which removes the excess money from the economy, and hopefully slows down the rise in prices. Governments use their annual **budgets** to influence the flow of money in the economy. They will aim to encourage growth, while trying to avoid the risk of inflation. Governments can use statistics gathered by the **Australian Bureau of Statistics** to assist them in their decision making. These statistics can include figures relating to the levels of employment in the economy, as well as those tracking price rises.

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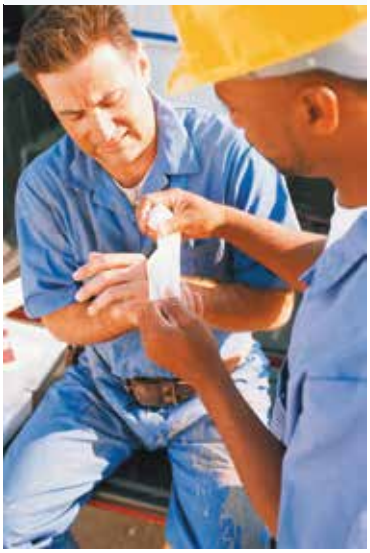
Explore more with this weblink: Australian Bureau of Statistics

5.5.5 Wages and employee relations

As we have discussed, there is a market for labour in which workers offer their skills and experience for sale to businesses and businesses buy that labour by paying wages and salaries. In order to ensure that the labour market functions fairly, it is regulated by laws passed by governments. The major law dealing with wages and working conditions in Australia is the *Fair Work Act*, a federal government law.

State governments provide regulations to ensure safe workplaces through Work Health and Safety laws. Both federal and state governments have also sought to prevent discrimination in the workplace by passing laws supporting equal employment opportunity. These make it illegal to discriminate against someone in any workplace on the basis of gender, race, age or ethnicity.

FIGURE 5 Work Health and Safety laws are designed to prevent injuries at work.



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Explore more with this weblink: Fair Work

5.5.6 Provision of goods and services

Governments can also become involved in the marketplace as actual suppliers of goods and services. Every state and territory government provides an education system. In addition, state governments provide hospitals and other health services. Although many of these services are also provided by other organisations, such as private schools and private hospitals, it is considered a responsibility of government to ensure that everyone has access to education and health services. Ambulance services and fire fighting and emergency services are similarly considered to be the responsibility of state governments.

FIGURE 6 It is a responsibility of government to provide hospitals and health services.



Public transport systems also are mostly provided by state governments, and those public transport systems that are provided by non-government businesses usually receive large amounts of money from government to assist in their running. Public transport does not make a profit, so no business would want to run it without such funding. Further, without this government assistance, for public transport to be profitable fares would have to be so expensive that many people could not afford to use it. Public transport is recognised as an essential service, so governments either provide it themselves or pay businesses to provide it at a reasonable price.

5.5.7 Planning and the environment

State governments and local councils have powers to control the type of buildings and other developments occurring within their borders. Governments establish building standards to ensure that all buildings are structurally sound, and not likely to fall down or cause a hazard in any other way. Anyone wishing to build a house or other structure on vacant land must gain a building approval. This is to ensure that the building conforms with certain standards. Councils and the state government can also determine whether or not a particular type of building is

appropriate in a particular area. For example, it would usually be considered inappropriate to build a large factory in the middle of a residential area.

Since the early 1970s, state governments have also introduced laws to protect the environment. These place restrictions on both businesses and individuals in relation to what they can release into the atmosphere and waterways. These laws can affect markets because they can increase costs for some businesses. Businesses that may once have simply released waste material into a creek, river or drain now have to dispose of it in an environmentally responsible manner. Smoke and fumes have to be properly filtered before being released into the atmosphere. Motor vehicles have emission controls to limit the levels of harmful chemicals in exhaust fumes.

FIGURE 7 Governments have introduced laws to prevent businesses from polluting the environment.



Environmental laws have also created new business opportunities, with waste management and recycling businesses providing services for a variety of different customers. As with most government involvement in the economy, while some businesses may appear to be disadvantaged, opportunities are often created for new and different businesses to grow.

5.5.8 International trade policies

Governments have the power to regulate what comes into and goes out of the country. Customs and quarantine laws can have an influence on the markets for a number of products. Australia had a ban on the importation of apples from New Zealand for many years because of fears that these apples carry a disease known as fire blight. Such a regulation would obviously have an impact on the market for apples throughout Australia.

FIGURE 8 A reduction in tariffs has increased the quantity of imported clothing sold in Australia.



Traditionally governments have also attempted to protect goods produced by local industries by imposing special taxes on similar goods imported from other countries. These taxes are known as **tariffs**. The clothing and textile industries were once protected in this way. In the early 1980s there was a 28 per cent tariff on all imported clothing. This made these imported goods more expensive than locally produced clothing, thus encouraging consumers to buy the Australian-manufactured product. Over the next thirty years this tariff was reduced, making imported clothing much cheaper than the local product.

As a result of reduced tariffs, many local clothing manufacturers have been unable to compete with cheaper imported clothing and consequently have had to close. While this has been a negative for the Australian clothing industry, the positive impact for consumers is that clothing is much cheaper as a result of the reduction in tariffs. Since the 1980s Australian governments have also negotiated trade agreements with other countries. We agree to reduce tariffs on imports from those countries, and in return they agree to reduce tariffs on goods they import from us. Although this can make it difficult for some local manufacturers who have to compete against cheaper imported products, it can be good for our export industries and for consumers paying lower prices.

5.5.9 Immigration policies

As well as controlling the goods that come into and go out of Australia, governments can regulate the movement of people. This particularly applies to immigration into the country. Immigration allows the population to rise faster than would occur through natural increases in the birth rate. Rapid population increases can provide more consumers for businesses to supply with goods and services. Further, new arrivals add to the workforce, providing new employees with new skills for expanding businesses.

Governments can also affect the market for particular goods and services through decisions made about who is encouraged to migrate here. If particular skills are required in certain industries and there are not enough people in Australia who have the required qualifications, governments can allow employers to bring in migrants with the necessary skills. This can have an impact on the labour market in that industry. Australia has also become a major provider of tertiary education for our region. Encouraging students to come here from Asian and Pacific Island countries provides additional income for our universities, as these international students pay fees to study here.

FIGURE 9 Australia has become a major provider of tertiary education for fee-paying students from Asian countries.



5.5 Activities

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

Remember

1. Define each of the following in your own words:
   (a) infrastructure
   (b) inflation
   (c) government budget.
2. What is the purpose of Australian Consumer Law?
3. Why does government usually have to provide funding for public transport to operate?

Explain

4. How can government welfare payments have an impact on the market for goods and services?
5. Explain what happens when a service provided by government is privatised.
6. How can a government budget influence economic growth?
7. Why might it be important for government to be involved in the regulation of wages and working conditions for employees?
8. What effect might environmental laws have on the costs experienced by businesses in managing waste from their production processes?
9. Explain two ways in which government immigration policies can have an influence on markets.

Discover

10. Use the **Australian Bureau of Statistics** weblink in the Resources tab to complete the following:
    (a) What is the current estimated population of Australia?
    (b) Explain how this estimate is calculated.
    (c) Select two headlines or media releases, and for each one, describe:
        (i) three significant facts or figures included in the report
        (ii) the trends or changes that have occurred in recent years in the facts or figures reported.

5.6 SkillBuilder: Contesting and debating ideas

5.6.1 Tell me

When you open a newspaper or watch the news on television, you are exposed to many economic and business issues. These issues are complex and diverse in nature. A study of such issues may require you to examine a range of things including:

- events — such as the Global Financial Crisis (GFC)
- individuals — such as famous entrepreneurs or world leaders

- policies — of Australian governments or overseas governments
- business decisions — of either Australian or overseas businesses
- agreements — such as free trade agreements between Australia and other countries.

When studying such issues, it is important to be able to *contest* and *debate* different ideas related to each issue. These important skills are defined as:

- *contesting* — coming up with opposing ideas on an issue
- *debating* — the process of communicating about these opposing ideas with others.

In order to *contest* an idea, you must examine an issue from many different perspectives, not just from your own point of view. You must also consider the impacts of an issue on all stakeholders.

For example, if a business was considering moving their factories from Australia to Indonesia, you would have to consider the impact of this decision on each of the following stakeholders:

- owners/shareholders
- employees — both in Australia and Indonesia
- suppliers
- the Australian federal government
- the Indonesian government
- consumers.

Each of the above stakeholders may have a different view on the planned relocation. They may engage in *debate* in order to *contest* or challenge the perspective of the other stakeholders.

As a student of economics and business, it is important for you to be able to *contest* and *debate* issues and to express your own ideas clearly, in written, verbal and multimedia form.

5.6.2 Show me

Read the following case study.

CASE STUDY

Car manufacturing in Australia

For over ninety years cars have been manufactured in Australia. The car manufacturing industry has been an important source of employment for Australian people and has contributed to Australia's export earnings. By the end of 2017, Toyota, Holden and Ford will cease production in Australia.

There are two main perspectives on this issue:

- Perspective 1: Some people have argued that the federal government should have provided more money to the car manufacturers to help keep them in Australia. These people worry that many thousands of jobs will be lost and that the suppliers of these businesses will also be affected.
- Perspective 2: Others argue that the car manufacturers in Australia are inefficient and therefore should not be propped up (supported) by the government. These people believe that the high production costs in Australia mean that it will never be viable to produce cars in Australia.

Consider the facts in table 1.

TABLE 1 Key facts relating to the exit of car manufacturers from Australia

Toyota	Holden	Ford
• Started manufacturing in Australia in 1963 • Will close its Australian operations by the end of 2017 • Employs more than 4000 people Australia-wide	• Began as an Australian saddlery business in 1856 • Will close its Australian operations in 2017 • Almost 3000 people in Australia will lose their jobs	• Opened in Australia in 1925 • Will close its Australian operations in 2016 • Closure of its operations to cost 1200 jobs in Australia

Source: Chris Uhlmann and Emma Griffiths, *Car industry funding*, ABC News, 10 March 2015.

The case study relates to a *contested* business and economic issue. Different stakeholders involved in this issue have very different perspectives. The two major political parties in Australia also engaged in lengthy *debate* in relation to this issue.

The following questions allow for a close examination of the case study so that issues can be contested and debated.

1. What are the main issues/ideas relating to this economic or business issue?
   - Why are car manufacturers choosing to close their Australian operations?
   - Should the Australian Government provide assistance to the car manufacturers?
   - How will different stakeholders be affected if the Australian operations are closed?
2. Who are the major stakeholders involved in this issue?
   - Employees of Toyota, Holden and Ford
   - Shareholders of Toyota, Holden and Ford
   - Consumers
   - The federal government
   - Suppliers of parts and materials
3. What are the interests/perspectives of each of the stakeholders involved in this issue?

Stakeholder	Interest/perspective of this stakeholder
Employees	The main interest of employees is job security and well-paying, challenging work. They want production to stay in Australia.
Shareholders	The main interest of shareholders is maximising the return on their investment. Therefore, they may be happy about the closures if they result in increased profit for the business.
Consumers	Consumers want good-quality and reasonably priced cars. They may support the closures if it will result in cheaper cars.
The federal government	The federal government wants businesses to be competitive so would not want to keep providing financial support to inefficient businesses. However, the government would be very concerned about the job losses that would result from the closures.
Suppliers	Suppliers want to keep their customers, and the closures will force them to find new customers or move into new markets.

4. What is your view on this issue?
   - Consider your view on the issue. Try to consider all the facts that are available before deciding on your view.
5. How does your view compare with the views of others?
   - Compare your view on the issue with that of others. Are there any stakeholders who share or oppose your view?
6. How can you communicate your perspective to other people interested in this issue?
   - It is often useful to debate your ideas/perspectives with friends, family members or as a whole class. Consider whether or not your perspective is influenced by the opinions of others.

5.6.3 Let me do it

Using the example above as a model, select another economic or business issue to investigate. Some examples of issues that you may consider include:

- Australia's involvement in a free trade agreement
- Penalty rates — are they still necessary in our current economy?
- Has technology ruined our 'work–life balance'?

- Any other economic or business issue you are interested in.

In relation to your chosen economic or business issue, answer the following questions (see the previous example if you are unsure how to answer any of the questions):

1. What are the main issues/ideas relating to your chosen economic or business issue?
2. Who are the major stakeholders involved in this issue?
3. What are the interests/perspectives of each of the stakeholders involved in this issue?
4. What is your view on this issue?
5. How does your view compare with the views of others?
6. How can you communicate your perspective to other people interested in this issue?

Once you have conducted your research, you could communicate your findings in a number of ways:

- Conduct a class debate so that you and your classmates can challenge and contest each other's ideas.
- Prepare a written report which examines your perspective and other perspectives on the issue.
- Use a multimedia platform (such as iMovie) to create a Q and A style program. This would allow for debate and contesting of ideas.

5.7 Review

5.7.1 Summary

In Australia we live in a market economy. We rely on markets to provide us with the goods and services we require to satisfy our needs and wants. All markets consist of buyers and sellers, who exchange goods and services for money.

- Consumers satisfy their needs and wants by working to earn money, and then buying goods and services from businesses that produce those goods and services.
- The basic circular flow of money is between the household sector and the business sector.
- Financial intermediaries, government and the overseas sector are all involved in the operation of the market system in Australia.
- There are a large number of different types of markets that make up the Australian economy. These include the retail market, the labour market, financial markets and the stock market.
- The interaction between buyers and sellers in the marketplace can influence prices charged for goods and services.
- Markets can also help determine what goods should be produced and in what quantities; how those goods and services are produced; and to whom they are distributed.
- Government performs a number of roles in the Australian market system including:
  - the provision of law and justice, welfare, and infrastructure
  - economic management
  - regulation of wages and employment conditions
  - provision of some goods and services
  - management of planning and the environment
  - regulation of international trade
  - setting of immigration policies and targets.

5.7.2 Reflect

Fresh 'n' Fruity is a small company supplying fresh fruit and vegetables for home delivery. Customers place their orders online, and orders are delivered within 48 hours. The company employs packers to pack each order and van drivers to deliver the goods, as well as office staff to process the orders and forward them to the warehouse. It also employs a website manager who ensures that all prices are regularly updated and

displayed on the company website. Home delivery of fresh fruit and vegetables is a growing market, with an increasing number of suppliers. They all display their prices on their websites, so competition is very strong. Complete the following tasks:

1. What type of market is this business involved in?
2. The business wishes to expand its warehouse. How could it find the money to do this?
3. Explain two methods that could be used to determine the prices of the goods sold.
4. How can the operation of the market help this company to decide what goods to provide (i.e. what to produce)?
5. What factors might influence the company in deciding their methods of operation (i.e. how to produce)?
6. What factors in this marketplace influence to whom the business sells its fruit and vegetables?
7. Identify and explain three ways in which this business might by affected by the activities of government.

TOPIC 6
Rights and responsibilities in the marketplace

6.1 Overview

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

6.1.1 Protecting consumers

Have you ever been 'ripped off' by a shop or other business providing a service? Have you ever been frustrated because something you want is only available at one store and the price is too high? As consumers, we would like to think we are going to get a fair deal every time we make a purchase, but this doesn't always happen. Unfortunately, some business owners and employees fail the fairness test when it comes to serving their customers.

As we have seen in subtopic 5.5, one of the important functions of government in the marketplace is to provide a legal and justice system so that buying and selling occurs within a set of rules that is fair to all participants. In Australia, federal and state parliaments have passed a number of laws that are designed to protect consumers from being exploited by unscrupulous businesses. Laws have also been passed to ensure that businesses can compete fairly with each other. If there is a large number of businesses competing for customers in any market, those customers are more likely to get a fair deal.

The current law that regulates competition and the rights of consumers in the marketplace is the *Competition and Consumer Act*. This law was passed by the federal parliament in 2010, and came into operation on 1 January 2011. This Act replaced a number of previous federal, state and territory laws, and introduced a consistent Australian Consumer Law that now applies in every state and territory.

In order to make sure that businesses comply with the *Competition and Consumer Act*, there are a number of different government bodies that have the power to enforce the law. These include the Australian Competition and Consumer Commission (ACCC), as well as a number of state and territory bodies, such as Consumer Affairs Victoria, New South Wales Fair Trading, South Australia's Consumer and Business Services, and Fair Trading or Consumer Protection authorities in other states and territories.

FIGURE 1 Providing choice, friendly service and good value to customers will help a business owner conform to the Australian Consumer Law.



If a consumer believes that a business has breached the Australian Consumer Law, these government bodies can assist in resolving the dispute. They can also intervene if a business owner believes that another business has been acting in a way that could destroy fair competition in the market.

Starter questions

1. One of the biggest problems experienced by many consumers is 'bill shock' from mobile phone contracts.
   (a) Why do you think this happens?
   (b) What steps do you, your friends and family take to avoid this problem?
2. Used car businesses have a reputation for being dishonest and covering up faults in cars they sell. Do you think this is a fair assessment of most dealers? Give reasons for your response.
3. As a class, brainstorm examples of when you believe you have been 'ripped off', or when someone you know believes they have received a poor deal when purchasing goods or services. With the assistance of your teacher, compile a table of the different types of businesses involved, and the action that was taken to solve the problem.
4. Not all businesses are dishonest. Compile a list of local businesses that you believe provide good quality products, good service, and so on. For each of these businesses, identify the features that encourage you to trust them.

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Watch this eLesson: Consumer rights — services (eles-2529)

6.2 Legal protection of consumer rights

6.2.1 Fair transactions

As a consumer, you can often be at a disadvantage when it comes to buying goods and services. Even though you may have a good idea of what you wish to buy, you will often rely on the advice of a sales-person to help you with your purchase. You want to be assured that this person will be showing appropriate respect for your interests, not trying to 'con' you. The Australian Consumer Law aims to make sure that every **transaction** between buyers and sellers is fair to both parties.

6.2.2 Honesty is the best policy

The Australian Consumer Law makes it clear that sellers are expected to advertise and promote their products honestly. It is illegal to do anything that might mislead the customer, or trick them into buying something they might not have bought if they had known all the facts. The following are some examples of behaviour that is illegal under this law.

1. *Misleading or deceptive conduct* — Advertisements must not use words that make claims about a product that are not true. This includes claims about low prices, or goods being 'on special'.
2. *Unconscionable conduct* — This is any business conduct that is unfair or unreasonable.

3. *Offering gifts and prizes in connection with the supply of goods and services and then not providing them.*
4. *Conduct that may mislead the public* — for example, using a brand name similar to a well-known brand, or using an Australian-made logo when the product was made overseas.
5. *Bait advertising* — This refers to a business attempting to attract customers by advertising some products at lower prices, but stocking very few of those products. When the advertised products quickly run out, customers are then directed to higher priced items.
6. *Referral selling* — This occurs when a business offers a customer a special deal or special price if the customer refers other potential customers to the seller and those customers make a purchase.

FIGURE 1 Any discounts, special offers or specials offered by sellers must be genuine.



6.2.3 Treating consumers fairly

Consumers wish to satisfy their needs and wants, and when they go looking for goods and services they are usually eager to make a purchase. This means that an unscrupulous seller could take advantage of them. Consumer law makes it compulsory for sellers to provide all available information to consumers, and to ensure that buyers and sellers have equal rights in any purchase. Some of these rights are:

1. Any contract or agreement that a consumer enters must be fair and balanced. It must be written in clear language that is easy to understand. It should not contain any provisions that allow the seller to change the conditions of the agreement without informing the buyer. For example, it would be illegal for a mobile phone contract to allow the service provider to make changes to their prices and charges without notifying the customer. However, the consumer is responsible for reading the contract carefully to make sure they understand it.
2. A consumer has the right to ask for a receipt for any transaction, no matter how small the amount involved. For all transactions over $75, a receipt is compulsory.
3. Anyone attempting to sell goods or services door-to-door or over the phone can only do so between 9 am and 6 pm on weekdays, and from 9 am to 5 pm on Saturdays. These types of sales are not permitted on Sundays or public holidays. This rule does not apply when consumers have agreed in advance to an appointment time for the seller to visit their home. A salesperson must leave immediately if requested and must not contact the consumer again for at least thirty days (with that same product). If a consumer agrees to purchase goods or services from a door-to-door salesperson, or over the phone, the Australian Consumer Law allows for a ten-day 'cooling off period'. This means that the consumer has the right to cancel the agreement within ten days, without having to pay anything.

FIGURE 2 A door-to-door salesperson must leave immediately if requested.



4. **Lay-by** agreements must be in writing and must be expressed in plain language that is clear and easy to understand. The agreement must include all terms and conditions.
5. Businesses that display 'No refunds' signs are breaking the law. If a product is faulty or is unfit for its usual purpose a refund must be offered to the buyer. A business may refuse to provide a refund if the consumer has simply changed his or her mind and there is nothing wrong with the product.

6.2.4 Guarantees for consumers

You may have heard of guarantees or warranties offered by manufacturers or sellers. These are promises that if anything goes wrong with the product, it will be replaced or repaired free of charge. Even if a manufacturer or seller does not provide such a written warranty, the Australian Consumer Law makes it compulsory for all suppliers and manufacturers to automatically provide a basic set of guarantees on all products they sell to consumers. A business cannot remove consumer rights under these guarantees, but they can improve these basic rights if they wish to do so. The Australian Consumer Law provides the following guaranteed rights:

- The consumer will gain clear legal ownership to goods; that is, the seller actually owns the goods being sold and can legally transfer ownership to the buyer.
- Goods must match any sample, demonstration model or description provided to the buyer.
- Goods must be of acceptable quality; that is, they must be safe, long-lasting, free from defects, acceptable in appearance and finish, and do all the things that the goods are normally used for. For example, if a consumer purchased a pair of jeans and found some of the stitching was coming apart, the jeans would not be considered of acceptable quality.
- Products must be fit for a particular purpose. Fitness of purpose means the product will perform as the instructions or advertisements imply. A bottle of shampoo that failed to properly wash hair would be a breach of this condition.
- Repairs and spare parts must be available for a reasonable time after manufacture and sale.
- Any necessary servicing must be carried out with reasonable care and skill and must be completed within a reasonable time.

FIGURE 3 Goods must be of acceptable quality; if a consumer purchased a pair of shoes and one of the heels broke after only a couple of wears, the shoes would not be considered of acceptable quality.



6.2.5 When the law is broken

Although the Australian Consumer Law is a law of the Commonwealth parliament, enforcement of the laws protecting consumers is usually carried out by the relevant state or territory Office of Fair Trading or Consumer Affairs Office. When a consumer has a complaint against a seller, these offices will usually recommend that the consumer attempt to sort out the problem directly with the seller. If direct contact with the business does not produce a result, the Fair Trading or Consumer Affairs Office may contact the business on the consumer's behalf and attempt to resolve the matter.

If the business fails to resolve the problem, Fair Trading or Consumer Affairs Offices can take legal action on behalf of the consumer. If the legal action is successful, the seller may be required to compensate the consumer or to replace or repair any faulty goods. The business can also be fined for failing to comply with the Australian Consumer Law.

FIGURE 4 The following steps may help a consumer resolve an issue when they feel a business has breached consumer laws.

If a consumer has a complaint, they should first try to resolve it directly with the seller.

↓

If the above fails, the consumer should contact the relevant authority (e.g. Consumer Affairs Victoria).

↓

Organisations such as Consumer Affairs Victoria may contact businesses on behalf of a consumer to try to resolve the problem.

↓

If the business still does not resolve the problem, the organisation may take legal action on behalf of the consumer.

↓

If the legal action is successful, the business may be forced to compensate the consumer, and they may also be fined for breaching consumer laws.

6.2.6 Responsibilities as well as rights!

While the Australian Consumer Law contains a strong emphasis on protecting the rights of consumers and enforcing the responsibilities of sellers, consumers also have responsibilities in the marketplace. Some of these responsibilities are:

- Whenever you buy goods or services, you are entering into a legally binding contract. You might believe that a contract is a written document that you sign, but this is not always the case. If you are buying a house or a car, there are particular types of written documents that are required by law, but any agreement between a buyer and a seller is a legally binding contract, even if you don't sign anything. As a buyer you have a responsibility to pay the required amount for the goods or services you purchase. This is particularly relevant if you purchase goods or services on credit, with an expectation that you will pay by instalments, such as the purchase of a mobile phone with an accompanying plan.
- Consumers who borrow money or who use a credit card to make purchases have a responsibility to make repayments. Failure to do so can leave the consumer with a poor credit rating. This remains active for five years, and if you

FIGURE 5 Fair Trading and Consumer Protection offices will usually recommend that the consumer attempt to sort out a problem directly with the seller.



need to apply for a loan during that time, you may have that loan refused.

- A consumer cannot return goods and claim a refund if the goods have been used other than for the purposes for which they were intended. If you damage a product by using it inappropriately, or even injure yourself while doing so, you have very little chance of being compensated. Consumers have a responsibility to use goods in the way the manufacturer intended.

FIGURE 6 Consumers who borrow money must repay it in full. Failure to do so can leave the consumer with a poor credit rating.



6.2 Activities

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

Remember

1. What is the purpose of Australian Consumer Law?
2. Provide a brief description of each of the following:
   (a) misleading conduct
   (b) bait advertising
   (c) referral selling.
3. Outline one responsibility that consumers have in relation to goods or services they purchase.

Explain

4. Explain the rules that apply to phone sales and door-to-door selling.
5. In what circumstances is a seller allowed to refuse a refund?
6. Explain two guaranteed rights that consumers have in relation to goods they purchase.
7. What powers does a Consumer Protection or Fair Trading authority have to enforce Australian Consumer Law?

Think

8. In each of the following examples, explain why there has been a breach of the *Competition and Consumer Act*.
   (a) An electrical goods business advertises a particular brand of television and states that it is at a cheaper price than that offered by a competitor. This statement is false.
   (b) A clothing store advertises tee-shirts and claims that they are made in Australia when in fact they are made in Hong Kong.
   (c) A take-away food outlet advertises that a special deal is only for one week when in fact it plans to extend it for two months.
   (d) A garden maintenance business offers some its customers a 10 per cent discount if they provide the names and addresses of five potential customers for the business.

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Watch this eLesson: Animal testing: Are consumers being misled? (eles-2433)

Watch this eLesson: What is an ethical consumer or producer? (eles-0255) and complete the accompanying worksheet 6.1 'What is an ethical consumer or producer?'

6.3 Business competition protects consumers

6.3.1 The benefits of competition

One of the best protections consumers can have is a market with a large number of sellers, all competing with each other to attract customers. Competition can help keep prices lower, and if one business gains a bad reputation, there are plenty of alternatives available. As the name suggests, the *Competition and Consumer Act* is concerned with encouraging fair competition between businesses in all markets. The Act makes it illegal to engage in business practices that interfere with competition, or that give some businesses an unfair advantage over others. The Australian Competition and Consumer Commission (ACCC) has the power to enforce the law to encourage greater competition in the marketplace.

6.3.2 Banned anti-competitive practices

The *Competition and Consumer Act* lists a number of business practices that are prohibited or that are regulated by the ACCC. These practices are outlined in the subsections below.

FIGURE 1 Any agreement by service stations to raise or lower prices at the same time and at the same rate would be an example of price fixing.



Price fixing

It is illegal for two businesses in competition with each other to agree to set identical prices for their products. Businesses will probably have similar prices for similar products because of market forces, but they cannot actively work together to raise or lower prices by an exact amount. This has been an issue over the years with petrol pricing. Many service stations lower their prices in the middle of the week, and then raise them at the weekend. There have been accusations that service stations that are close to each other have agreed to raise or lower their prices by the same amount at the same time. If it could be proved that they had done so, they would be deemed to be acting illegally, because this action would prevent consumers from taking advantage of genuine competition.

FIGURE 2 Woolworths was fined for attempting to misuse its market power to restrict the operations of competing liquor outlets.



Misuse of market power

Not all businesses are the same size, and there is a risk that larger businesses may use their power unfairly to drive smaller competitors out of business. The Act bans any action aimed at damaging or getting rid of a competitor

or preventing another business from entering the market. Some years ago retailer Woolworths was fined $7 million for attempting to prevent some restaurants and bars from selling packaged liquor in competition with its own liquor outlets. When these other businesses applied for liquor licences, Woolworths lodged objections with the government licensing authority. They then proposed to withdraw the objections if the other businesses agreed not to sell take-away alcohol products to their customers. A court found that Woolworths was in breach of the law.

Predatory pricing

Predatory pricing occurs when a business deliberately sets its prices at such a low level that its competitors cannot match them. In such cases, the business actually decides that it is prepared to lose money for a while until it has forced its competitors out of the market. This leaves the business with less competition so that it can then disregard market forces, raise prices and exploit consumers. An example would be where a major supermarket chain decided to sell all its bread products below the prices set by a local bread shop. The supermarket could afford to make a loss on its bread because it was making a good profit on other products. The bread shop may not be able to lower its prices to match those charged by the supermarket, so could lose a lot of its customers. If the bread shop was forced out of the market, the supermarket could then raise its prices and there would be no competition to prevent it from doing so.

FIGURE 3 It would be illegal for a supermarket to use predatory pricing to try to put a neighbouring bread shop out of business.



Exclusive dealing

Exclusive dealing involves one business trading with another while imposing restrictions on that other business's freedom to deal with its competitors. An example is when a hair products supplier will only sell to a hairdresser on the condition that the hairdresser does not purchase hair products from any other supplier. This can be legal in some circumstances if it is not seen to lessen competition in the market for the products in question. For example, McDonald's sells Coca-Cola products but not Pepsi, and they are permitted to do so. This is because KFC sells Pepsi and not Coke, so the overall market for soft drinks is still competitive. Businesses that wish to enter such an arrangement must notify the ACCC of the proposed agreement. The ACCC will then examine the details before either approving or disallowing the arrangement.

FIGURE 4 McDonald's is permitted to have an exclusive deal with Coca-Cola, and KFC can have an exclusive deal with Pepsi, because the market for soft drinks is still competitive.



Resale price maintenance

Suppliers cannot set the prices at which retailers will sell the products they supply them. Suppliers can recommend a retail price for the sale of their goods, but it is illegal to attempt to force a retailer to sell at that price. Retailers must be free to compete on price with other retailers selling the same products. It is also illegal to set a minimum price that sellers must not sell below, or to force a retailer not to discount goods. On the other hand, it is quite legal for a supplier to set a maximum price for its products. This is to prevent any retailer that has no competitors in a particular location from unfairly overcharging customers.

FIGURE 5 Retailers must be free to compete on price with other retailers selling the same products.



Mergers and take-overs

When two or more businesses decide to join together, this is known as a *merger*. When one business decides to buy out a competitor, this is known as a *take-over* or an *acquisition*. Sometimes a merger or take-over in a particular market may lead to reduced competition in that market. The Act prohibits mergers and take-overs between one or more businesses if they result in the competition being substantially reduced. Businesses proposing a merger or acquisition can ask the ACCC for permission. The ACCC may permit a merger or acquisition if it will not substantially limit competition. If businesses proceed without seeking permission, the ACCC can investigate and has the power to take action against them if it finds that the merger or acquisition has substantially limited competition.

FIGURE 6 Australia's four big banks are prohibited from merging because this would severely reduce competition in the banking industry.



Mergers and acquisitions have occurred regularly in the banking industry. In 2008, Bendigo Bank and Adelaide Bank merged; the Commonwealth Bank took over Bankwest; and Westpac acquired St George Bank. However, the big four banks, ANZ, NAB, Westpac and the Commonwealth Bank are specifically banned from merging with each other as this would be too big a reduction in competition.

6.3.3 The role of the Australian Competition and Consumer Commission (ACCC)

The ACCC has wide powers to investigate possible breaches of the *Competition and Consumer Act*, and can take legal action against any person or organisation suspected of such a breach. It will sometimes be granted a court order to seize confidential documents from businesses suspected of anti-competitive behaviour.

Only a court can determine whether a breach of the Act has occurred and make orders against offenders. The ACCC's role is to bring matters before the courts to have criminal penalties imposed and

to gain compensation for anyone who may have been harmed by the breach. Courts can impose penalties of up to $10 million for companies and $500 000 for individuals found guilty of anti-competitive behaviour.

The ACCC has the power to authorise behaviour which might appear to be anti-competitive if it considers that behaviour to be in the public interest. It can also actively monitor prices and approve price rises in markets where competition is limited. As described in section 6.3.2, businesses wishing to engage in mergers or take-overs can seek advice from the ACCC as to whether the proposed action is likely to breach the Act, and then proceed according to that advice. The ACCC aims to encourage compliance with the Act rather than simply to punish wrongdoers.

FIGURE 7 ACCC officials may seize documents from businesses suspected of anti-competitive behaviour.



6.3 Activities

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

Remember

1. Provide a brief description of each of the following:
   (a) price fixing
   (b) predatory pricing
   (c) exclusive dealing
   (d) resale price maintenance.

Explain

2. Why is competition between businesses beneficial for consumers?
3. Explain the circumstances under which a merger or acquisition would be acceptable to the ACCC.
4. Outline the actions that can be taken by the ACCC when dealing with a breach of the *Competition and Consumer Act*.

Discover

5. The media releases page of the ACCC website contains details of recent cases dealt with by the ACCC. Use the **ACCC media releases** weblink in the Resources tab to visit the site, select and read one story, and then answer the following:
   (a) What was the issue in question?
   (b) How did the matter come to the attention of the ACCC?
   (c) What decisions, actions or recommendations did the ACC make in relation to the issue?

Predict

6. How would you expect the ACCC to deal with each of the following situations?
   (a) The only two garden maintenance businesses in a country town decide to merge and form one business.
   (b) The owners of five petrol retailers along a major stretch of road met each week to determine how much they would all charge on each day of the week.

(c) The manufacturer of a range of electrical goods provides all retail outlets selling its products with a list of recommended retail prices for each of its products, and refuse to supply them unless they stick to those prices.
(d) A branch of a major supermarket chain, located in the same shopping centre as an independent supermarket, consistently prices all its products five per cent below those of the independent supermarket. When the independent business lowers its prices to try and match its competitor, the major supermarket lowers its prices even further.

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Explore more with this weblink: ACCC media releases

6.4 Keeping consumers safe

6.4.1 When purchases go wrong

Every now and again we hear stories in the news of a particular model of car being 'recalled' to have some fault fixed. Other stories come to light of people suffering from food poisoning after visiting a certain restaurant or café. We hope that every purchase we make will be safe and not cause us harm, but this is not always the case. Just as it is important to protect consumers from dishonest behaviour, it is even more important to ensure that the products we buy will not harm us.

6.4.2 Who keeps us safe?

A number of different bodies have the responsibility for ensuring that the goods and services we buy are not going to cause us harm. These bodies include government regulators as well as other groups. The roles of these different entities are discussed briefly below.

Government regulators

Governments at federal, state, territory and local level have established a number of bodies to ensure product safety.

- The ACCC — the Australian Competition and Consumer Commission includes issues of product safety among its various roles.
- State and territory Consumer Affairs and Fair Trading authorities have a major role within their respective states.
- Customs and quarantine bodies are able to monitor goods coming in from overseas, and can identify any products that may be dangerous.
- Specific industry regulators are organisations that have particular powers in relation to certain types of products. For example, the Therapeutic Goods Administration has a role in regulating medicines, as well as devices such as wheelchairs.
- Local government health authorities carry out inspections on food premises such as restaurants, cafés and school canteens to make sure cleanliness and hygiene regulations are followed.

FIGURE 1 Customs officers check containers of goods from overseas to prevent dangerous goods from entering the Australian market.



Other groups

Responsibility for product safety is spread quite broadly across the community, with a number of organisations involved.

- Businesses — manufacturers and sellers take responsibility for ensuring their products are safe. A business selling a product that causes harm to one or more consumers can be sued by those affected. It makes sense to avoid legal action by closely controlling the production process to keep products safe.
- Technical bodies — worldwide organisations such as the International Organisation for Standardisation (ISO) set acceptable standards for all types of products. Any product that conforms to those standards is entitled to display an ISO number, so consumers know it conforms to the highest quality.
- Consumers — buyers and their representatives also have a responsibility for safety. Choice, the Australian consumers' association, publishes a magazine and a website called *Choice*, which examines and tests all types of products. Individual consumers also have a responsibility to maintain items such as electrical cords and safety features on motor vehicles.

FIGURE 2 Consumers can be assured that any product carrying ISO certification will be safe and will conform to the highest standards of quality.



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Explore more with this weblink: ISO standards

6.4.3 What do the government regulators do?

Federal, state and territory bodies have wide-ranging powers and responsibilities to ensure product safety. They carry out a variety of different activities in exercising these responsibilities.

General market monitoring

Government regulatory bodies examine all areas of all markets to detect possibly unsafe products. They monitor the media for any death or injury reports that may suggest a particular product could be dangerous. They examine and arrange testing of new types of products coming onto the market. They also respond to consumer complaints and monitor information on new products from around the world.

Encouraging safe practices

Regulatory bodies encourage safe practices through various measures:

1. *Negotiating product removal*. This involves gaining agreement from suppliers to remove dangerous goods from sale in their stores or outlets, including online outlets.
2. *Removing unsafe goods*. This can often involve a product recall. Anyone who may have bought a product that is found to be dangerous is expected to return it to the place of purchase. If the fault can be repaired, it will be returned to the manufacturer to be fixed. If the product cannot be made safe, the purchaser will be entitled to a refund. Product recalls must be widely publicised through the media. In newspapers, recall notices appear with a special striped border. When suppliers have records of who their purchasers are, they also will contact them directly to arrange a recall. This often happens when identified faults need to be repaired in motor vehicles.

3. *Promotion of safety management*. Government regulators encourage manufacturers and other suppliers to comply with sets of standards. These can include **mandatory standards** or **voluntary standards**. Mandatory standards are compulsory and must be observed by suppliers. For example, there are very strict standards for electrical goods, and consumers must be supplied with instructions and warnings about appropriate use and possible hazards. All packaged food must have details of ingredients on the packaging, and clothing items must have washing and care instructions provided. Voluntary standards are those that have been agreed to by groups of suppliers or other organisations. They are not compulsory, but any supplier that complies with them can use this fact when promoting its products. Voluntary standards do not usually relate to issues of safety, but are more likely to deal with issues of quality.
4. *Publicity and education*. Government regulators aim to make sure that all necessary information relating to product safety in general, and particular hazards when they occur, is circulated as widely as possible throughout the community. They often issue statements to the media about particular safety issues. These are sometimes reported in the television news and in newspapers. The ACCC administers a product safety website, which provides regular updates on safety hazards. State and territory Consumer Affairs and Fair Trading authorities regularly conduct education and publicity programs to inform the public on broad product safety issues.

FIGURE 3 Manufacturers that discover a fault in any of their products are expected to recall these products for repair, replacement or refund.



Product Safety Recall

NOTICE OF RECALL TO CONSUMERS

FUN 4 KIDS ROBOT

Defect: Fun 4 Kids has identified a batch of battery operated robots that do not comply with mandatory standard for toys for children up to and including 36 months of age because the batteries are accessible without the use of a tool. In addition, the product may also break into small parts during normal use.

Hazard: Children may gain access to the batteries, which are small parts, presenting a potential choking hazard.

What to do: Fun 4 Kids robots are available from SOME major retailers etc. This batch has been available since August 2014. If you have purchased a toy with this device number (206HW) during this period you should:
1.Immediately discontinue use of the product
2.Return the device to the following Reply Paid address for replacement at Fun 4 Kids' expense:
Fun 4 Kids
Reply Paid 7845
Locked bag 101, Rushmore, NSW 1879
3.Include your return address and contact details

Contact details: For further information please contact Fun 4 Kids Freecall on: 1800 34569218

See www.recalls.gov.au for Australian Product Recall Information

FIGURE 4 All packaged food must have details of ingredients on the packaging.



Nutrition Facts

Amount Per Serving	
Calories 85	Calories from fat 4
	% Daily Value
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat	0%
Cholesterol 0mg	0%
Sodium 2mg	0%
Total Carbohydrate 20g	5%
Protein 0g	

Vitamin A 5% Vitamin C 15%
Calcium 5% 5%

	Calories:	2,000	2,500
Total Fat	Less than	60g	80g
Sat Fat	Less than	30g	80g
Cholesterol	Less than	210mg	210mg
Sodium	Less than	2,500mg	2,500mg
Total Carbohydrate		300g	380g
Fiber	Sat Fat	30g	30g

Calories per gram:
Fat 10 Carbohydrate 5 Protein 5

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Explore more with this weblink: ACCC Product Safety Australia

Solving safety problems and enforcing standards

Government regulators usually attempt to support businesses to do the right thing, rather than simply punishing them for doing the wrong thing. Where possible, they will work with industry, support technical investigation and concentrate on educating suppliers and consumers about product safety. New regulations can be created where necessary, and warning notices will be issued when dangerous products are identified.

Sometimes a product is clearly so risky that it has to be banned. This has happened on numerous occasions with toys sold for use by young children. If a toy contains small parts that could come loose and be swallowed by a small child, the toy may be banned from sale. Many other toys carry clear indications of the age group for which they are designed, and possible risks to younger children.

FIGURE 5 This toy wooden alphabet train was removed from sale because it contained dangerous small parts.



If a manufacturer or other supplier fails to comply with safety standards or bans, government regulators can take legal action. Fines of more than $1 million can be applied to any business failing to meet mandatory standards, or continuing to sell a product after it has been banned. Businesses may also be ordered by a court to provide compensation to any customers harmed by products they have sold. A business that becomes aware of any harm caused by a product or service that it has sold must inform the appropriate government regulator within two days. Failure to do so can also result in a fine.

6.4 Activities

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

Remember

1. Describe the role of each of the following in ensuring product safety:
   (a) industry regulators
   (b) customs and quarantine
   (c) local government authorities.
2. What action can government regulators take if a person is injured after a supplier fails to remove a banned product from sale?

Explain

3. What responsibilities do consumers have in relation to product safety?
4. Explain the difference between mandatory standards and voluntary standards.
5. Give details of two of the methods used by government regulators to encourage safe practices.

Discover

6. Use the **ISO standards** weblink in the Resources tab to visit the 'About Us' section of the International Organisation for Standardisation (ISO) website. Watch the video provided on this page and then answer the following:
   (a) What are ISO standards?
   (b) Outline two benefits of these standards.
7. Use the **ACCC Product Safety Australia** weblink in the Resources tab to visit this section of the ACCC website and select three 'Recall categories' from the links in the left hand side panel. From each of these three categories, select one product that has been recalled and answer the following:
   (a) What was the name of the product?
   (b) What was the defect in the product?
   (c) Why was that defect dangerous?
   (d) What advice is given to consumers?

6.5 SkillBuilder: Questioning and research

6.5.1 Tell me

The following steps provide a useful guide to the process of carrying out research:

- Identify and understand the general task you are attempting to complete.
- Develop a series of specific questions that will help guide your research in the appropriate direction, and help you determine the information you need.
- Locate appropriate sources of that information.
- Record relevant information from a range of sources.
- Present the information in an appropriate form.

6.5.2 Show me

Imagine you have been asked to investigate the role of your state Consumer Protection or Fair Trading authority's website in providing advice for consumers and businesses.

Your first step is to clearly identify the key task. This could be expressed as follows:

'Prepare a report on the type of advice the state Consumer Protection or Fair Trading authority website provides for consumers and businesses, with examples.'

It is now necessary to break this down into a series of more specific questions. These could include:

1. How is the website organised to provide advice?
2. What types of headings or categories of information are used?
3. How is the material broken down (types of industries, types of products etc.)?
4. If a consumer has a specific problem with a particular product or supplier, what does the website advise them to do?
5. What sort of advice is provided to businesses?
6. What are some relevant examples?

The next step is to locate your sources. Each state authority has a website, so you simply need to use a search engine to find the name and website of your home state's Consumer Protection or Fair Trading authority.

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

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

6.5.3 Let me do it

Practise the skill

Using the above process as a model, carry out the following research task:

Prepare a report on the type of advice the ACCC gives to consumers in relation to internet and phone usage, including examples.

6.6 Review

6.6.1 Summary

The market system works best as a means of providing goods and services if markets are fair to all participants. This means that we require laws to regulate markets and maintain that fairness. In Australia this is provided by the *Competition and Consumer Act*, which incorporates the Australian Consumer Law.

- The Australian Consumer Law prohibits a range of practices that could mislead consumers.
- It is compulsory for sellers to provide all available information to consumers, and to ensure that buyers and sellers have equal rights in any purchase.
- Consumer Law also provides a number of basic guarantees in relation to the quality of goods purchased.
- Practices that would lessen fair and open competition between businesses are banned under the Act.
- The ACCC has the power to take legal action through the courts to deal with businesses that fail to comply with the provisions of the Act.
- A number of different government regulators monitor product safety throughout Australia.
- These regulators encourage the development of safety standards, and seek to educate suppliers and the public on product safety.
- The regulators can ban dangerous products, or order the recall of products to ensure they are made safe.

6.6.2 Reflect

Any business displaying a sign that says 'No refunds' or 'No returns' is breaking the law, because returns and refunds are permitted in some circumstances.

1. Use internet resources (ACCC, Fair Trading or Consumer Protection websites) to find out the actual legal circumstances in which refunds are permitted, and when they do not have to be granted.
2. Design and create a poster for display in a shop that clearly informs customers of those circumstances in which returns and refunds are allowed, and those circumstances in which the business is not required to allow a return or provide a refund.

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Try out this interactivity: Rights and responsibilities in the marketplace crossword (int-6524)

TOPIC 7
Business decisions

7.1 Overview

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

7.1.1 Cosmetics entrepreneur

Jellaine Ross started her business Cherry Blooms at the age of 24. The Brisbane-based company sells cosmetic products, particularly brush-on eyelash extensions. Ms Ross started selling the brush-on eyelash extensions after seeing them being used when she was on a holiday in Korea. She thought the idea would work in Australia so she repackaged and remarketed the product and created her own brand. Her business earned $100 000 in its first year and now sells close to $10 million worth of product a year both online and in retail stores across the world.

FIGURE 1 Founder and Chief Executive Officer of Cherry Blooms, Jellaine Ross



Starter questions

1. List some of the decisions that Jellaine Ross might have needed to make before starting her business.
2. Cherry Blooms is a company. What does this mean?
3. Why did Jellaine Ross start a business selling brush-on eyelash extensions?
4. Why do think that business owners need to respond to business opportunities?

INQUIRY SEQUENCE

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Watch this eLesson: Different forms of business ownership (eles-1813)

7.2 What are the three main ways in which a business can be owned?

7.2.1 Structures of business ownership

There are a number of structures, or forms of ownership, that a business owner can choose from when starting a business. The three most common forms of ownership are **sole proprietorship**, whereby an individual runs a business on their own, a **partnership**, whereby a group of people will run a business together, and a **corporation**, which is owned by shareholders. These are discussed below.

7.2.2 Sole proprietorship

A sole proprietorship, or sole trader, is a business that is owned and operated by one person. A sole proprietor business can operate in almost any field. Usually, however, they are small businesses such as cafés, newsagents and hairdressers and trades such as plumbers and electricians. A sole proprietor may employ other people to work for the business, or to operate and manage the business.

The sole proprietor receives all the **profit** that the business makes, but is also responsible for any losses. He or she has **unlimited liability**. This means he or she can be forced to sell personal assets such as a house or car to pay off business debts. A sole proprietor business usually has only one person's name in the business name, for example, *Maria's Café*.

Individuals who establish a sole proprietor business are often referred to as entrepreneurs. Entrepreneurs are those people who assume the financial and personal risk of establishing a business with the hope of making a profit. These people normally exhibit enterprising behaviours.

You may know somebody or you yourself may be the kind of person who demonstrates enterprising behaviours. Some of these enterprising behaviours and characteristics include:

- demonstrating initiative
- having good problem-solving abilities
- being creative and innovative
- being able to plan and complete complex tasks
- being a reflective thinker
- being willing to take measured risks
- predicting the consequences of a decision
- communicating clearly and effectively with different types of people
- analysing alternatives and selecting appropriate courses of action.

FIGURE 1 A sole trader is a business that is owned by one person, even though it may employ other people to operate and manage the business.



Advantages and disadvantages of sole proprietorship

A sole proprietorship is a good form of ownership for a person who is just starting a business because it is very simple and low cost. It allows the owner to maintain full control of the business and to keep all the profits. There will be no disputes with any partners and there are minimal government regulations. However, the owner does have unlimited liability. It can be difficult for the sole trader to find finance to commence the business or expand and there is a large burden on the owner to perform a wider variety of tasks.

7.2.3 Partnership

A partnership is a business usually owned and operated by two or more people, called partners. The partners share their profits and losses, usually equally. Together they decide how best to operate the business. It is common for people with similar skills, such as doctors, accountants, solicitors and

dentists, to form a partnership. Partnerships tend to have the names of the partners in the business name, for example, *Kennedy & Lee Lawyers*. As with sole proprietors, partnerships also have unlimited liability.

A partnership can be formed with a verbal agreement, but using a formal written partnership agreement is worthwhile. This usually outlines who is in the partnership, how profits will be shared, how decisions will be made, how disputes will be settled and what will happen when the partnership ends.

FIGURE 2 A partnership is a business usually owned and operated by two or more people, called partners.



Advantages and disadvantages of partnership

A partnership is an inexpensive and simple form of ownership. It allows responsibility for decision-making and risk, as well as workload, to be shared. The partners can pool their finances and their expertise together and there is minimal government regulation. On the other hand, a partnership has unlimited liability. It can be difficult to find suitable partners and disputes between the partners can arise. If one partner decides to leave the business, the future of the business can become complicated.

7.2.4 Corporation

A corporation, or company, is owned by **shareholders**. In Australia, all corporations undergo a process known as incorporation. This involves creating a business as a legal entity in its own right and treating it as a separate entity from its shareholders. In other words, the corporation (rather than individual shareholders) is liable for the debts created through its operation.

Corporations have **limited liability**. This means that if the business cannot pay its debts, a shareholder loses only the money she or he has invested in the business. A shareholder cannot be forced to sell personal assets to pay the corporation's debts.

However, there are some exceptions to this situation. In some instances, the directors of the corporation will be asked to give a personal guarantee when seeking a loan from a financial institution. In such cases, the person who offered the personal guarantee might lose their own assets to pay the debts of the business.

If directors of the corporation engage in misleading behaviour or recklessly borrow money, they can be held personally responsible. Criminal charges may follow, and lawsuits may also be brought under the code of civil law.

Corporations can be organised as either public or private. The general public may buy and sell shares in public corporations and these corporations may be listed on the Australian Securities Exchange (ASX). Private corporations can not be listed on the stock exchange and tend to be family-owned businesses. They have restrictions on who can buy their shares. A public corporation must have the word 'Limited', or the abbreviation 'Ltd', after its name. A private corporation must have the words 'Proprietary Limited', or the abbreviation 'Pty Ltd', after its name.

FIGURE 3 A corporation is owned by shareholders and can be structured as either a public or private company.



Advantages and disadvantages of a corporation

A corporation is a very good form of ownership for attracting more finance. Capital (finance) can be obtained by selling shares. Corporations have limited liability, which means that the owners can only lose the value of their investment if the corporation goes into debt. The life of a corporation can continue if an owner of the business sells their shares. However, corporations are very complex and expensive to set up. There are very strict laws regulating corporations including how they are registered, how they need to report their financial results and how they will be closed down. Corporations can grow very large, resulting in inefficiencies.

7.2 Activities

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

Remember

1. Define the following terms in your own words:
   (a) unlimited liability
   (b) limited liability
   (c) shareholder.
2. Identify the correct form of business ownership for the following businesses:
   (a) National Australia Bank Ltd
   (b) Dinah's Mobile Dog-washing
   (c) McCartney and Daughters
   (d) Visy Industries Australia Pty Ltd.

Explain

3. Outline the difference between a sole proprietorship and a partnership.
4. In what ways does a private corporation differ from a public corporation?
5. Summarise the advantages and disadvantages of each form of business ownership using a table such as the one below.

Form of ownership	Advantages	Disadvantages
Sole proprietor		
Partnership		
Corporation		

Discover

6. Work in groups for this activity. Choose a business that interests you — it may be a local, national or international business. Use research techniques to find out as much as you can about it on the internet and through other means. Share your findings with your group.
   - What type of business is it, and how is it structured?
   - What are some of the business's key products/ services?
   - What else about this business is of particular interest?
7. Working with a partner or by yourself, visit a shopping centre. Record information about the businesses you find there in a chart like the one below.

Name of business	Nature of business activity	Form of business ownership
Carol's café	Meals, tea, coffee, snacks	Sole proprietorship

   Collect data for at least 10 different businesses. Analyse your results to find out what is the most common form of business ownership. Use a bar graph or a pie chart to present your results. Suggest reasons why this form of ownership is the most popular.

Predict

8. List the possible consequences of the partners of a business having a dispute.
9. If someone wants to buy out a corporation, what will they need to do?

Think

10. Suggest an appropriate form of business ownership for the following people. Explain why you made your suggestion.
    (a) Brynn is very interested in setting up a manufacturing business which will sell coffee to supermarkets around Australia, and possibly internationally.
    (b) Gemma wants to start a new pet shop business where she is responsible for making all of the decisions on her own.
    (c) Muhaned is considering whether he should open a fish and chip shop. He is worried that he has very little finance, and would like to invite other people to help him start the business.

7.3 Are there other ways to own or operate a business?

7.3.1 Alternative ways to own a business

Sole proprietorship, partnership, and corporation are not the only forms of business ownership available when starting a business. A business can also be structured as a **cooperative** — a business owned and controlled by the group of people it serves, and a **trust**, where another person or company holds property or carries out business on behalf of the members of the trust. After choosing a form of ownership, a business owner may decide to run their business as a **franchise**.

7.3.2 Cooperative

In a cooperative, a number of people combine resources for a particular purpose. Typical cooperatives involve farmers, community education centres and credit unions.

The benefit of a cooperative is that people who work in one industry can join together to manage their own affairs, drawing on their combined expert knowledge of the specialist aspects of their work. They also reduce costs by streamlining their operations to ensure maximum efficiency in the delivery of goods and services.

FIGURE 1 The Best Western hotel chain is an example of a cooperative.



An example of a cooperative is the Best Western international hotel chain whose members are hotel operators. The members own and operate their own businesses but work together and pool funds and resources through Best Western, which operates as a non-profit organisation. Pooled funds are used to advertise their businesses and the Best Western brand, and to generate greater buying power.

There are many different types of cooperatives used for a wide range of purposes, including cooperatives for housing, building, consumers, workers and credit unions. Retailers' cooperatives buy in bulk on behalf of their members to obtain discounts from manufacturers and to pool marketing. This type of cooperative is common for locally owned grocery stores, hardware stores and pharmacies. However, their members are businesses rather than individuals.

7.3.3 Trust

A trust is a form of business ownership where a **trustee** holds property or assets for the benefit of another person or a group of people. These other people are known as **beneficiaries**. They are often members of a family. Setting up a trust can be expensive and complex because a formal deed needs to be created and there are administrative tasks that the trustee is required to complete annually. Trusts are often used to preserve family assets and to reduce tax. Family businesses can be set up as trusts so that every family member can be made a beneficiary without having direct involvement in the running of the business.

FIGURE 2 A family business can be set up as a trust so that family members can be made beneficiaries.



7.3.4 Franchise

While it is not actually a form of business ownership, operating a business as a franchise is becoming increasingly popular. A **franchisor** is the individual or organisation that grants, under certain conditions, the right to use a business name and the right to produce or distribute the franchisor's product. The **franchisee** is the person who purchases the franchise, usually by paying a fee to the franchisor. Franchisees can operate their business as a sole proprietorship, partnership, corporation or trust.

The benefit to the franchisee is that he/she is granted an instantly recognisable business name, for example Subway and Hungry Jack's. The business owner can immediately start to benefit from the reputation of the franchise. The franchisee also receives training in the technical aspects of operating the business from the franchisor, as well as assistance with business management principles. In return, the franchisee provides the start-up fees and labour, and agrees to uphold the terms and conditions of the franchise agreement. This can mean, for example, that a franchisee is obliged to market and sell the products specified under the franchise agreement. The franchisee may also need to conform with any required production and distribution processes and requirements.

Just as there are many advantages for businesses operating as franchises, there are also disadvantages for both the franchisee and franchisor.

Operating a business as a franchise limits the freedom of the franchisee. The franchisor controls the operations, the product and the marketing. For example, when you enter a McDonald's restaurant, the décor looks the same, the staff act the same and wear the same uniform, and the food tastes the same as in any other McDonald's anywhere in Australia. Operating a franchise limits the owner's ability to innovate and individualise their stores.

All advertising and promotional campaigns are determined by a centralised office and must be run in all franchise stores in exactly the same way. An owner of a franchise may not agree with a particular TV commercial or a 'Scratch and Win' promotion, but they must do what the franchisor tells them.

The responsibility is on the operator/franchisee to follow all of the strict guidelines set by the franchisor or they may be reprimanded, receive a fine or even lose the rights to their business.

FIGURE 3 Some franchise operations in Australia include Pie Face, a café and bakery business specialising in pies, and Harvey Norman, which sells products for the home and office.

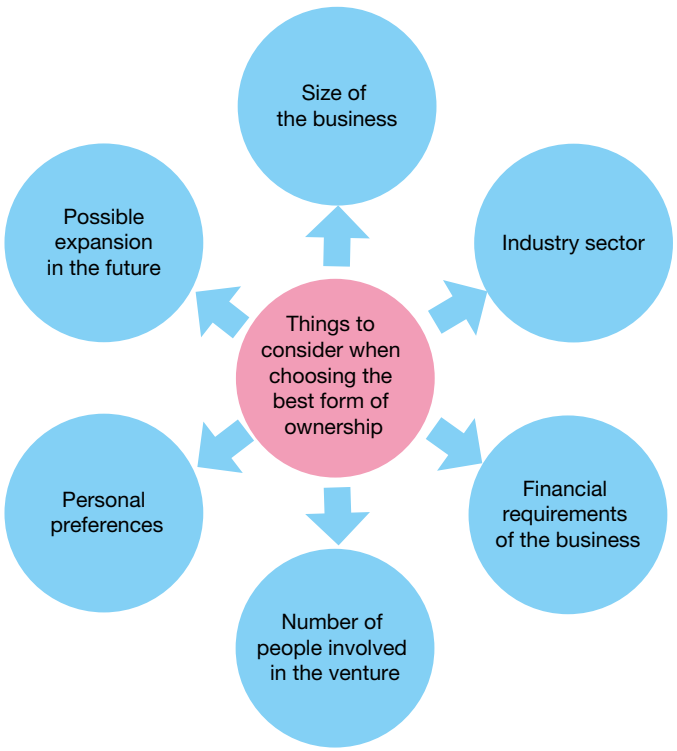




7.3.5 Choosing the best form of ownership

As we have seen, there are several structures, or forms of ownership, that a business owner can choose from when starting a business. When choosing the most suitable structure, the business owner needs to consider their personal preferences, as well as the advantages and disadvantages of each type of business. For example, someone who prefers to work alone and is wishing to start a business that is easy to set up might choose a sole proprietorship. A person who wants to raise the finance to grow a business selling products around Australia, and perhaps overseas, might consider a company structure. A person wishing to preserve the assets of their family and reduce tax might choose a trust. The form of ownership used by the business can change over time. It is quite possible that after a business is started, it will grow. As the business grows, its goals might change, which means the owner might need to review the most appropriate structure as well.

FIGURE 4 Business owners must consider a range of factors when deciding on which form of ownership best suits their business.



7.3 Activities

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

Remember

1. In what ways is a cooperative different to other forms of business ownership?
2. Why do people create trusts?
3. List five different franchises that operate in your area.

Explain

4. (a) What do the franchisor and the franchisee receive under a franchise agreement?
   (b) What is each party required to provide?
5. Outline the main advantages and disadvantages in establishing a business through a franchise agreement.
6. What are the benefits to farmers of joining a cooperative?

Discover

7. Use the **Business structures** weblink in the Resources tab to visit the Australian Government Business website and find out more about different types of business ownership. Choose two business structures and write down two new things that you did not already know about these structures. (Within the site, you may need to click on links to the Australian Taxation Office (ATO) or other advice for your state.)

Think

8. Consider the following businesses that are just starting up. What form of business ownership would be the most appropriate? For each case, explain why a person or group of people would choose to establish that form of ownership rather than another.
   (a) An accounting practice providing financial and taxation services
   (b) A café offering freshly baked breads and cakes and specialty coffee
   (c) A milk processing plant owned and operated by a group of one hundred dairy farmers
   (d) A fashion retailer with the aim of expanding nationally within twelve months
   (e) A family that has property held in trust by another person
   (f) A business selling phone and internet connections hoping to raise $250 million in capital to commence trading

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Explore more with this weblink: Business structures

7.4 Opportunities for businesses

7.4.1 Factors influencing opportunities

A business will always be searching for opportunities, including ideas for new products, new customers and new ways of running the business. There are many factors that influence opportunities for businesses, including demographics, competition, location and target market. Successful businesses will be very quick to seize opportunities.

7.4.2 Demographics

Being aware of **demographics** can create opportunities for businesses. Demographics are characteristics or statistics relating to population, including age, gender, ethnicity, employment, income and education. This information can be used by businesses to work out what products consumers prefer or to determine their buying behaviours. Let's have a closer look at some of these characteristics.

Age

The age of a country's population can influence business opportunities. The products that a business sells will usually appeal to a certain age group. The Australian population is ageing which means that there is more demand for, for example, health services, further education and training, and travel. Some businesses may choose to focus on these opportunities or to target their products at younger consumers. Younger people aged under 35 are more likely to be the first consumers to purchase new technologies like mobile phones and computer games.

Gender

Males and females demand different products. Businesses will sell different hygiene and clothing products based on the gender of consumers. Women make the majority of the buying decisions in Australian households. This presents an opportunity for businesses. For example, businesses might target women with new home improvement products.

Income

Income can affect business opportunities. The products that a business sells will usually appeal to a certain income group. A premium product, such as designer clothing, will normally appeal to higher income groups. Lower income groups tend to purchase discount products. A business owner may decide to focus on higher income groups by starting a fashion boutique, or focus on lower income groups by opening a discount fashion store.

FIGURE 1 Demographics are the characteristics or statistics relating to population, including age and gender.





7.4.3 Target market

By focusing its efforts on the most appropriate demographic, the business can begin to determine its **target market**. This is a specific group of customers with similar characteristics, for which a business will produce goods and services. A business working out its target market will do so by 'segmenting the market'. People can be grouped according to demographic characteristics, geographical characteristics (where people live; for example, in urban, rural or suburban areas, or the country they are located in), behavioural characteristics (the way that customers purchase products; for example, are they a regular user or a first-time user of a product, do they have loyalty to a brand?) and psychographic characteristics (people's personalities, values, attitudes, interests, and lifestyles).

FIGURE 2 By identifying a target market, a business may be better able to satisfy the demands of its customers.



A business selling car products may determine that its target market is males, aged 30–50 and living in urban areas, who like cars and who have time and money to spend working on them. A business selling make-up may have a target market of customers who are female, aged 25–50, living in the city and who like to buy 'brand name' products. Defining a target market allows a business to decide who will demand their products, what products they want, and if there are actually enough potential customers to make the business profitable.

7.4.4 Competition

Competition can make life very difficult for a business. Depending on the market that the business is operating in, there may be several competitors or very few competitors. Competition can drive prices down and can restrict the opportunity to make profit.

However, competition can also create opportunities for businesses. It can force a business to improve the way they do things or to innovate, either through using technology, altering the product or by improving customer service. Competition can force a business to examine their target market closely to make sure that they are selling to the right consumers and perhaps to change the group of customers to whom they are attempting to sell.

7.4.5 Location

The location that a business chooses can create opportunities or restrict them, according to the nature of the business. A business needs to consider how important passing trade will be, whether visibility is important, how important access to resources will be, or whether cost will be the most important factor. For example, a business that is hoping to sell to young people or young families would find limited opportunities if it located in an area whose population has an average age of over 60; a boutique fashion store would struggle to find customers if it located in an industrial area; and a business that manufactures goods might encounter difficulties if it located in an area that was not easily accessed by its suppliers.

CASE STUDY

GameZone

Two friends, Jake and Ashley, established their small business, GameZone, in 2010. They didn't have much money of their own, but they managed to convince their parents to lend them enough to get started.

Their first problem was the location. Rents were very high in the local shopping centre. They opted for a disused shop in a local street. Next door was an abandoned warehouse, and on the other side was the Pensioner World shop. They thought they might do all right in the area though, because another computer games store, eGames, was located just around the corner.

Ashley thought it would be best to sell to anyone and everyone who would buy their games. He put a couple of advertisements in the local newspapers, and left some leaflets in the Pensioner World shop.

On the opening day, the stock had arrived and games were piled high on the shelves. One elderly customer walked up to the counter.

'Do you have any touch-typing programs please?' asked the customer.

'Dunno about that,' said Mez, the shop assistant. Jake emerged from the back office and stubbed out a cigarette on the counter. He told the customer that the store sold games, not computer programs.

'Well then, could you please order a copy for me?' asked the customer.

'Maybe, but until our internet is fixed, nothing's happening. Sorry,' replied Jake.

FIGURE 3 GameZone in action — how not to play the business game!



- **A** Bad location for business
- **B** Wrong demographic for products
- **C** Uninterested staff
- **D** Inappropriate store layout
- **E** Disorganised paperwork
- **F** Workplace hazard

7.4 Activities

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

Remember

1. List some business opportunities.

Explain

2. Briefly outline the four characteristics of a target market.
3. Explain how the following factors influence business opportunities:
   (a) target market
   (b) competition
   (c) location.
4. For each of the target market groups below, think of an opportunity (a product or a business idea) that would cater for their needs.
   (a) High income earners
   (b) New parents
   (c) Diet-conscious consumers
   (d) Well-educated people
   (e) Young and active students

Discover

5. In a magazine, newspaper or online, find images that show an example of each target market characteristic. Paste the pictures onto a page under appropriate headings (demographic, geographic, behavioural and psychographic) and add labels explaining why each picture represents that characteristic.
6. Select a business in your local area. Describe whether the business has an advantage or disadvantage in its location in regard to:
   (a) how visible it is to potential customers
   (b) cost (including the likely rent or costs of transportation)
   (c) how close it is to suppliers and customers
   (d) how close it is to competitors.

Predict

7. What would happen to a business that fails to seize opportunities?

Think

8. Read the GameZone case study.
   (a) What evidence is there that Jake and Ashley did not spend enough time carefully locating their business for its target market?
   (b) How will competition affect GameZone? Did Jake and Ashley make the right decision in locating close to a competitor? Why or why not?
   (c) Give three examples of poor customer service at GameZone.
   (d) The business has not enjoyed the start the owners wanted. If they called you in as a manager, what steps would you take to improve operations? Explain.

7.5 How can businesses respond to opportunities in the market?

7.5.1 Developing a new product

After identifying opportunities in the market, a business owner will need to respond to those opportunities in some way. This may involve developing new products to satisfy demand or changing the way the business delivers its products or services to consumers.

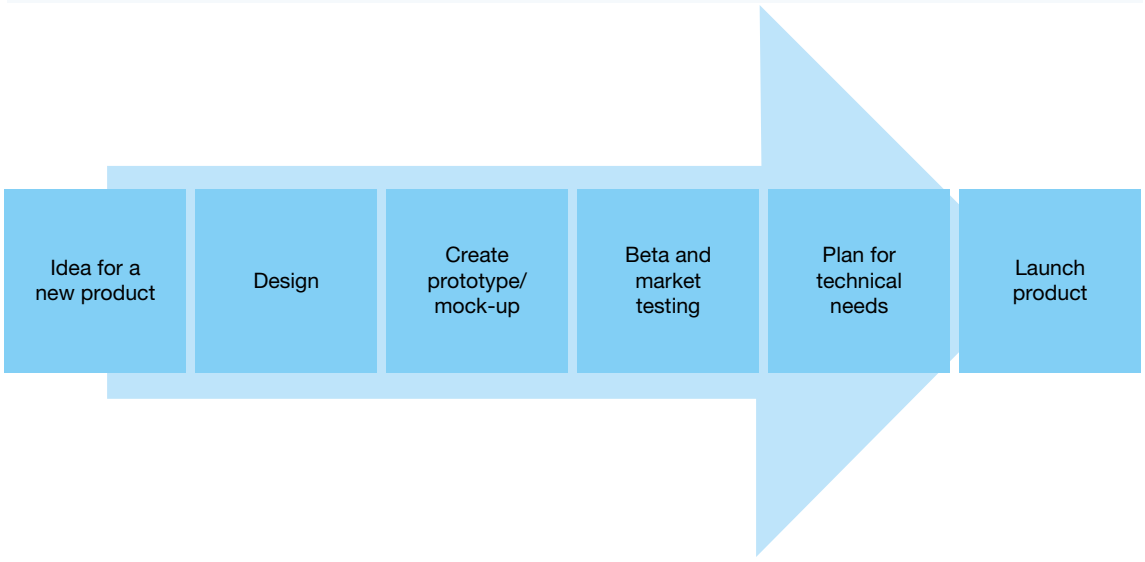
A business might respond to opportunities in the market by developing a new product to satisfy demand. **Product development** can involve modifying an existing product or the way in which it is presented, or creating an entirely new product that meets the demands of a newly defined customer or market. Starting with an idea for a new product, or an idea to modify a product, a business will go through a series of steps to bring the product to market.

The product will need to undergo a design process and then a prototype or mock-up will need to be created. The product will then go through beta and market testing. The testing will confirm if the product is on the right track or if improvements need to be made. After the technical needs of the product are planned for, including materials needs, suppliers, and final production requirements, the product will be launched onto the market.

FIGURE 2 Gelato Messina, a Sydney-based gelato maker, introduced a 'whitebait' flavour — a combination of salmon and white chocolate with lemon cream cheese, dill and caper jelly. Co-owner Donato Toce said that the business would not have introduced the flavour if they did not think it would work.



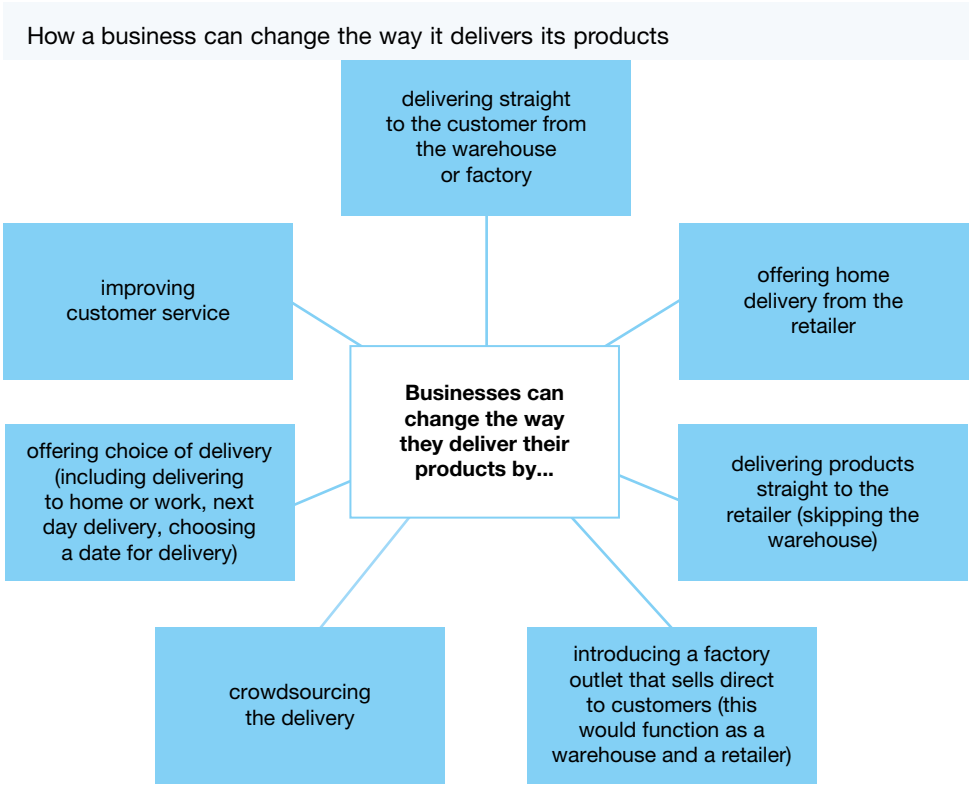
FIGURE 1 The process for new product development



7.5.2 Changing the way products are delivered to consumers

A business might respond to opportunities in the market by changing the way they deliver their products to customers. Products can be delivered in many ways, including by road, rail, ship, pipelines, power lines and computer networks. Most goods are produced at a point of production, for example a farm or factory. They are then distributed to warehouses and moved to points of sale, for example retail stores, where customers will then purchase them. A business can change the way it delivers products to customers by modifying this process.

Online shops have drastically altered the way that products are delivered to customers. Instead of going to a physical store, millions of customers around the world visit businesses such as Amazon.com, and eBay online. After purchasing a product, customers can specify or negotiate delivery details, including delivery direct to the customer's home. Some of the ways in which a business can change the way in which it delivers its products can be seen in figure 3 below.



Crowdsourced delivery

Online networks and marketplaces, including Zipments and Deliv in the USA and PluckNGo in Australia, connect couriers with customers who want to have goods delivered. A business owner wanting deliveries can make the request on the **crowdshipping** service's site or app. Those wanting to deliver products can browse available delivery orders, then pick up and make the delivery. Couriers range from professionals to students to people looking for some extra income.

Improving customer service

A business can improve its customer service by seeking feedback from customers and reacting to the suggestions. One way to collect feedback is through a customer survey. Many businesses use customer loyalty programs. Discounts and giveaways can be used to reward customers. Loyalty programs allow businesses to build a database of their customers and to stay in contact with them. Another way that businesses can provide quality service is by training staff in how to provide good service.

FIGURE 3 Blake Davies, a barista employed by Casualties Espresso in Port Macquarie, delivers coffee and food to customers on his skateboard.



CASE STUDY

Apple responds to an opportunity

Apple pioneered a hands-on, immersive in-store technology experience when it originally opened a retail store in 2001. When the first store opened, people were very sceptical. There was a recession and Apple had been reporting losses. But Apple saw an opportunity to improve its relationship with its customers and better present its brand. Led by then Chief Executive Officer (CEO) Steve Jobs, Apple took a risk in opening Apple Stores. It now has more than 400 retail stores located around the world, and rivals including Microsoft and Samsung have since emulated the retail stores.

Apple's retail stores allow the company to connect with customers in ways that other technology companies cannot. Customers, both new and existing, can experiment with Mac and iOS products. Apple learns lessons from what customers do in the retail stores and applies these lessons to its product development, including its iTunes and Mac OS applications stores, as well as its hardware. Having retail stores allows Apple to take further risks with its products. It knows that if its products break down, customers can simply pop into an Apple Store and have the fault repaired or replaced by a technician at the Genius Bar. This excellent customer service builds a positive relationship between the consumer and Apple so that customers keep coming back and tell other people about their products. Apple also uses its retail stores to support the launch of its new products, so that they become events. The launch of a new iPhone or iPad becomes a media frenzy because of the lines of people waiting outside Apple Stores.

FIGURE 4 Apple saw a business opportunity to improve its relationship with customers and build its brand by launching Apple Stores.



7.5 Activities

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

Remember

1. Define the term 'product development'.
2. List the steps in the product development process.
3. Suggest five ways that a business can change the way in which it delivers its products.

Explain

4. Read the case study 'Apple responds to an opportunity' and answer the following:
   (a) What business opportunities was Apple responding to?
   (b) In what ways did Apple respond to these opportunities in the market?
   (c) How did the introduction of Apple Stores improve Apple's products and customer service?

Discover

5. Use the **Business innovation** weblink in the Resources tab to visit the Australian Government Business website to find out more about businesses that have responded to market opportunities.
   Choose one business case study and read it. Write down one innovation that the business has introduced in response to a business opportunity.
6. Product of the Year is a consumer-voted award for product innovation. Use the **Product of the Year** weblink in the Resources tab to visit the award's website and find the results of the current year's awards. Write down the names of ten new products that received awards.

Predict

7. List the possible consequences of the decisions that are being made by the following small business owners:
   (a) Charlie runs a plant nursery and has decided to sell his products online to expand locally and overseas. He is intending to use crowdsourced delivery to make sure that the products get to customers.
   (b) Customer surveys at Bulete Ltd, a transport and logistics corporation, have revealed that customer satisfaction is very poor. The CEO, Murgon Conray, has decided that all staff will be trained in customer service.
   (c) Karley is planning to introduce a new product line to her swimwear importing business. She has sent her designs to the manufacturer in Asia which produces her products and has promoted the new fashions on her website.

Think

8. Imagine that one of the shop spaces in your local shopping centre has become vacant. Recommend a new business idea that could be located in that space and explain the new product or products that it might sell. Draw the new shop front and label the ways that the store has provided a new product to satisfy demand or changed the way that its products are delivered to consumers.
9. Use the product development process to launch an imaginary new product. Complete a report by responding to the following questions:
   (a) Outline your idea. What is your product and who do you think would be interested in buying it?
   (b) Design your product. Draw or sketch rough plans for your new product.
   (c) Create a prototype or mock-up. You could draw a final sketch, make a model or produce a video or animation showing what the product will look like.
   (d) If you were to test the product on the market, what would be the results? Write a paragraph suggesting what beta and market testing might reveal about your product.
   (e) What technical needs will your product have? Write a paragraph outlining what will be needed to produce your product, including materials, employees, factory, plant or warehouse, transport, packaging and any other needs.
   (f) Launch your product by presenting your report to the class. You could do this in the form of a PowerPoint, Keynote, video or a combination of presentation technologies.

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Explore more with this weblink: Business innovation

Explore more with this weblink: Product of the Year

7.6 SkillBuilder: Cost–benefit analysis

7.6.1 Tell me

Using a cost–benefit analysis

A **cost–benefit analysis** is a detailed examination of the strengths and weaknesses of different alternatives in order to see whether the benefits outweigh the costs. The principle behind a cost–benefit analysis is that you should only decide to act on an alternative if the benefit from taking it is greater than the cost.

Why is a cost–benefit analysis useful in economics and business?

A cost–benefit analysis is important for determining if an option will be a good decision or investment. It is also useful for comparing alternatives or projects, as well as estimating the resources needed to complete the alternative or project.

A good cost–benefit analysis:

- identifies opportunities
- proposes alternative ways to take advantage of these opportunities
- calculates the costs and benefits
- compares the costs and benefits to determine if the benefits outweigh the costs
- makes a decision about the best alternative to recommend.

7.6.2 Show me

We can apply the five elements of a good cost–benefit analysis to a case study, to see how this works in practice.

CASE STUDY

Olando's opportunity



Step 1: *Identify opportunities in the market*.

Olando is the general manager of a large soft drink manufacturer. He and his team are looking at the market to identify opportunities.

The manufacturer has spent a great deal of time looking closely at its business and the local market that it sells to. By asking a wide range of questions they have determined that there are two business strategies that could meet the changing needs of the soft drink market.

Olando's team believes that there is an unmet need in the Australian market for low-sugar alternatives to cola flavours. There are currently some products available, but customer feedback suggests some frustration with the lack of widespread access to these options. These options also suffer from poor quality.

Step 2: *Propose alternative ways to take advantage of these opportunities.*

The company thinks that there are two possible alternatives. Firstly, they can introduce a new range of low-sugar soft drinks based on the unmet need. The other alternative is to select suitable products that other companies are selling overseas and offer these, or copies of these, to local customers. This would involve buying the rights to distribute these soft drinks.

Step 3: *Calculate the costs and benefits of each alternative.*

Olando's team conducts a cost–benefit analysis of the alternatives proposed. This means that they add up all the costs and all the benefits of each alternative, and then they compare the costs and benefits to decide if the benefits outweigh the costs. A summary of the costs and benefits of each alternative can be seen in table 1 and table 2.

TABLE 1 A summary of costs and benefits for a new range of low-sugar soft drinks

	Costs	Benefits
Monetary	Total (including raw materials, factory overheads, transportation, packaging, research and development, salaries): $20 million	Total (including sales): $30 million
Non-monetary	Extra workload for staff	New research and development which could benefit the business in the future A positive image built up among customers and potential customers

TABLE 2 A summary of costs and benefits for selling or imitating overseas products

	Costs	Benefits
Monetary	Total (including raw materials, factory overheads, transportation, packaging, salaries): $15 million	Total (including sales): $20 million
Non-monetary	Staff dissatisfaction with using ideas from overseas Customer dissatisfaction with using products designed for overseas markets	Research and development team will be free to look at other products

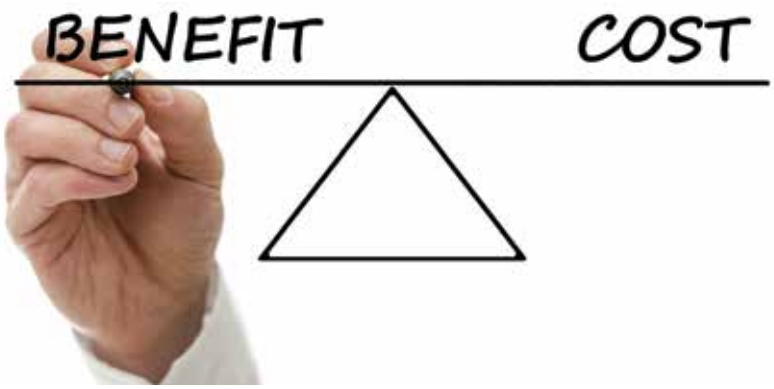
Step 4: *Compare the costs and benefits to determine if the benefits outweigh the costs.*

The team calculates that the benefits outweigh the costs when analysing the first alternative, introducing a new range of low-sugar soft drinks. The monetary costs are $20 million, while the monetary benefits are $30 million. This means that the monetary benefits outweigh the monetary costs by $10 million. They also consider that the non-monetary benefits considerably outweigh the non-monetary costs.

When analysing the second alternative, selecting or imitating overseas products and selling these to local customers, the team calculates that the monetary benefits outweigh the monetary costs by $5 million. The team feels that, even though the non-monetary costs of this alternative are high, the non-monetary benefits still outweigh the non-monetary costs.

Step 5: *Choose the best alternative.*

The team determines that the best alternative is the first one, introducing a new range of low-sugar soft drinks. This is because they believe that the benefits of this alternative far outweigh the costs when compared to the second alternative.



7.6.3 Let me do it

You can now carry out this five step process to complete a cost–benefit analysis using the case study on next page.

CASE STUDY

Uncle Bill's

Uncle Bill's is a global manufacturer of cereal products and snacks. Its marketing department has recommended that the business should respond to opportunities in the Australian market to produce products that meet different dietary needs, including low-salt, yeast-free and gluten-free products. It has proposed two alternatives. The first alternative is to introduce a new range of gluten-free cereals. The second alternative is to modify existing products already being used in other markets and sell these in the Australian market.

Bridie is the Australian regional manager for Uncle Bill's. She has asked you to be part of the team that will undertake a cost–benefit analysis of the alternatives proposed. Bridie has provided the team with a breakdown of the costs and benefits of each alternative (see table 3 and table 4).

TABLE 3 A breakdown of costs and benefits for Uncle Bill's: Alternative 1 — new gluten-free products

	Costs	Benefits
Monetary	Raw materials (ingredients): $12 million Factory overheads — salaries, insurance, power, repairs and maintenance: $8 million Transportation: $1 million Packaging/labelling: $2 million Selling/distribution: $3 million Research and development — salaries, other overheads: $4 million	Improve market share by 5% Sales of $50 million
Non-monetary	Extra workload for staff	New research and development which could benefit the business in the future Building a positive image among customers and potential customers Empower staff (as they are involved in the development of the new product) and improve corporate culture

TABLE 4 A breakdown of costs and benefits for Uncle Bill's: Alternative 2 — modification of existing products

	Costs	Benefits
Monetary	Raw Materials (Ingredients): $12 Million Factory Overheads — Salaries, Insurance, Power, Repairs And Maintenance: $8 Million Transportation: $1 Million Packaging/Labelling: $2 Million Selling/Distribution: $3 Million	Improve market share by 4% Sales of $40 million
Non-monetary	Some staff may be dissatisfied with using ideas from other countries when local ideas could have been used. Loss of customers who may be dissatisfied with products that are designed for overseas markets	Research and development team will be free to look at other products

Construct your cost–benefit analysis by completing the following steps:

Steps 1: Identify the opportunities for Uncle Bill's.

Steps 2: Identify the alternatives that have been proposed to take advantage of these opportunities.

Steps 3: Add up the costs and benefits of each alternative. Write down the total costs and benefits for alternative 1 and the total costs and benefits for alternative 2.

Steps 4: Compare the costs and benefits for each alternative. Do the benefits outweigh the costs for one alternative or both? In your opinion, which alternative has more benefits than costs?

Steps 5: Make a decision about which alternative to recommend.

Complete the following questions.

1. How did you decide which alternative to recommend?
2. Compare your decisions to the decisions made by other people in your class. How do the decisions differ? Can you explain the variation in decisions?
3. What aspect of completing a cost–benefit analysis did you find relatively easy and what did you find more challenging?
4. Reading the Olando's opportunity case study, identify the opportunities in the market for Olando's soft-drink manufacturer.
5. How did Olando's company respond to opportunities in the Australian market?

7.7 Review

7.7.1 Summary

When starting a business, the business owner has several forms of ownership from which to choose. These include sole proprietorship, partnership, corporation, cooperative and trust. Some business owners choose to operate their business as a franchise. When selecting the most suitable form of ownership, the business owner will consider their personal preferences, as well as the advantages and disadvantages of each type of business. There are many factors that influence business opportunities in the market and a number of ways that businesses can respond to those opportunities.

- Entrepreneurs assume the financial and personal risk of establishing a business with the hope of making a profit. These people demonstrate abilities such as risk-taking, initiative, problem-solving, creativity, innovation, communication and planning.
- A sole proprietorship is a business that is owned and operated by one person.
- A partnership is a business owned and operated by two or more people.
- A corporation is a business owned by shareholders.
- A cooperative is a business that is owned and operated by the group of people that it serves.
- A trust is a business created to hold property or assets for the benefit of another person or a group of people.
- A franchise is the situation in which a business sells the right to distribute its products under its name to other individuals or businesses.
- Business opportunities are influenced by factors including demographics, target market, competition and location.
- A business can respond to opportunities by following a process to develop new products to satisfy demand or by changing the way products are delivered to consumers.

7.7.2 Reflect

1. What is a cost–benefit analysis?
2. Why is preparing a cost–benefit analysis useful?
3. Read the case study on the next page and then answer the following questions:
   (a) What form of business ownership does Food Orbit have? Explain your answer.
   (b) Outline the advantages and disadvantages of this form of ownership.
   (c) Explain why you think the founders of Food Orbit might have chosen to use this form of ownership rather than another.
   (d) Identify the opportunities in the market for Food Orbit.
   (e) Explain how James Nathan and Melissa Foster responded to opportunities in the Australian market.
   (f) What has happened to Food Orbit since the launch of the website?

CASE STUDY

Food Orbit

In 2013 Food Orbit Pty Ltd started a website designed to connect local farmers and growers with wholesale buyers of food, including restaurant chefs. When the website launched, Food Orbit's founder and CEO James Nathan said, 'We're trying to change the food system. We're shortening the supply chain. We're cutting out the middleman. We're effectively doing this to be able to give farmers a fair price.' Food Orbit has a vision: 'To see every café, restaurant, school, canteen, caterer, hospital and hotel all using locally sourced, sustainable food.'

FIGURE 1 James Nathan, founder and CEO of Food Orbit



Mr Nathan and his co-founder, Melissa Foster, spoke to growers at farmers markets and toured properties, signing farmers up for their website. They also spoke to chefs. To raise awareness of local producers they staged a series of local produce dinners with Tom Walton, head chef of The Bucket List, a seafood restaurant in Bondi. They did this to showcase the farmers and to prove that their model of connecting farmers with restaurateurs worked.

Since launching the online ordering platform Mr Nathan has been seeking funding for the technical and sales resources needed to grow the business. In early 2014, Food Orbit partnered with Marketboomer, a business owned by Australian stock exchange listed Qanda Technology. Marketboomer supplies large hotel chains and Qantas lounges and has relationships with thousands of wholesalers. Food Orbit has now changed its focus from creating a 'one-stop shop' to connecting chefs with all of their suppliers.

'We started up quite small and tried to expand the amount of local produce restaurants were buying through us. But unless you are supplying a substantial portion of chefs' needs and making their life easier, you won't get much traction', says Mr Nathan.

The objective for Food Orbit now is to grow nationally and perhaps expand into New Zealand and the United Kingdom.

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Try out this interactivity: Business decisions crossword (int-6525)

TOPIC 8
The changing work environment

8.1 Overview

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

8.1.1 The rapidly changing world of work

In the past, when a person started a job, they would generally remain in that same job for several decades — a job was considered 'for life'. It gave the worker a sense of security knowing that they would always have an income (money coming in) as long as they performed the tasks their **employer** asked of them.

FIGURE 1 The nature of work has significantly evolved, largely as a result of technology.



Today the concept of **work** is shifting from 'Where do you work?' to 'For whom do you work?' and 'What do you do?'.

In many **industries**, the routine of a working day starting at 9 am and finishing at 5 pm is long gone. This routine has been replaced with almost 24/7 access to everything and everyone. Computers, the internet and smart phones have made it possible for people to stay connected with their social and work networks no matter what the time. With increased connectedness comes benefits such as greater flexibility to work the hours that suit individuals' lifestyles and the possibility of working remotely (i.e. from home or another location away from the office). However, it is also not uncommon for employers to expect workers to be available to deal with work matters outside of their normal working hours. In some fields there appears to be an **employer expectation** that employees will work harder and longer than they have done in the past. For the Australian **labour force**, like many places throughout the world, **employment** for life is a thing of the past. Employment is becoming less secure, and work that involves low-level skills is less common. It is being replaced by work that requires a greater level of skill and knowledge, especially in light of the rapid technological advances that have taken place over the past 20 years and which continue to shape the modern work environment. Technology is just one of the key factors that influence the world of work. Other influences include the health of the economy, employer and employee expectations, consumer demands, and **globalisation**. In this topic, we will explore these various influences on the way people work today and how they may work in the future.

Starter questions

1. Explain how you think work has changed in the last 100 years.
2. Technology has affected how people work. Think of three examples of jobs that have been affected by technological advances and explain how these roles have changed.
3. 'Technology has made many significant changes to our lives.' Discuss.

INQUIRY SEQUENCE

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Watch this eLesson: Future music (eles-2434)

Explore more with these weblinks: Changing world of work, Future careers

8.2 Influences on work today

8.2.1 Modern technology

The Australian **labour market** has undergone significant change in the past two decades. These changes may in part be attributed to the changing expectations of workers and employers: employers expect that employees will work harder and longer hours, while employees want a greater balance between their work and their non-working lives (**work–life balance**). Arguably, though, the greatest influence on today's world of work has been the rapid development of technology — a development that has changed the way in which not only Australians, but the people of the entire world, work. We will explore the impact of modern technological advances in subtopic 8.3, but it is important to note that long before the age of computers, the silicon chip and the internet, another significant technological advance began the process of change in the way people work.

8.2.2 Past influences

Prior to the late eighteenth century, the type of available work was mainly in **primary production**, in areas such as crop farming, fishing or livestock raising. Life was very different to that of today's developed societies. People produced the bulk of their own food, clothes and other needs. Manufacturing was fairly small-scale and done in people's homes using hand tools or basic machines. From the late 1700s to the mid 1800s, technological advances associated with the Industrial Revolution — in particular the development of steam power and the steam engine, the mechanised cotton mill and loom and the use of processed fuel to fire and heat the furnaces in iron ore production in England — changed the way that people lived and worked. People who previously worked in the primary industries outlined above moved to towns and cities to work in factories (**secondary industries**). The working conditions in these early factories were harsh. Men, women and children had few rights. They were forced to work long hours in noisy, dirty and dangerous workplaces. Accidents often happened around machinery, but there was no compensation or sick leave. If a person was injured,

someone else took their job and there were no unemployment benefits provided to those who could not find work.

Substantial workplace reforms in the many decades since this time have greatly improved on-the-job conditions for the great majority of workers in industrialised, developed countries such as Australia. But in some countries, harsh and unsafe work environments still exist, with workers paid poorly for long hours of labour in these difficult conditions. This is one of the ethical challenges of globalisation, which is discussed further in the sections that follow.

FIGURE 1 Children provided cheap labour in factories and mills. As this 1853 illustration shows, they were often badly treated.



8.2.3 Present influences

In looking at the historical perspective of work, it is evident that the advancement of new ideas, the need for improvements in daily living conditions, new manufacturing processes, and the development of new ways of using resources such as coal, gas and oil, have all had major effects on how people live and work. In modern times, in addition to technological advances, there are numerous other factors that may influence the ways in which people work. These include:

- the health of the local economy and the level of unemployment
- government regulations and workers' unions
- the impact of globalisation, the decreasing cost of distance, and the **outsourcing** and **offshoring** of jobs
- the decline of employment opportunities in some industries and the growth of others.

The health of the economy

When an economy is healthy, business tends to thrive, which means work is generally more readily available and unemployment levels are low. Consumers feel more able to afford the products and services they require, and their spending, in turn, feeds business growth. However, during times of economic hardship this is not the case. Businesses that are struggling to keep afloat are less likely to hire staff and, in fact, may attempt to cut business costs through making particular positions **redundant** and **retrenching** some of their workers. Thus, when the economy is in a period of decline, workers may experience difficulty finding employment.

FIGURE 2 The health of the economy is an important influence on the world of work — a healthy economy generally means more available jobs and lower unemployment rates.



Sometimes employers will attempt to weather a period of economic downturn by reducing employees' work hours rather than retrenching their workers. This can be an effective way of maintaining jobs while allowing a business to continue to operate at a lower cost, but any such changes can only be made in consultation with employees, if they are on permanent work contracts.

Government and workers' union influences

Industrial relations laws govern the relationship between employers and employees and have a significant impact on the ways people work in Australia. These laws have undergone many changes since the inception of the industrial relations system in the early 1900s. Many of these changes have occurred as a result of different government policies over time, and also as a result of the work of *unions* — formal organisations that negotiate with employers and government on behalf of the workers in a particular industry to ensure that their **conditions of employment** are fair and reasonable. Conditions of employment are the arrangements made between an employer and employee; that is, what the employer agrees to give an employee in return for their work. These conditions are usually outlined in a formal agreement, which covers issues such as the number of hours an employee is expected to work, annual leave and other entitlements such as sick leave and long service or maternity leave.

FIGURE 3 Conditions of employment are set out in a formal agreement. In Australia, there are three different types of agreement: awards, registered collective (group) agreements and individual employment contracts.



Government also affects the world of work through decisions regarding taxation and import tariffs, which can impact on the ability of certain industries to remain competitive (see subtopic 5.5), and through changes to laws in relation to issues such as retail trading hours and liquor licensing. For example, where once it was illegal for retail shops to trade on Sundays, this has now become the norm. In Victoria from the time of World War I until 1966, hotels had to close at 6 pm; in 1966 this was changed to 10 pm, and since changes to liquor licensing laws in the late 1980s, many hotels and other venues are now able to stay open until the early hours of the morning. Clearly, such changes have had a significant impact on the working hours of people employed in hospitality (hotels, clubs and restaurants) and in retail trade. Changes to work hours are discussed further in subtopic 8.4.

The impact of globalisation

Advances in technology, in particular communications technology, more effective, lower cost methods of transportation, and largely unrestricted trade between countries have allowed the whole world to become a single, integrated marketplace. The term globalisation refers to this ever-increasing international cultural and economic interaction.

In Australia, globalisation has had, and continues to have, a significant effect on work opportunities and the way people work. One of the key ways in which this effect has been felt is through the increasing practice of outsourcing.

Outsourcing involves engaging individuals or businesses outside of an organisation to fulfil functions previously carried out within the organisation itself. In an attempt to improve productivity, cut costs and increase their ability to compete on a global scale, many Australian businesses now outsource some of their non-core functions. Some functions that are commonly outsourced include recruiting new staff, marketing and advertising, management of finances, and production of goods. Some businesses have taken this a step further, and outsource various functions to workers and organisations overseas — some have even moved their entire production process overseas. This practice is known as offshoring.

Offshoring provides a business with the ability to cut labour costs, which can be as much as ten times higher in a developed country such as Australia than in a developing country such as China, India or Sri Lanka. For example, a number of the telecommunication companies you may deal with have outsourced their call centres to places like India, Sri Lanka and China; similarly, an increasing number of companies are taking their legal or accounting needs offshore, having work completed in countries where labour costs are cheaper but skill levels remain high. Offshoring can also enhance the ability of a business to stay competitive and to develop an overseas presence by entering new markets.

The impact of globalisation on the Australian working environment can be examined in relation to the consumer, the worker and the business owner.

FIGURE 4 Rapid technological advances have facilitated the process of globalisation — allowing the interaction of economies throughout the world.



TABLE 1 Examining the impact of globalisation on Australian consumers, employers and employees

Impact on consumers	Impact on employers	Impact on employees
Ability to choose from a wide range of goods, some of which are imported into the country, e.g. tinned tomatoes, electrical goods, clothing, wine	Ability to reduce the costs of manufacturing or providing a service by employing cheaper overseas-based labour	Loss of jobs as some roles are moved to overseas providers
Access to goods at lower prices	Access to new markets overseas	Potential for individuals to travel, work and/or study overseas; taking skills, knowledge and capabilities with them
Ability to browse and buy online and have purchases delivered to the door, eliminating the need to travel to stores	Increased ability to access new technologies from overseas	Potential to work for international companies that bring their business to Australia
	Ability to generate greater income through selling more products to a global market, allowing the potential to further build and develop the business through investment in improvements in technology, productivity and quality	New jobs created as a result of business growth through exporting products such as wine, cars, gas and minerals to other countries
	Pressure to become more competitive and produce goods and services more cheaply than overseas competitors	

Decline and growth of industries

With many companies moving part or all of their operations overseas, the employment opportunities in some industries have decreased. For example, the announcement of the closure of production plants of the three major car manufacturers in Australia (Ford, Holden and Toyota) means that workers in this industry will need to seek employment in other fields. While ongoing technological advances can lead to job losses in some cases, where tasks that were once carried out by people are now able to be done by machines, they can also present opportunities for new businesses to develop; for example, in areas such as telecommunications and digital technologies. In the 1980s, jobs such as website designers, social media managers, e-commerce consultants and app developers didn't exist. Thirty years later, they are a common part of the business world. Many of the jobs that will exist in the future may be roles that we cannot even imagine today.

FIGURE 5 Just as 'app development' was unheard of in the 1980s, many of the jobs of the future may be in fields that are yet to be developed.



8.2 Activities

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

Remember

1. Describe what work was like before the Industrial Revolution.
2. Explain the difference between primary and secondary industries.
3. What is outsourcing?
4. What is offshoring?

Explain

5. Examine figure 1. What do you think working conditions were like for young people then?

Think

6. What impact do you think globalisation, outsourcing and offshoring will have on the Australian economy?
7. What might be some of the ethical challenges of globalisation, and in particular, the practice of offshoring?

Discover

8. Use the **Industrial Revolution** weblink in the Resources tab to watch a video examining how the Industrial Revolution changed the nature of work. Take some notes while watching the video, then write one or two paragraphs explaining how working conditions were different prior to the Industrial Revolution compared with today.

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8.3 The significance of technology

8.3.1 Significant technological change

The Australian work environment has changed significantly in the past two decades. Much of this change can be attributed to the development of technology and rapid communications advances that have altered the way the world does business.

The world of work changed dramatically in the 1980s with the development of the desktop computer, but it was the widespread adoption of the internet in the 1990s that has brought arguably the greatest change to the world of work since the Industrial Revolution. The internet, computers and devices such as smart phones and tablets are now part of our everyday life and, for most workers, have been integrated significantly into the way that they undertake and complete their work. The ability to communicate virtually instantaneously with anyone almost anywhere in the world has changed the way people do business and has been a major factor in the process of globalisation.

Types of new technology

Technological advances have changed many aspects of business operation, from administration tasks to internal and external communications and service provision and manufacturing processes. The list of technological advances that have changed the way we work is enormous. It includes:

FIGURE 1 Video conferencing allows workers to meet even though they may be in different countries.



- video conferencing and webinars: using technology to meet or conduct information and training sessions, rather than needing to have face-to-face interactions
- smart technology (smart phones): enabling 24/7 communication through phone, email, SMS, MMS
- e-commerce: internet banking, online shopping, microchip credit cards, EFTPOS, PayPal, BPay, Post Billpay, PayPass
- software developments: word processing, spreadsheets, database, accounting and other software programs that streamline administrative tasks
- robotics: their use in manufacturing, especially in assembly lines
- computer-aided design (CAD): using computers to design new products, buildings etc.
- computer-aided manufacturing (CAM): using computers to assist with the manufacturing process of goods and services
- cloud computing: external data storage away from the organisation, allowing access to information from anywhere
- communication: discussion forums, blogs, social networking — creating new ways to reach potential customers.

How technology has changed working lives

The impact of technological advances has been felt significantly in the workplace. For example, where once it was necessary to send written materials via the post (which may take several days or even weeks to be delivered, depending on the distances involved), email now makes it possible for correspondence to

be sent and delivered within the same minute! Computer software enables once tedious administrative, accounting and other processes to be completed in a fraction of the time that they once required. And computer-operated machines now perform many manufacturing line tasks that once required meticulous human completion. Similarly, in many cases where once manual labour was the norm, computers and robots now control the lifting and movement of heavy objects. Interestingly, the law has followed this process and various requirements have been introduced that seek to protect workers and ensure that employers provide a safe environment for them. Work (Occupational) Health and Safety laws cover issues such as manual handling, machine operation, safety guards and shut-off mechanisms, acceptable noise levels, and other hazard management in relation to the use of technology in the workplace.

Manufacturing

The use of computers in production has meant that the manufacturing process has sped up significantly and, in turn, productivity levels have increased. Assembly lines, computer-aided designs, and computer-driven manufacturing processes (in which computers control and direct the machinery and equipment), have meant that less workers are needed to undertake the manual aspects of production. However the increase in production output, combined with access to new markets through globalised trade opportunities has allowed the growth of some businesses, and a need for increased numbers of workers to meet the demands of expansion. Further, the nature of many roles in computer-assisted manufacturing operations has changed, with workers gaining higher level skills as they are trained to be able to monitor equipment and carry out any adjustments or even repairs that may be required.

FIGURE 2 The types of machinery used in manufacturing processes are constantly changing the way workers work and the work that they do.



Rapid communication changes

Technology has changed the concept of communication. For example, the growth of the internet has meant that news events, when they occur, can be instantly disseminated and shared through instant messaging, blogs, emails and websites. This change has had a huge impact on print media such as newspapers. Many people no longer buy the printed newspaper but will instead read the news online — and it is not just local newspapers that they can access, but also newspapers from around the world.

In the workplace, these rapid changes have led to enormous shifts in the way people communicate and work. No longer is there a need to have 'face time', where people need to be in the same room to meet and discuss business. As figure 1 depicts, face time has been replaced by 'virtual meeting time'. Smart devices allow for instant communication and access to workers, employers, suppliers and producers.

Where once distance may have been a prohibitive factor in applying for and obtaining a job, this is no longer the case. In many fields of work, employees increasingly have the opportunity to work remotely, based from their own homes. The use of technology such as teleconferencing or video-conferencing, email, cloud computing and so on effectively eliminates the distance between people, and creates opportunities for more flexible work arrangements that are beneficial for both the employee and the employer.

Staying connected or switching off?

FIGURE 3 You can have access to your working life no matter where you are.



The developments that have occurred in communications technology make it difficult to 'switch off'. For example how many people in your class have a smart phone? Do you check your phone or device as soon as an instant message, email or Facebook post hits your inbox? If you do, you are not alone. Many of us are obsessed with our smart phones, tablets, laptops and other devices, along with the social media so easily accessed on them. And while such technologies allow us unprecedented opportunities for social connection and access to information, they also play a role in the gradual blurring of the boundaries between work and home life. It is now easy to stay connected with the office or work while at home, on holidays, or even while sleeping! Many people now work beyond the traditional office hours of 9 to 5, using laptops and other devices to access work networks remotely, checking work emails while they have breakfast or during their commute to work on the train, or perhaps to teleconference during their home time with other people working in a different time zone.

8.3 Activities

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

Remember

1. List three technological advances that have altered the way people work and outline how they have changed the workplace.

Explain

2. The use of technology in work has a range of consequences. Discuss one positive and one negative consequence.
3. Discuss how technology can stop people from 'switching off' and the impact this may have on a person's wellbeing.

Think

4. What forms of technology do you use on a daily basis? What effect does this have on your life?

Investigate

5. Conduct more research on the development of the internet. There are many interesting videos online that will provide you with this information. Examine them and then write a short story or cartoon about how the internet was developed.

8.4 Changes to the workforce

8.4.1 The changing roles of women and men

Fifty years ago, the majority of the Australian workforce was male. Most of these men were the family breadwinners — supporting their wives and families until retiring in their sixties. Women often 'retired' from the workforce when they married, and it was relatively uncommon for a woman to work if she had young children. Today, the two-income family is more common, with women continuing to work throughout the period of having dependent children. Employment is more likely to be part-time or casual and there have been significant changes in the types of jobs in which people are employed. People are less likely to do the one job for their entire working lives, instead moving not just from one role to another in the same field, but also undertaking complete career changes, possibly several times, in a bid to find work that continues to provide a sense of purpose and satisfaction in this major area of people's lives. With this shift in the way people approach their careers, human resources management has become increasingly important within the business world — emphasising the value placed on finding the right person for a particular role. In this section, we will explore these and other changes to the Australian workforce.

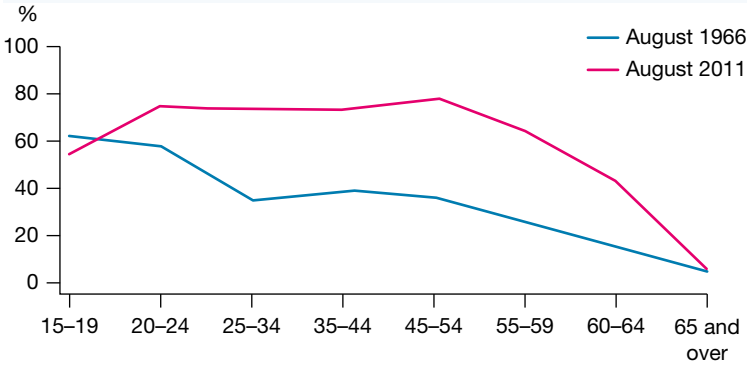
8.4.2 Participation rates

One of the most significant changes seen in the Australian workforce in the past 50 years has been the increased participation of women. As mentioned above, in the past it was common for women to leave the workforce when they had children, and often they never returned to paid work. This is no longer the case. Figure 1 shows the change in female workforce participation rates from 1966 to 2011.

The graph clearly depicts the overall increase in participation, and, in particular, the virtual absence in 2011 of the 'dip' in participation seen in the 1966 data during the traditional child-rearing ages of 20 to 35. This indicates that a much higher proportion of women today are continuing to work throughout this period.

As women have entered the workforce in greater numbers and continued to work after having children, the need for formal childcare has increased. This has led to the growth of the childcare industry and has created significant new job opportunities in early childhood development and childcare. Another significant change has been an increase in flexible work options, offering benefits such as parental leave (for both females and males) and part-time work, that allows greater flexibility to juggle the demands of work and parenthood.

FIGURE 1 Age-specific labour force participation rates for females, 1966 and 2011



Source: Adapted from Australian Bureau of Statistics, *Labour Force Historical Timeseries, Australia* (cat. no. 6204.0.55.001).

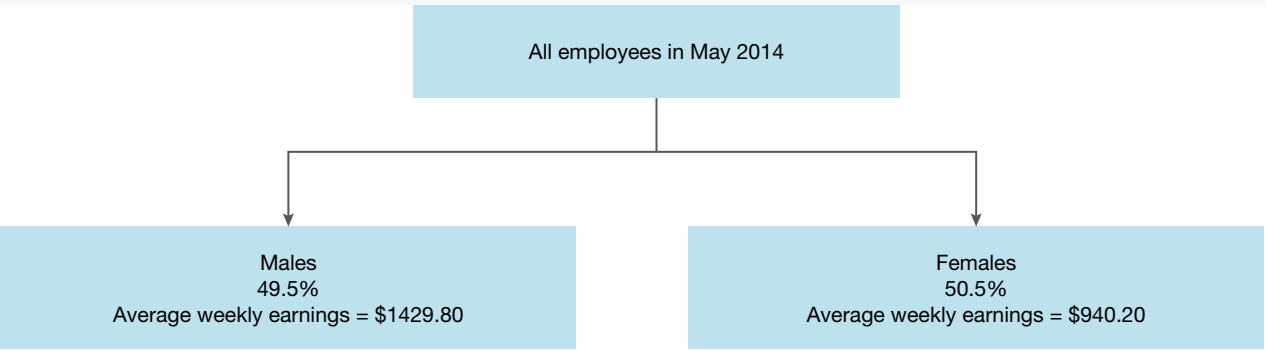
FIGURE 2 The increased participation of women in the workforce has created the need for formal childcare.



Figure 3 below shows the proportion of males and females in the employed Australian labour force in May 2014, and their average weekly earnings.

Female employees actually slightly outnumber males, but as can clearly be seen, the average weekly earnings of females is significantly lower than that of men. This can be explained to some extent by looking at the differences in full-time and part-time participation rates.

FIGURE 3 Proportion of males and females in the paid workforce in 2014, and their average weekly earnings



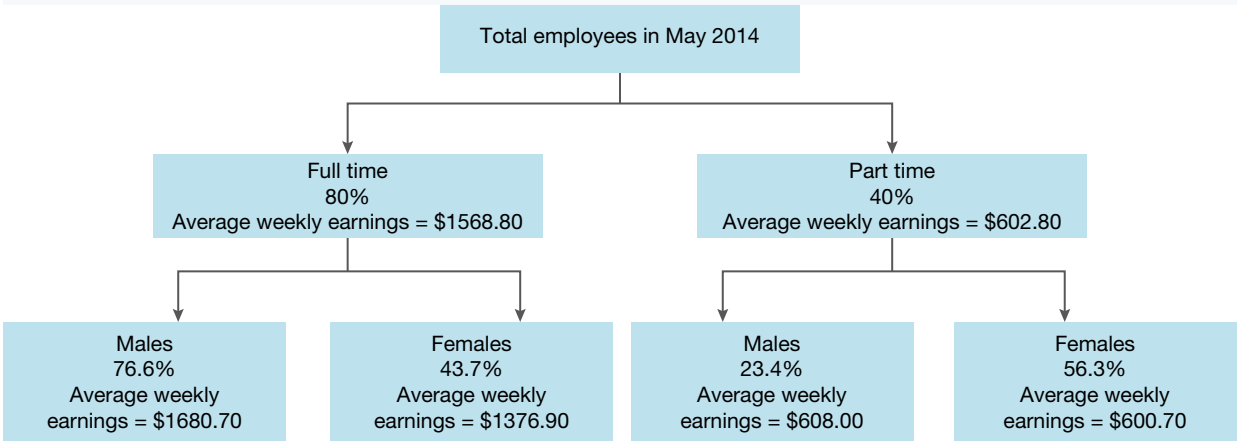
Source: Adapted from Australian Bureau of Statistics, *Employee Earnings and Hours, Australia, May 2014* (cat. no. 6306.0).

Full-time and part-time participation rates

An employee is considered to work full-time if their hours of work equate to 35 hours or more per week, or they work the agreed upon or award hours for a person in their occupation or industry, and the work is ongoing. An employee is considered to work part-time if they work less than 35 hours a week in ongoing employment, where the number of hours they work is either fixed or variable.

Figure 4 below shows that in May 2014 there were more full-time employees (60.0%) than part-time employees (40.0%), and that, as would be expected, average full-time earnings ($1568.80/week) were significantly higher than average part-time earnings ($602.80/week). However, 56.3% of females were employed on a part-time basis, compared with only 23.4% of males; that is, the vast majority of male workers (76.6%) were employed full-time, which accounts for much of the disparity in average weekly earnings between men and women.

The proportion of full-time and part-time employees in May 2014, and their average weekly earnings



Source: Adapted from Australian Bureau of Statistics, *Employee Earnings and Hours, Australia, May 2014* (cat. no. 6306.0).

8.4.3 Hours of work

In today's work environment, there is a perception that people are expected to be available outside of traditional work hours due to technology-enabled connectivity, and that they are generally working longer hours than ever before. While in some industries this may indeed be the case, Australian Bureau of Statistics figures show that since the 1980s there has actually been a decline in the average hours worked by Australians — from 35 hours average in the 1980s, to 32.9 hours average in 2011. Figure 5 depicts this change.

The change in average work hours can at least in part be attributed to the significant increase in part-time employment during this period. Part-time roles now exist in almost all industries, and are particularly prevalent in areas such as retail trade and hospitality.

Apart from the change in the number of hours worked, there has also been a significant shift in the times that people work. Where once the world of work was largely framed around the 9 to 5 workday, this is no longer the case. For example, changes to regulations in retail trade have created a demand for employees to work vastly different hours to those of the past, with weekend and late-night trading now allowing businesses to operate well outside the traditional 9 to 5 trading hours. Similarly, venues such as bars, restaurants and nightclubs are now able to stay open much later, creating a need for staff who are willing and able to work shifts into the early hours of the morning. Consumer demand has also created a need to provide call centre sales and helpline staff in certain industries from early in the morning until late in the evening. Thus, employees working in such fields may work a range of hours that are significantly different to what was once the case.

FIGURE 4 The average number of hours worked by employed Australians shows an overall decrease from 1980 through to 2011.



Source: Adapted from Australian Bureau of Statistics, *As a Matter of Fact, 2012* (cat. no. 1393.0).

FIGURE 5 Changes to trading hours have had a significant impact on the hours of work for many Australians.



8.4.4 Availability of jobs

In the late 1960s almost half of Australia's labour force was employed in production industries like mining, manufacturing, construction, electricity, gas and water, agriculture, forestry and fishing. In 1997, some thirty years later, that proportion had decreased to 28%. During the same period, service industries grew substantially. These include: property and business services, accommodation, cafés and restaurants, culture and recreational services, personal and other services, health and community services, retail, education, transport and communication, trade and finance, and insurance. This trend continues today, and is a major factor in shaping the ongoing changes seen in the Australian workforce. We will look at the changes in Australian work industries in more detail in subtopic 8.5.

8.4.5 Career lengths

Recent studies in the United States of America, based on US labour statistics, indicate that the average US worker stays in a job for a period of 4.6 years. In Australia, the average is thought to be even less than this — as little as 2 years — largely as a result of younger workers being prepared to change jobs on a much more frequent basis than their older colleagues.

FIGURE 6 Today's workers change jobs far more often than they did in the past. This trend is expected to continue into the future.



Anecdotal evidence suggests that members of **Generation X** are likely to change jobs about 11 times during their working life. It is anticipated that this figure may double for **Generation Y** or **Generation Z** and increase even further for **Generation Alpha**.

Research has found that the reason for changing jobs varies from person to person, but may include:

- social reasons: response to life events, such as having children
- economic reasons: wanting to obtain better working arrangements
- career-related reasons: wanting to gain further career experience
- other personal reasons: a desire to gain new experiences.

It is interesting to note that for many workers, there is a reluctance to change. Possible reasons why some workers choose to stay in the same job may include:

- a lack of opportunity to change jobs
- security
- convenience
- feeling valued in a role
- they like the people they work with
- a fast commute (quick to get to and from work)
- the need to build/consolidate retirement (superannuation) funds.

Even for people who do not change jobs, the workplace continues to change and evolve. In the Career Experience Survey conducted in November 2002 by the Australian Bureau of Statistics, a number of significant issues regarding the changing nature of work were noted. Approximately 77% of all employees surveyed had been with the same employer for a year or more. Of these, almost 57% reported significant changes to their working life over the past year. The types of change reported are summarised in table 1 opposite.

Table 1 shows that in the majority of cases, the changes did not mean that employees were actually changing their positions. More often, the change involved taking on additional tasks or more responsibility, perhaps as experience is gained in a role.

TABLE 1 Types of workplace change experienced

Type of change	Percentage of employees who experienced the change	Experienced by whom
Promotion: receiving an increase in wages or salary due to an increase in responsibility or the complexity of the work that is undertaken	8.7%	Permanent and full-time workers
Transfer: where a person is moved from their current position into another one without a change in wage, salary, level of responsibility or complexity of task	6.8%	Permanent and full-time workers
Change in hours: this can be either a reduction or an increase in the amount of hours to be worked in a week	31.7%	Part-time workers and casual workers
Changed location: movement involving a change in terms of either work building, or geographical location such as a suburb, state or even country	8.5%	Permanent and full-time workers
New, different or extra duties: where there has been a change in the scope (the range) of activities that need to be completed	40.2%	Permanent and full-time workers
More responsibility: an increase in the level of responsibility you have in terms of your experience and what is expected of you	42.7%	Permanent and full-time workers

Source: Adapted from Australian Bureau of Statistics, *Career experience, Australia, November 2002* (cat. no. 6254.0).

8.4.6 Human resource management

The term **human resources** refers to the people who work within an organisation. In any business, the human resources are one of the most vital elements. With the world of work undergoing such rapid and ongoing changes, the effective management of a business's employees — **human resource management** — has become increasingly important. Human resource management involves many aspects, such as staff recruitment, negotiation of employment conditions, training, professional development, and carrying out staff performance reviews. The goal of successful human resource management is to ensure an organisation has the right people with the skills and knowledge necessary to meet the needs of the business.

Finding the best employees with the most appropriate skills and other attributes that will suit the organisation and its culture is an important part of the human resource manager's role. This recruitment process has changed significantly over the past 20 years as a result of technological advances including software development and, of course, the internet.

Online sites that act as repositories of potential workers' résumés, such as SEEK.com.au, allow people in search of work to place their details online, enabling employers to find them more quickly and easily. Job ads are posted in

FIGURE 7 A business's human resources are among its most important features.



FIGURE 8 Hiring is a lot easier thanks to online sites where employers can choose their employees.



these online forums and many employers require prospective employees to complete the application process online, which can significantly streamline the whole recruitment process compared to traditional paper-based job applications.

FIGURE 9 Human resource managers have become very important to the success of a business. The tasks that they perform can be grouped into the four categories below.

Acquisition	• The main tasks related to acquisition include advertising available jobs, interviewing people and selecting the best person for each job. • Human resource staff may keep a database of all employees and skills, qualifications and experience that they have.
Training	• Training involves providing employees with the skills needed to perform their job. It begins with an induction process when a person is employed. • Employees continue to receive training throughout their working life.
Maintenance	• Maintenance relates to all the processes/strategies undertaken to keep workers motivated and wanting to remain at the business. • It may include carrying out performance reviews, changing pay rates, offering promotions, flexible work arrangements, further training and providing challenging work.
Separation	• When employees leave (or separate) from a business, human resource managers need to gather information about why people leave. • This information may inform them about the changes they may need to make to their acquisition, training and maintenance of current staff.

Perhaps on the downside for potential employees however, is the way in which the online environment has also made it easier for employers to 'background check' job applicants. It has become increasingly common for an employer to look on social media sites to find information about the employee they are considering hiring. Applicants need therefore to be mindful of their 'online presence' in order that it does not potentially limit their employment opportunities.

The internet has provided a new way for people to advertise and search for work roles. Employers are now able to reach a whole world of potential employees easily and in a cost-effective manner; and job hunters are able to browse the thousands of jobs advertised around the world in their search for a role that fulfils their needs and ambitions.

FIGURE 10 Through advances in technology employers can now easily access potential employees from around the world.



8.4.7 The value of work

The value one places on work can be linked to one of the four reasons why people work:

1. **To obtain self-satisfaction**

   It is never easy to separate the work you do from who you are. For many workers the tasks they perform are done to a very high quality and reflect the attitude that they have towards their work and their employers. They take pride in the work they do and this in turn raises their level of work satisfaction. When workers have ownership of their work and are proud of their achievements, they are more likely to work harder and longer to achieve the objectives of the organisation. For example, two hundred employees of a factory were asked to write down the most important aspect of their work. Their responses revealed that it was not money that motivated them. Sixty-seven per cent of the employees said that knowing they had done the job well and received some praise from the supervisor were the most rewarding aspects. Thus recognition of a job well done increases the value of the work itself.

2. **To gain status and prestige**

   The type of work a person does is often used to measure that person's status and prestige within our society. In other words, their status comes from their occupation. The value we place on a person's job determines his or her income. For example, a heart surgeon's highly skilled work is valued more than a labourer's, so the surgeon receives a higher income. This is partly due to the education and training needed to become a surgeon as well as their high skill level and specialisation. Historically, society has tended to place a lower value on work in what are referred to as the 'caring professions', such as childcare, nursing and aged care. For this reason, salaries for people who work in these areas have generally been lower than in many other fields. These roles have traditionally been filled by women, and this provides another reason for the disparity that is often seen between the relative wages of men and women in Australia. This attitude is slowly changing, with wage rises being fought for and won in many of these areas. Interestingly, in a 2013 survey that asked Australians to rate professions in terms of their perceived ethics and honesty, nursing emerged as the number one ranked profession. Doctors were ranked second in the survey.

3. **To enjoy social interactions with others**

   The social aspects of work increase its value. On average, employees spend more time at work with their co-workers than they do at home with their families (not including sleep time). Work provides the opportunity to meet other people and make friends. Some workplaces have social clubs that employees can join, to participate in organised activities aimed at increasing the sense of staff connectedness and satisfaction.

FIGURE 11 Social interaction is one of the key reasons that people work.



4. To help others

For many people the need to make a difference and contribute to society is an important part of why they work. This may be particularly so in the case of those who work in the 'caring professions', or who choose to work for not-for-profit organisations. Some people place such a high value on the desire to help others that they are prepared to offer their time and skills through volunteer work, seeking no payment for the work they do.

8.4 Activities

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Remember

1. Describe one significant change that has occurred in the Australian workforce in the last 50 years.
2. List three reasons why people value work.

Explain

3. Examine figure 1. Discuss how participation rates of females have changed from 1966 to today.
4. Review figures 3 and 4. Consider the information shown in these figures with other factors discussed in this section and explain why the average weekly earnings for women are lower than they are for men.

Think

5. 'The value of work is a personal thing'. Discuss.

8.5 Work in the future

8.5.1 Predicting future changes to work and possible outcomes

Can you imagine what work will be like in the year 2050? Will new jobs exist that are like the ones we see in sci-fi movies, or will they continue to be much the same as they are now? Although it is very difficult to predict how work will change, what form it will take, what activities will need to be performed and what skills, knowledge and abilities workers will need to have, it is worth noting that one of the challenges of government is to do just that — to attempt to predict some of these changes and to make policies and economic plans that will support the future world of work in Australia.

Work as we know it will slowly change. Exactly how it will change is unknown, but it is likely to be dependent on a range of factors, which in turn could have particular outcomes. Table 1 summarises some of these potential factors and outcomes.

FIGURE 1 Is this the future of work?



TABLE 1 Potential changes and outcomes in the future world of work

Factor	Outcome
Skills required in the future workplace	Future employees will require more education and higher skills development to participate in the workforce.
Changes in the **gender segregation** of the workforce	More equal representation of men and women in all types of work across all industries; the gender gap in average wages will continue to decrease
More employment in certain sectors of industry (service) and decreased employment opportunities in other sectors of industry (manufacturing)	More service-oriented roles; more focus on case work that follows a customer from start to finish, multi-skilling of the workforce, to enable the same employee to assist a customer throughout their entire customer experience
Further advances and increased use of technology in the workplace	Employees will need to continue to learn how to operate new equipment and software in order to perform their jobs. Some roles may become obsolete as new technology provides more efficient ways of completing particular tasks.
Changing worker attitudes and the desire for work–life balance	The provision of more flexible work arrangements to accommodate employees' needs, increase satisfaction and productivity, and retain staff
Changing workplace environments	Creation of more creative, ideas-driven environments that encourage workers to think independently and be creative in their problem solving Greater focus on having healthy and happy employees who will work longer and stay with an organisation, rather than frequently changing jobs; employees supported through the provision of benefits such as an onsite gym, canteen or café, childcare facilities etc.

Increased education and skill levels

Two interrelated service areas that are experiencing distinct growth and an increase in employment opportunities are professional, scientific and technical services; and education and training. In the future, these areas will continue to grow as the need for higher skilled workers increases. Lower skilled jobs are decreasing and being replaced by roles that require a higher level of education and which are more skills-focused. Thus the need for workers to be multi-skilled, educated and more technically oriented to enable them to work with the newest technological advances is becoming increasingly evident.

Without appropriate, accessible training and education opportunities, it will be difficult to meet Australia's future workplace requirements. Thus, the need to provide such opportunities is an issue of constant focus for government.

Changing attitudes to gender segregation

Another possible change is in the area of gender segregation. This is where one gender, male or female, is more likely to be employed in a particular area than the other gender. Gender segregation is common in some industries. This is particularly evident in construction and mining. For example, in the New South Wales construction industry, women account for only 10% of workers. In mining, they account for only 11% of workers. However, in the more traditionally female-dominated occupations such as health care, social assistance, education and training, women continue to occupy the vast majority of roles. What might be the outcome if more men started to work in these typically female-dominated occupations and more women started working in typically male-dominated professions?

Certainly, it would have an impact on the gender gap that still exists in average wages of men and women. It might also lead to an increase in the perceived value (and the higher wages that go with it) of the traditionally lower paid female-dominated industries. Would it also change the way that we view the genders, or perhaps the industries? Or might it simply be a natural progression that comes as part of an ever-changing work environment?

Declining industries and growth industries

Over the past hundred years, the work people do has changed significantly. This is clearly demonstrated by looking at the industries in which they work. The three main employment industries are the **primary**, **secondary** and **tertiary** industries. In the past, much of the workforce was involved in the primary and secondary industries. In recent years, however, there has been a shift towards greater participation in the tertiary industry, and in what have now been termed the **quaternary** and **quinary** industries also. The figure below outlines the various features of each of these industry types.

In Australia, there are numerous sub-industries into which people's work can be classified. These include agriculture, mining, manufacturing, retail, construction, accommodation and food services, transport, education, health and others. Table 2 below examines the four main employing industries and compares the proportion of people employed in 2000–2001 with the proportion employed in those same industries for the period 2015–2016.

As table 2 details, during this 15-year period, while retail trade remained steady as the second-highest employing industry, the health care and social assistance industry and the construction industry saw strong increases in the percentage of people employed in those fields, while the manufacturing industry saw a decrease of 5%. This is representative of the growth and decline of these particular fields of employment.

The figure 'A series of graphs showing changes in various industry sectors' provides another view of the employment figures in certain industries from 2007 to 2013.

The five key industries of the Australian work environment

SECONDARY INDUSTRY
Secondary industries include all workers involved in turning raw materials into finished or semi-finished products. For example, iron ore, coal and limestone are turned into steel — a semi-finished product. Steel is then used to manufacture cars and steel-framed houses — finished products.



TERTIARY INDUSTRY
People who work in the tertiary industry provide a service to others (for example, retailers, dentists, bankers and solicitors). Over the past 50 years, the number of employees in tertiary industries has grown rapidly. Today, three out of every four employees work in this sector. The growth has been so fast that some jobs in the tertiary industry have been broken down into the quaternary industry and quinary industry.





PRIMARY INDUSTRY
A primary industry is one that produces raw materials (for example, fresh fruit) from what nature has provided. All types of farming, mining, fishing, grazing and forestry are primary industries. Primary industries provide all our food. Hence, the work of employees in these industries is essential. As well, approximately 60 per cent of all Australia's exports are primary industry products.





QUATERNARY INDUSTRY
The quaternary industry is made up of service industries involved in the transfer and processing of information and knowledge. Telecommunications, property, computing and education are some examples.

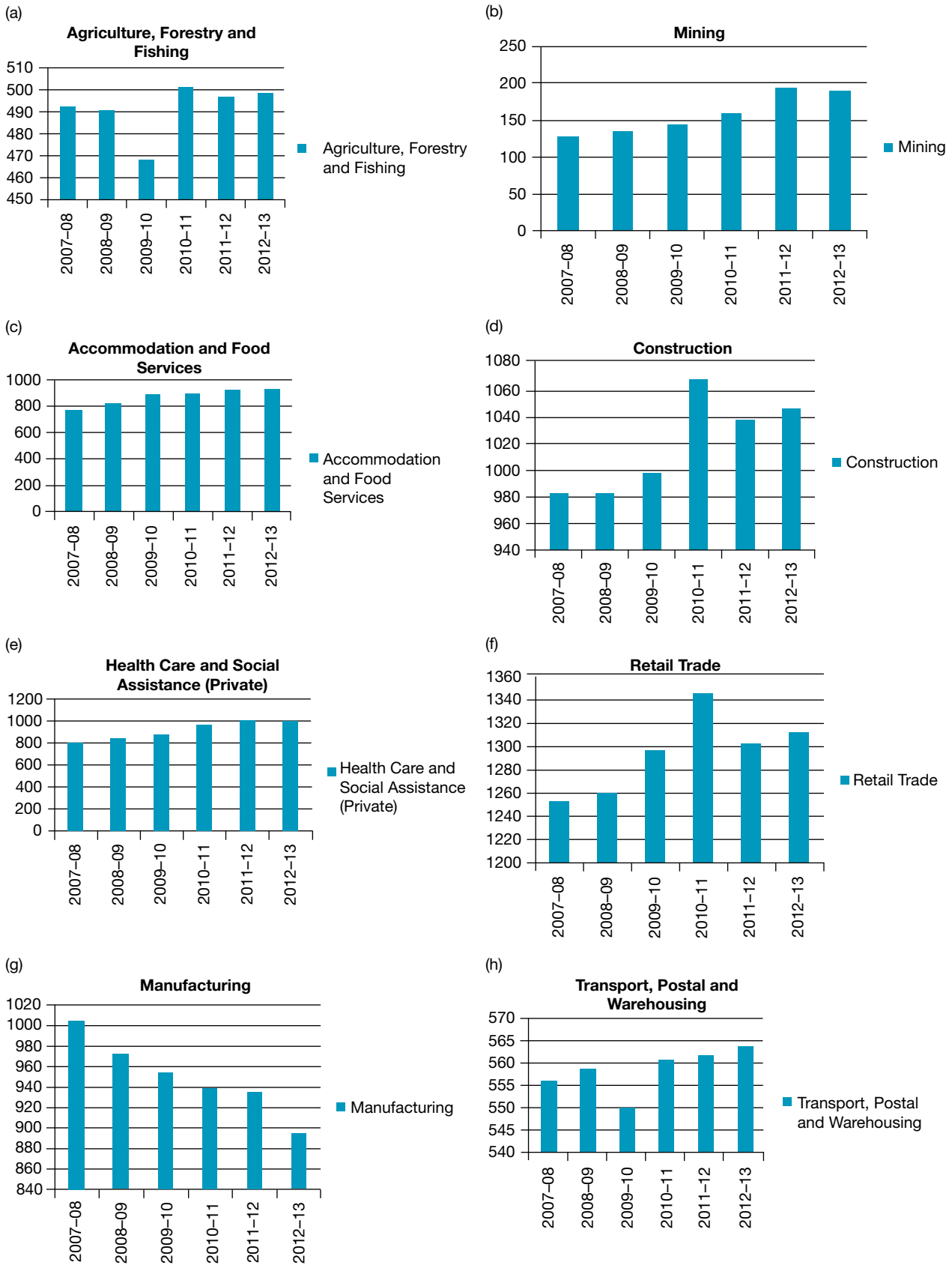
QUINARY INDUSTRY
The quinary industry is made up of domestic services, many of which were once carried out by people within their own homes. Hospitality, childcare, domestic cleaning and home maintenance services are examples of quinary industry services. They include both paid and unpaid workers.

TABLE 2 The proportion of people employed in 2000–2001 compared to 2015–16, by industry, in Australia

Industry	Proportion of all employed, 2000–01	Proportion of all employed, 2015–16
Health care and social assistance	10%	13%
Retail trade	11%	11%
Construction	7%	9%
Manufacturing	12%	7%

Source: Adapted from Australian Bureau of Statistics, *Year Book Australia, 2012* (cat. no. 1301.0) and Department of Employment, *Australian Jobs 2016.*

A series of graphs showing changes in various industry sectors



Source: Adapted from Australian Bureau of Statistics, *6291.0.55.003 - Labour Force, Australia, Detailed, Quarterly, May 2014*

These graphs clearly show the significant growth in a number of industries, such as retail trade, construction and mining, and the distinct decline of the manufacturing industry in Australia during this period.

Further advances in technology

With ongoing technological developments comes the need for workers to continue to up-skill in order to be able to use new equipment or software to its potential. But in some instances, we may see a decrease in the number of jobs available in particular fields due to the automation of tasks. Many laborious tasks have been made simpler and quicker through the use of technology. Such increased efficiencies mean less people are required to complete the same amount of work, and hence, fewer work positions are available in that field.

It is difficult to know how far the impact of technology will reach in the workplace — which jobs of today may become obsolete in the future as a result of new technological developments. But equally, the new areas of work that will emerge through technological development are largely unknown. It is hoped that these new fields will open up increasing opportunities that will be more than adequate to replace the roles that are lost.

Changing attitudes, the desire for work–life balance and changing workplace environments

As Generations Y, Z and Alpha fill the workforce, we may see a shift in the style of environments within which people work. Employers may need to create a new style of workplace, one that encourages workers to stay, rather than changing jobs on a regular basis, as is the tendency of these younger generations. More flexible working arrangements and benefits that promote staff satisfaction and increase productivity may become an increasingly common feature of the future world of work. An example of this kind of workplace is provided by American company Google, and is described in the case study below.

CASE STUDY

Google work environment inspires creativity

Google is leading the way in terms of balancing life and work. The company offers its employees a wide range of extra activities such as volleyball, roller hockey, bicycles, yoga classes, sharing spaces (couches and comfy chairs where workers can discuss whatever topic they want), weights rooms, workout rooms, washers and dryers for workers to wash their clothes, massage rooms, ping pong and pool tables, outdoor seating for sunny days, and a wide variety of lunch and dinner places — all free or for only a small charge to its workers.

Google provides its employees with a work environment that has an interesting décor, which promotes their ability to be more creative. Even sleeping pods are provided, so employees can catch up on sleep and feel refreshed to continue working. For one day a week employees are encouraged to work on whatever they want. This promotes creativity and encourages new ideas to be developed, which lead to new products, better solutions and a happier workplace.

FIGURE 2 Google is often identified in surveys as the business that people would most like to work for.



FIGURE 3 Another reason the work environment is important!



8.5 Activities

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

Remember

1. Which of the four main employing industries in Australia has experienced gradual decline over the past 25 years?

Explain

2. Examine table 2 and answer the questions below.
   (a) What was the percentage change for the following industries?
      (i) Health care and social assistance
      (ii) Retail trade
      (iii) Construction
      (iv) Manufacturing
   (e) Which industry had a negative change (decline) from 2000–2001 to 2010–2011?
3. Examine figure 3 and describe the trends you notice in the industries.
4. Examine table 3 on the next page and answer the following questions.
   (a) Which industry employs the most people?
   (b) Which industry employs the least people?
   (c) Which industry had the biggest positive percentage change?
   (d) Which industry had the biggest negative percentage change?

TABLE 3 Employment by industry, Victoria

Industries	Employment			
	Employ't Nov 2015	% of total	5 year change to Nov 2015	
	'000	%	'000	%
Accommodation and Food Services	198.3	7	14.7	8.0
Administrative and Support Services	108.4	4	7.9	7.9
Agriculture, Forestry and Fishing	88.6	3	14.7	19.9
Arts and Recreation Services	64.3	2	6.9	12.1
Construction	262.7	9	14.2	5.7
Education and Training	232.4	8	16.8	7.8
Electricity, Gas, Water and Waste Services	36.3	1	4.7	14.9
Financial and Insurance Services	115.8	4	–0.2	–0.2
Health Care and Social Assistance	365.2	12	47.2	14.8
Information, Media and Telecommunications	61.3	2	0.8	1.4
Manufacturing	269.5	9	–36.4	–11.9
Mining	8.5	0	–1.2	–12.3
Other Services	107.4	4	–3.0	–2.7
Professional, Scientific and Technical Services	264.2	9	41.5	18.6
Public Administration and Safety	146	5	13.8	10.4
Rental, Hiring and Real Estate Services	47.9	2	5.4	12.8
Retail Trade	331.4	11	16.6	5.3
Transport, Postal and Warehousing	151.3	5	14.0	10.2
Wholesale Trade	115.4	4	2.3	2.1

Source: Australian Government, Department of Education, Employment and Workplace Relations, *Australian Jobs 2013*, p. 7

Investigate

5. Use the **GooglePlex** weblink in the Resources tab to watch a clip that shows various features of the Google work environment.
   Write a paragraph describing how Google treats its workers.

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Explore more with this weblink: GooglePlex

8.6 SkillBuilder: Analysis and interpretation of data

8.6.1 Tell me

Tables and graphs can provide a wealth of information in a clear and concise way; to get the most from them, it is important to analyse them closely.

Line graphs are very useful for showing trends (patterns of change over time) and comparing data. When analysing a line graph, first examine the heading — what does it tell you about the data contained in the

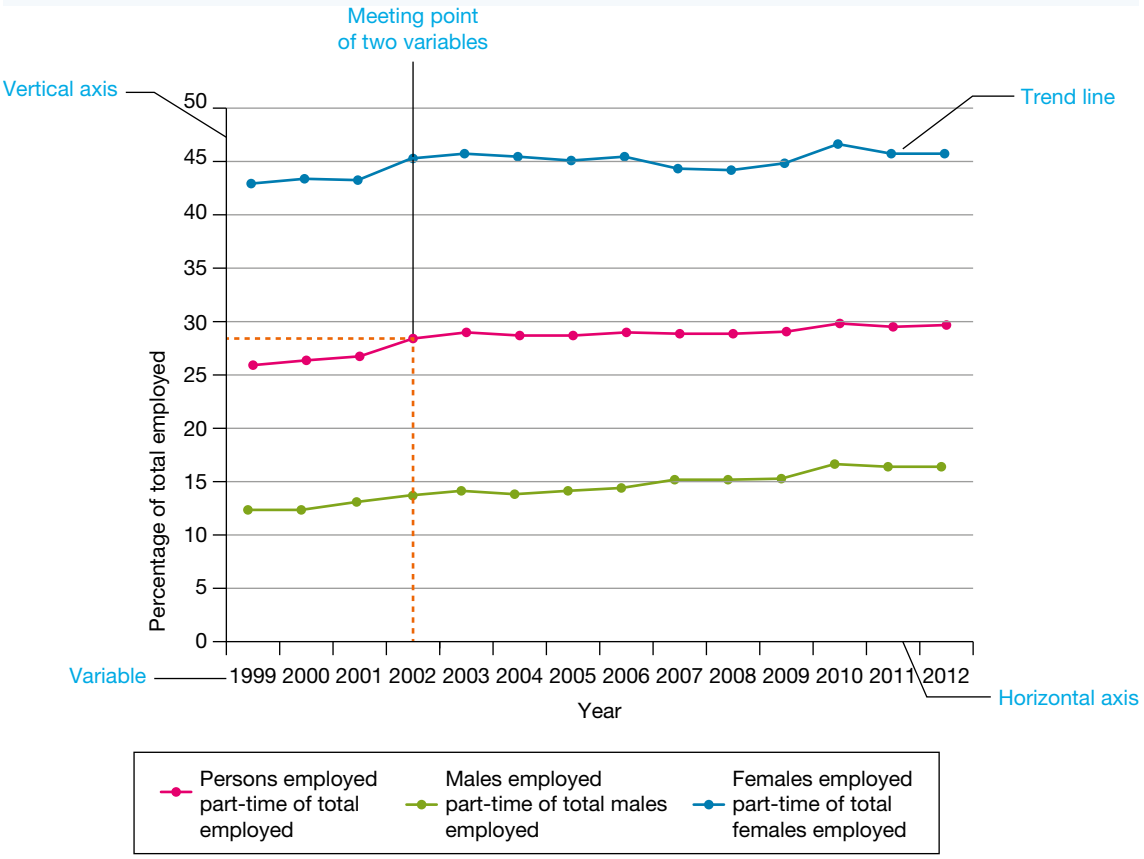
graph? Examine the key, which identifies what each of the lines on the graph represents. Then look closely at the vertical and horizontal axes, they show you the variables as numbers, percentages, years etc. When reading line graphs, find points on the graph where two variables meet to obtain specific information. For example, in figure 1 below, we can see that 28% of all people employed in 2002 worked in part-time roles.

The trend lines on a line graph show an overall picture of what is happening; that is, whether a particular variable has increased, declined or remained steady over time. Examine these closely — what changes do you see? If there has been change over time, has it been steady and gradual, or perhaps sudden and erratic? When examining a line graph, note down any patterns that you identify. You will then be ready to complete your interpretation, which involves writing a paragraph or two to summarise the information you have found in your analysis of the data.

8.6.2 Show me

Examine figure 1.

FIGURE 1 People employed part-time, as a percentage of total employed, 1999–2012



Source: Adapted from Australian Bureau of Statistics, *Australian social trends data cube, February, 2013, Work, National summary 1999–2012* (cat. no. 4102.0).

The graph's title tells us that the data we are looking at relates to the proportion of all employed people who were employed on a part-time basis during the period 1999–2012. Looking at the key, we can see that there is information provided about males, females and the total employed population. The red line on the graph shows the percentage of all employed people who were employed part-time; the purple line shows the percentage of all employed males who were employed part-time; and the green line shows the percentage of all employed females who were employed part-time. Looking at these lines on the graph, we can clearly see that the percentage of women employed part-time is significantly higher than that of men.

Looking at specific points on the graph, we can see that there has been a gradual increase in the percentage of all people employed part-time from around 26% in 1999 to 30% in 2012. The percentage of females employed part-time was steady at around 43% from 1999–2001, then increased slightly to around 45%, where it remained through to 2012. The percentage of males employed part-time increased from around 12.5% in 1999–2000 to around 15% by 2003. It remained at this level until 2009 and then rose again slightly to around 16% for the 2010–2012 period.

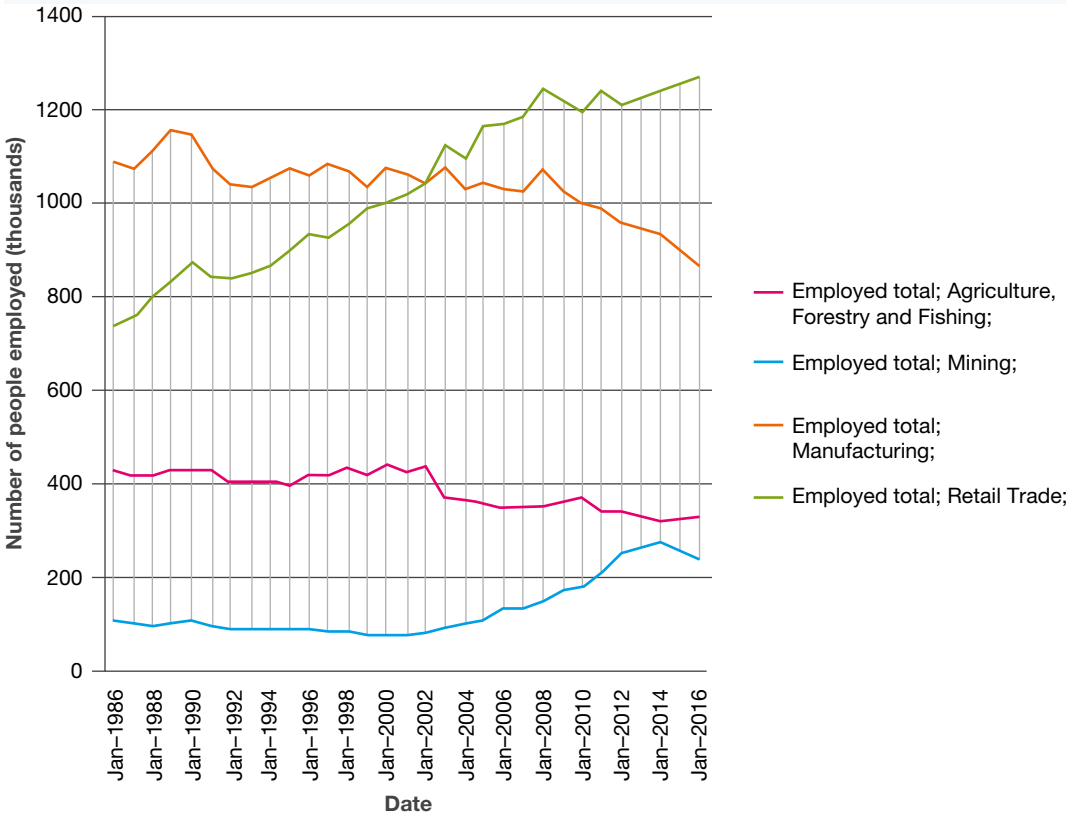
The trend lines show an overall gradual increase (around 3.5%) in the percentage of people who were employed part-time over the period 1999–2012. The increase for females was around 2%; and for males around 3.5%. To summarise what we have learned from this graph, we could write a brief paragraph such as:

> The percentage of Australians employed on a part-time basis has gradually increased in recent years. Overall, this figure grew from approximately 26% of the total employed workforce in 1999 to around 30% in 2012. The proportion of females employed on a part-time basis is significantly higher than that of men, and this remained constant throughout the 1999–2012 period. The increase in female part-time employment over this period was around 2%, while a slightly more pronounced change — an increase of around 3.5% — was observed in male part-time participation rates.

8.6.3 Let me do it

Practise your skills by analysing and interpreting the line graph below. Write a paragraph describing the trends shown.

Number of people employed in agriculture, forestry and fishing, mining, manufacturing and retail trade, 1986–2016



Source: Adapted from Australian Bureau of Statistics, *Labour Force, Australia, Detailed, Quarterly, May 2016* (cat. no. 6291.0.55.003).

8.7 Review

8.7.1 Summary

How exactly work will change in the future is unknown; however, a number of assumptions can be made.

- There will be further advances in technology and this will affect the type of work people do, when they do it and where they do it.
- Globalisation, offshoring and outsourcing will continue to have an impact on the Australian labour market.
- Changing work environments and the need for work–life balance will be a key feature of the future world of work.
- Employee relations and agreements will need to change even further to enable greater flexibility.
- The next generation of workers will need to be more highly skilled and educated, and more focused on technology.
- Technology will significantly impact organisations' future human resources needs, and the way in which they find and retain employees.
- The need for training and development will only increase with time.
- Distance will not be a barrier to obtaining a job in the future.

8.7.2 Reflect

1. Which industries are likely to see growth in the next 10 years?
2. Which industries are likely to see a decline in the next 10 years?
3. How do you anticipate work will change in the future?
4. Propose reasons why lower-skilled jobs are disappearing.
5. Discuss how the next generation of workers might view work.
6. With a partner, conduct your own research into the hours people work by carrying out a survey using an online survey program. Summarise and present your findings to your class.

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Try out this interactivity: The changing work environment crossword (int-6526)

UNIT 3 LANDFORMS AND LANDSCAPES

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14 Fieldwork inquiry: How does a waterway change from source to sea? 296

TOPIC 9 Geography concepts

9.1 Overview

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

9.1.1 Work and careers in Geography

As a student of Geography, you are starting to build the knowledge and skills that will be needed by you and your community now and into the future. The concepts and skills that you will use will not only help you in Geography but they can also be applied to everyday situations, such as finding your way from one place to another. Studying Geography may even help you in a future career here in Australia or somewhere overseas.

Throughout the year you will be studying topics that will give you a better understanding of the world around you — both the local and global environment. You will be investigating issues that need to be addressed now and also options for the future.

Explore: skills you need for a job

Many questions come up during a typical Geography class, such as the ones below in table 1. These questions need to be answered in the real world by people in a wide variety of occupations. They all have links with Geography.

TABLE 1 Examples of occupations that use Geography

Question	Occupations/organisations that try to answer these questions
• How high ***is*** Mount Everest? How do we know?	Surveyor, Cartographer
• How can we protect our parks and wildlife?	Park ranger, Planner, Environmental manager
• Where should we establish a new suburb for our future population?	Urban planner, Demographer
• How can we prepare for future droughts and floods?	Civil engineer
• Does our town really have enough water? • Where should we build a new dam? Should we build a new dam?	Coastal engineer, Hydrologist, Cartographer
• Should a boat marina be built at location X or at location Y?	Oceanographer
• Do we have good quality drinking water?	Chemist, Hydrologist
• How do countries such as India and China deal with their air pollution problems?	Environmental scientist/Manager
• How do we provide aid to other countries?	Air Force, Navy, Army Officer. Red Cross, World Vision and other aid agencies.
• How do we build sustainable housing?	Architect, Landscape architect, Civil engineer/ Construction manager, Town planner, Real estate salesperson



Think: who are you and what is your position in the world?

Do you know much about the occupations mentioned in table 1? Are any of interest to you?

The first step in thinking about your future is to consider questions such as:

- Who am I?
- What are my interests?
- What do I enjoy doing?
- What am I good at?
- When I leave school I would like to …



9.1.2 Geography careers on the move

A great part of studying Geography is being able to explore the many occupations and areas that it opens up. In table 2 are some occupations that you may not have thought studying Geography could lead you into.

TABLE 2 Would I enjoy …

… working indoors?	… working outdoors?	… helping people?
		
• Land economist • Landscape designer • Real estate salesperson • Geoscience technician • Travel consultant	• Surveyor • Mining engineer • Geologist • Landscape architect • Cartographer	• Park ranger • Paramedic • Navy officer • Fireman • Tour guide
… designing new places to live?	**… improving people's wellbeing?**	**… doing research?**
		
• Urban planner • Architect • Landscape architect • Horticulturist	• Natural resource manager • Demographer	• Meteorologist • Anthropologist • Geophysicist • Hydrographer • Environmental scientist

9.1.3 Finding my way as a local and global citizen

A wide range of exciting new jobs are developing in the spatial sciences which use geographical tools such as GPS, GIS, satellite imaging and surveying. These tools help people make important decisions about managing and planning places and resources. Whether it be how to manage water somewhere in the Middle East or how best to design a new housing estate here in Australia, these skills and occupations will be an important part of working as a global citizen.

9.1 Activities

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

Predict

1. Consider spatial technologies and work and enterprise careers of the future. Which geographical tools do you predict will be used by:
   - a meteorologist
   - a naval officer
   - an airline pilot
   - a farmer?

Discover

2. We can develop a better understanding of work and enterprise by exploring what others have to say about their careers. Use the **Geocareers** weblink in the Resources tab to help you locate one male and one female geographer working as local or global citizens.
   - What career path did they follow?
   - How did they include their passion for geography into their career journey?
   - What advice did they share about their career journey?

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Explore more with this weblink: Geocareers

9.2 Geographical concepts

9.2.1 Introduction

Geographical concepts help you to make sense of your world. By using these concepts you can both investigate and understand the world you live in, and you can use them to try to imagine a different world. The concepts help you to think geographically. There are seven major concepts: ***place***, ***space***, ***environment***, ***interconnection***, ***sustainability***, ***scale*** and ***change***.

In this book, you will use the seven concepts to investigate two units: *Landforms and landscapes* and *Changing nations*.

FIGURE 1 A way to remember these seven concepts is to think of the term SPICESS.

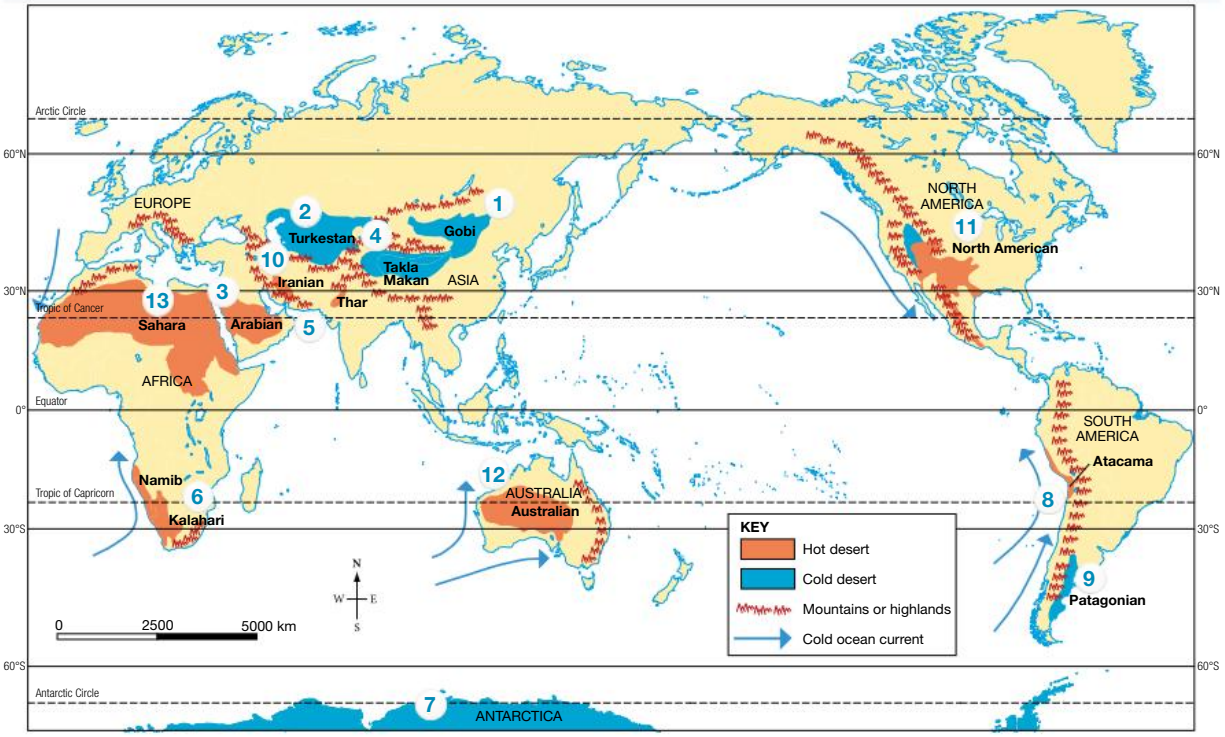


9.2.2 What is space?

Everything has a location on the space that is the surface of the Earth, and studying the effects of location, the distribution of things across this space, and how the space is organised and managed by people, helps us to understand why the world is like it is.

A place can be described by its absolute location (latitude and longitude) or its relative location (in what direction and how far it is from another place).

FIGURE 2 The distribution of the world's deserts



Source: MAPgraphics Pty Ltd, Brisbane

9.2.2 Activities

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

Refer to figure 2 above.

1. Use an atlas to give the absolute location (latitude and longitude) of Mecca, in the Arabian desert. What is the relative location of Mecca from Australia?
2. Describe the ***spatial*** distribution of the world's deserts in relation to the tropics.
3. In what direction and approximately how far is the Thar Desert from the Arabian Desert; the Atacama Desert and the Namib Desert?
4. How is the location of the Namib Desert influenced by cold ocean currents?
5. Look at a population map of Australia (see '9.2.4 What is interconnection?', figure 5). What is the relationship over ***space*** between the location of Australia's deserts and the location of Australia's population?

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
› **Space**

9.2.3 What is place?

The world is made up of places, so to understand our world we need to understand its places by studying their variety, how they influence our lives and how we create and change them.

You often have mental images and perceptions of places — rich and poor cities, suburbs, towns or neighbourhoods — and these may be very different from someone else's perceptions of the same places.

FIGURE 3 The Paraisópolis favela (slum), home to 60 000 people, is situated next to the gated complexes of the wealthy Morumbi district of São Paulo.



9.2.3 Activities

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

Refer to figure 3 above.

1. Where in the world is this ***place*** located?
2. What effects have people had on this ***place***?
3. List the differences you observe in the way people live on each side of this settlement.
4. How is this ***place*** similar to or different from the ***place*** where you live?
5. What decisions could be made to improve or ***change*** this ***place***?
6. How might the ***environment*** of this ***place*** affect the people who live there?
7. How does the ***place*** where these people live affect their lives?

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

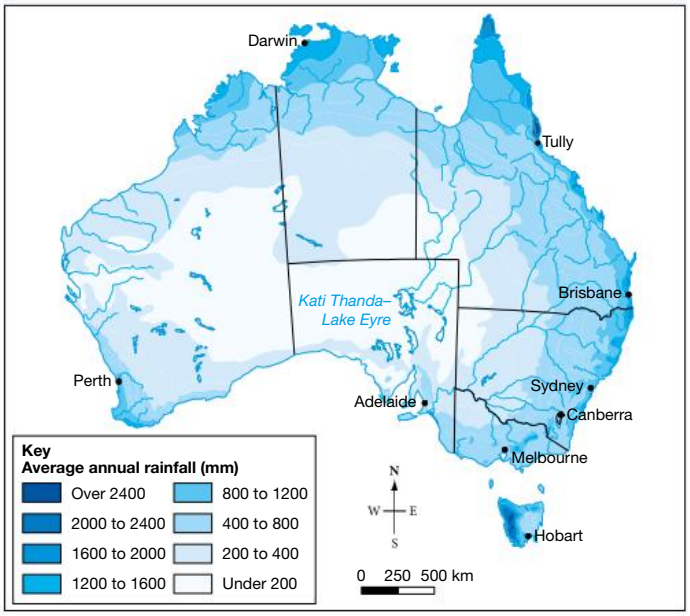
› **Place**

9.2.4 What is interconnection?

People and things are connected to other people and things in their own and other places, and understanding these connections helps us to understand how and why places are changing.

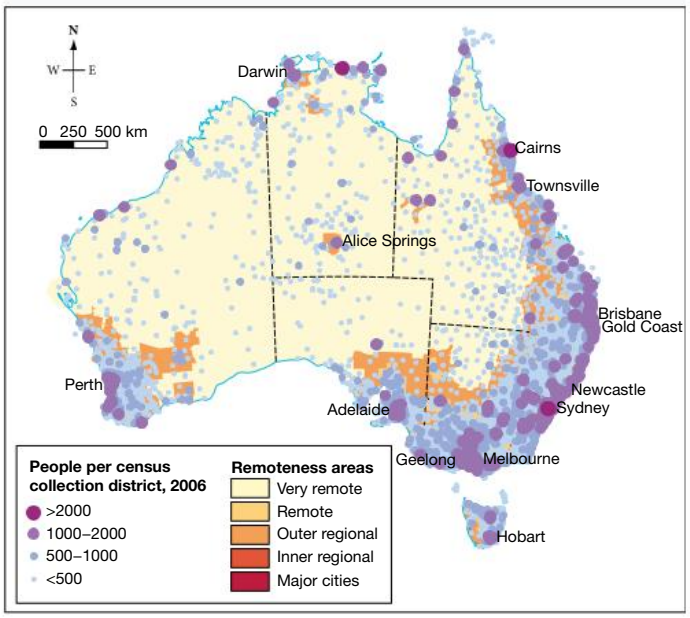
An event in one location can lead to change in a place some distance away.

FIGURE 4 Distribution of annual rainfall in Australia



Source: MAPgraphics Pty Ltd, Brisbane

FIGURE 5 Australia's population distribution



Source: Spatial Vision

9.2.4 Activities

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

Refer to figures 4 and 5 on the previous page.

1. Look at the rainfall map. What is the relationship, or ***interconnection***, between the distribution of rivers and the distribution of rainfall?
2. In small groups, think of ways in which the use of water upstream in these rivers could affect ***environments*** and people downstream.
3. Write a summary statement that describes the ***interconnection*** between rainfall in Australia and where people live.
4. Look at an atlas map showing the distribution of vegetation in Australia. How are rainfall and vegetation ***interconnected***?
5. Look at an atlas map. What is the ***interconnection*** between rainfall distribution and Australia's population density (number of people per census district)?
6. How might these ***interconnections*** affect how people live?

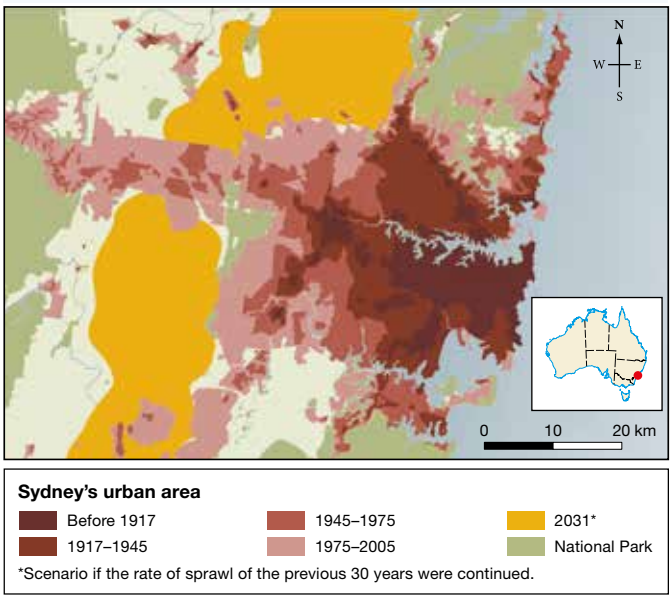
myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
› Interconnection

9.2.5 What is change?

The concept of change is about using time to better understand a place, an environment, a spatial pattern or a geographical problem.

Some changes can be fast and easily observed, but others are very slow. Cities, for example, can expand outwards over a number of years. Similarly, landforms generally change very slowly, as with the formation of mountains. But some landscape change can be very fast, as is the case with landslides, volcanic eruptions and deforestation.

FIGURE 6 The change in size of the city of Sydney over time.



Source: Provided by Metropolitan Strategy, NSW Department of Planning & Infrastructure.

FIGURE 7a Landscape before deforestation

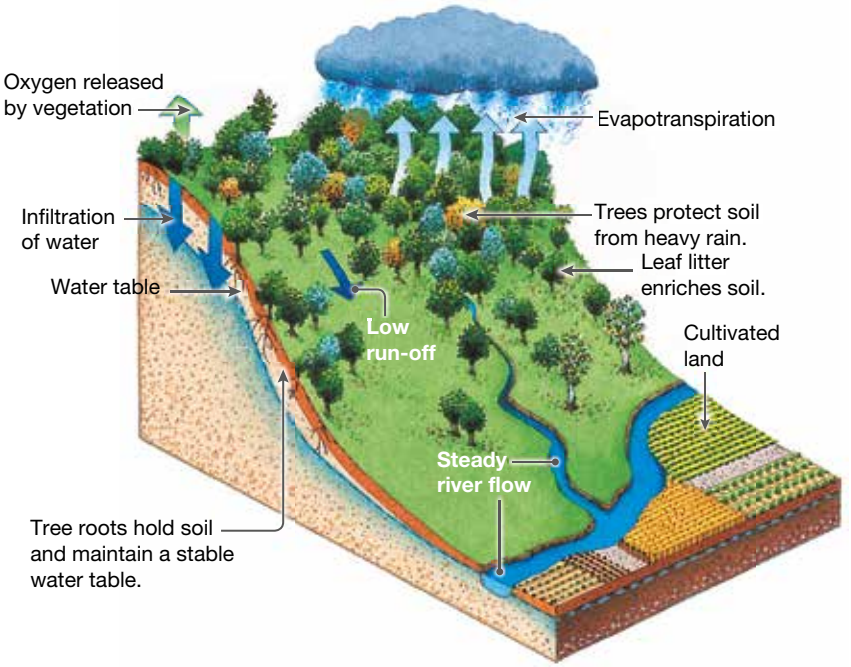
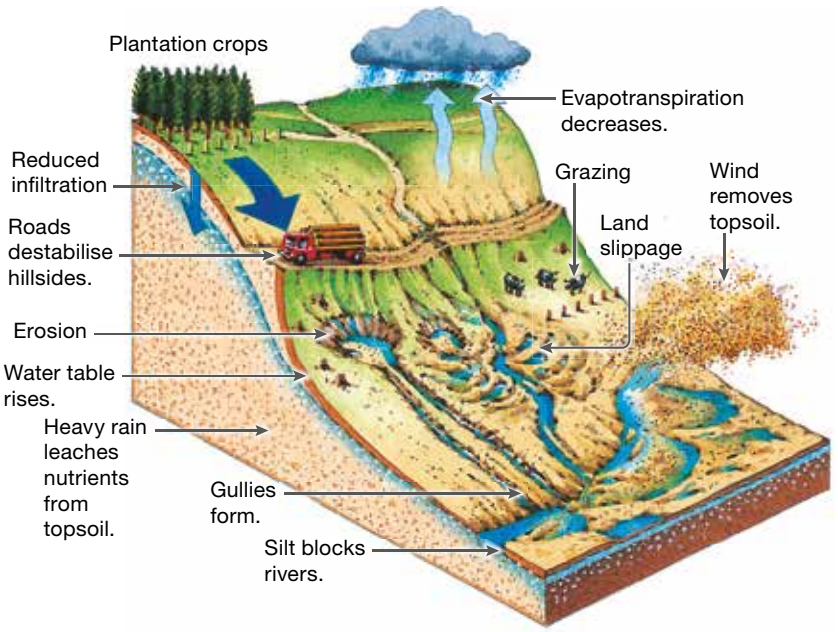


FIGURE 7b Landscape after deforestation



9.2.5 Activities

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

Refer to figure 6 on the previous page.

1. How has Sydney ***changed*** over time? How long has it taken for the city to spread to the furthest areas shown on the map?
2. What main natural feature attracted the earliest settlement?

3. What impact do you think this growth has had on the natural ***environment***?
4. What technological ***changes*** in transport have allowed Sydney to spread and grow over time?

Refer to figures 7a and 7b on the previous page.

5. List the ***changes*** that would have caused the slippage to occur.
6. What ***interconnections*** are there between:
   (a) vegetation cover and soil stability
   (b) vegetation cover and infiltration
   (c) high run-off and erosion?
7. List all the effects of the landslide on people and the ***environment***.
8. Write a summary statement about the pace of ***change*** and the impact on people and the ***environment*** in these two examples.

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› Change

9.2.6 What is environment?

People live in and depend on the environment, so it has an important influence on our lives.

The environment, defined as the physical and biological world around us, supports and enriches human and other life by providing raw materials and food, absorbing and recycling wastes, and being a source of enjoyment and inspiration to people.

FIGURE 8 Uranium mining in Colorado, United States. Many deserts contain valuable mineral deposits.



9.2.6 Activities

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

Refer to figure 8 on the previous page.

1. Describe the ***environment*** in which this mine is located. What evidence is there that this mine is located close to a river?
2. Is this a natural or a human ***environment***? Justify your choice.
3. What impact might this mine have on the surrounding ***environment***?
4. What resource or raw material is mined here?
5. How might the local and national economies benefit from what is happening in this ***environment***?
6. How has technology helped ***change*** this ***environment***?
7. In your opinion, what are the positive and negative aspects of the way this ***environment*** has been used?

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
› Environment

9.2.7 What is sustainability?

Sustainability is about maintaining the capacity of the environment to support our lives and those of other living creatures.

Sustainability is about the interconnection between the human and natural world and who gets which resources and where, in relation to conservation of these resources and prevention of environmental damage.

FIGURE 9 The Vatican is the world's smallest independent state and is hoping to become the first solar-powered nation in the world. It plans to create Europe's largest solar power plant, which will provide enough energy to power all of the state's 40 000 households. The roof of the Paul VI Hall is now covered in photoelectric cells.



9.2.7 Activities

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

Refer to figure 9 on the previous page.

1. What resource is being harnessed by the solar panels? Brainstorm a list of all the ways in which this energy can be used.
2. How is using solar panels an example of ***sustainable*** energy use? The use of what other resource will be reduced by using these solar panels?
3. Using the caption, outline the ***sustainability*** interests and values that the Vatican City is following by becoming a solar city.
4. What are some examples of other types of ***sustainable*** energy? Make a list of these with a partner.

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
› Sustainability

9.2.8 What is scale?

When we examine geographical questions at different spatial levels we are using the concept of scale to find more complete answers.

Scale can be from personal and local to regional, national or global. Looking at things at a range of scales allows a deeper understanding of geographical issues.

FIGURE 10 Perth, Western Australia. Building sustainable communities means we have to work at various scales.



Source: © Commonwealth of Australia Geoscience Australia 2006.

FIGURE 11a An urban organic community in Perth.



Ways to improve sustainability at the local scale include:
- reducing the ecological footprint
- protecting the natural environment
- increasing community wellbeing and pride in the local area
- changing behaviour patterns by providing better local options
- encouraging compact or dense living
- providing easy access to work, play and schools.

FIGURE 11b An aerial view of the Swan River and the city of Perth.



Ways to improve sustainability at the city scale include:
- building strong central activities areas (either one major hub, or a number of specified activity areas)
- reducing traffic congestion
- protecting natural systems
- avoiding suburban sprawl and reducing inefficient land use
- distributing infrastructure and transport networks equally and efficiently to provide accessible, cheap transportation options
- promoting inclusive planning and urban design
- providing better access to healthy lifestyles (e.g. cycle and walking paths)
- improving air quality and waste management
- using stormwater more efficiently
- increasing access to parks and green spaces
- reducing car dependency and increasing walkability
- promoting green space and recreational areas
- demonstrating a high mix of uses (e.g. commercial, residential and recreational).

9.2.8 Activities

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

Refer to figure 10.

1. What main information is this map trying to show?

Refer to figure a 11a and 11b.

2. The photo in figure 11a shows a zoomed-in view of the Perth city area. Do you see more or less detail at the zoomed-in ***scale***?
3. Identify two city aims listed above that could not be implemented at the local ***scale***.
4. Identify one local or neighbourhood aim listed above that could not be implemented at the city ***scale***.
5. Describe any local action where you live that tries to improve ***sustainability***. You could talk to your parents about this, or contact your local council to see what they are trying to do about the issue.

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› Scale

9.3 Review

9.3.1 Applying the concepts

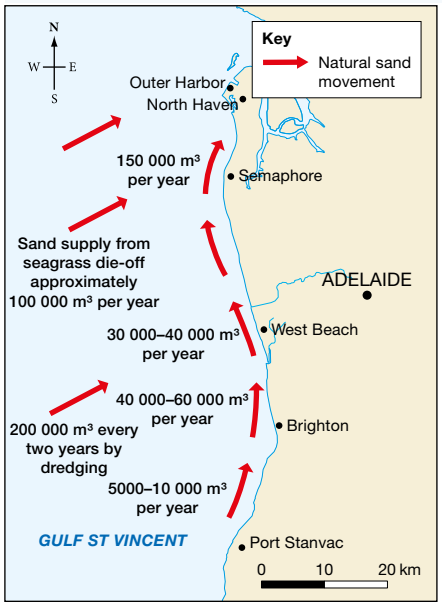
For the past 7000 years, the sandy beaches close to Adelaide in South Australia have been eroding and the sand has been moved northwards by the prevailing winds from the south-west. This has resulted in the growth of a peninsula and large dune system at North Haven.

As many people have now settled along this coastline, the sand movement is being managed to stop erosion by trapping the sand or trucking and piping it back to the south. The cost of this action can be very high.

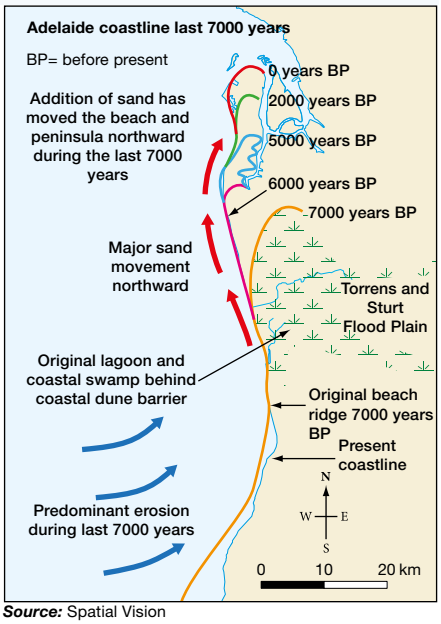
FIGURE 1 Piping sand along a beach.



FIGURE 2 The movement of sand northwards along the Adelaide Metropolitan coastline.



Source: Spatial Vision



Source: Spatial Vision

9.3.1 Activities

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

1. Use an atlas to describe the location of Adelaide relative to where you live. What is its absolute location? (***space***)
2. Is the Adelaide coast a ***place*** that you would like to live? Why or why not?
3. How would the perception of coastal erosion differ between people who live in coastal settlements and those living five or more kilometrs inland? (***place***)
4. What are the human natural characteristics of this ***place***? Do you think this coastal ***environment*** is natural or human? Justify your answer.
5. What is the length of the coastline shown on the maps in figure 2? (***scale***)
6. Describe how this ***environment*** may have looked 7000 years ago. How has it ***changed*** over time?
7. How have people ***changed*** this ***environment***?
8. What is the relationship (***interconnection***) between:
   (a) prevailing wind and sand movement (the prevailing wind along this coastline comes from the south-west)
   (b) sand movement and formation of coastal features?
9. Which local management (***scale***) is shown in figure 1?
10. How has technology helped manage this coastline? (***change***)
11. What ***changes*** might occur if the sand movement was not managed?
12. Is the movement of sand to stop beach erosion a ***sustainable*** activity — that is, is it worth stopping the movement of sand? Explain your answer.

TOPIC 10 Introducing landforms and landscapes

10.1 Overview

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

10.1.1 Introduction

Landscapes are the visible features of the land, ranging from the icy landscapes of polar regions and lofty mountain ranges, through to forests, deserts and coastal plains. Shaped by physical processes over millions of years, they have been overlaid by the presence of humans.

Starter questions

1. Describe key features of the landscape shown in the image of Horseshoe Bend on the previous page.
2. What do you think might be the difference between a natural and a human ***environment***?
3. Brainstorm as a class different landscapes around the world. Describe your favourite landscape and explain why it appeals to you.

Landforms in a desert landscape: the Colorado River meanders through Horseshoe Bend in Arizona, United States.



INQUIRY SEQUENCE

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learnon RESOURCES — ONLINE ONLY

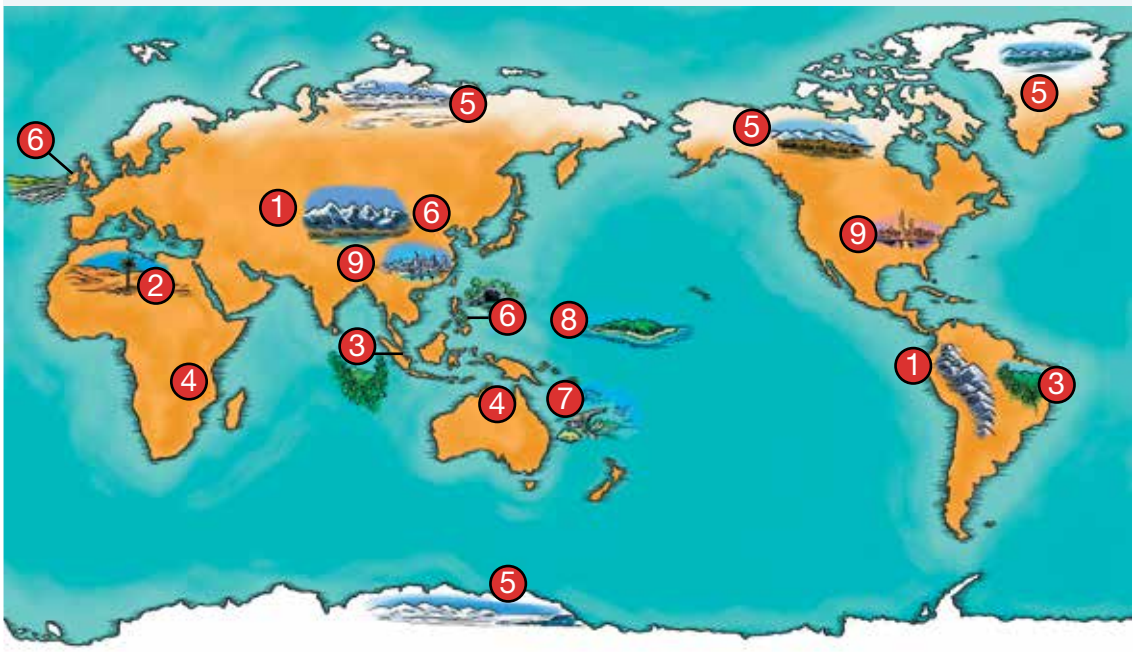
Watch this eLesson: World landscapes and landforms (eles-1623)

10.2 How are landscapes different?

10.2.1 Types of landscapes

There are many different landscapes across the Earth, and similarities can be observed within regions. Variations in landscapes are influenced by factors such as climate; geographical features, including mountains and rivers; latitude; the impact of humans; and where the landscapes are located.

FIGURE 1 Selected world landscapes



1 Mountains

Mountains rise above the surrounding landscape. They often have steep sides and high peaks and are the result of processes operating deep inside the Earth. Some reach high into the atmosphere where it is so cold that snow is found on their peaks.

2 Deserts

Deserts are areas of low rainfall; they are an arid or dry environment. They can experience temperature extremes: hot by day and freezing at night. However, not all deserts are hot. Antarctica is the world's largest desert, and the Gobi Desert, located on a high **plateau** in Asia, is also a cold desert.

FIGURE 2 At 8848 metres, Mount Everest in the Himalyas is the highest mountain on Earth.



3 Rainforests

Rainforests are the most diverse landscapes on Earth. They are found in a variety of climates, ranging from the hot wet tropics to the cooler temperate areas. The lush vegetation found in these regions depends on a high level of rainfall. Over 50 per cent of all known plant and animal species are found within them. In addition, many of our foods and medicines come from rainforests.

4 Grasslands

Grasslands, or savanna, are sometimes seen as a transitional landscape found between forests and deserts. They contain grasses of varying heights and coarseness, and small or widely spaced trees. They are often inhabited by grazing animals.

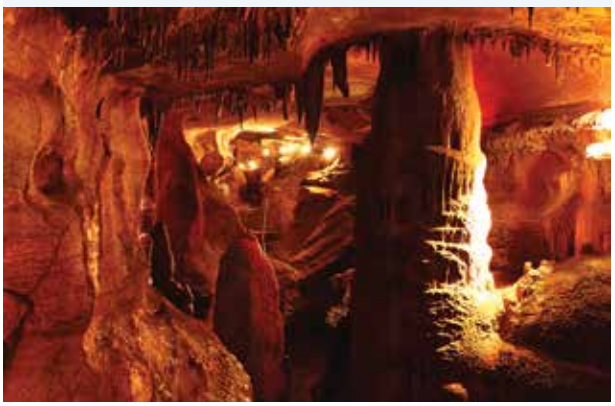
5 Polar regions

Polar regions and tundra can be found in polar and alpine regions. Characterised by **permafrost**, they are too cold for trees to grow. Vegetation such as dwarf shrubs, grasses and lichens have adapted to the extreme cold and short growing season. **Glaciers** often carve spectacular landscape features.

6 Karst landscapes

Karst landscapes form when mildly acidic water flows over soluble rock such as limestone. Small fractures form, which increase in size over time and lead to underground drainage systems developing. Common landforms include limestone pavements, disappearing rivers, reappearing springs, sinkholes, caves and karst mountains. Around 25 per cent of the world's population obtains water from karst **aquifers**.

FIGURE 3 These karst caves in southern China are protected.



7 Aquatic landscapes

Aquatic landscapes cover around three-quarters of the Earth and can be classified as freshwater or marine. Marine landscapes are the saltwater regions of the world, and include oceans and coral reefs. Freshwater landscapes are found on land, and include lakes, rivers and wetlands.

8 Islands

Islands are areas of land that are completely surrounded by water. They can be continental or oceanic. Continental islands lie on a continental shelf — an extension of a continent that is submerged beneath the sea. Oceanic islands rise from the ocean floor and are generally volcanic in origin. A group or chain of islands is known as an archipelago.

9 Built landscapes

Human or built landscapes are those that have been altered or created by humans.

10.2 Activities

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

Remember

1. Explain the difference between the terms *natural* and *built* ***environment***.
2. What factors make landscapes different?
3. List as many different human or built ***environments*** as you can think of.

Explain

4. Why do you think people ***change*** landscapes?

Discover

5. The map in figure 1 shows the wide variety of landscapes found on the surface of the Earth. However, it does not show all locations for each landscape type. Investigate one of the featured landscapes and find out other ***places*** in which it is found. Show this information on a map. Annotate your map with information from this subtopic and characteristics of your landscape.

Think

6. Copy the following table into your workbook.

Characteristics	How people use it	Positive impacts	Negative impacts

   (a) Select one of the landscape types described in this subtopic and complete the table.
   (b) Which list is larger — the positive impacts or negative impacts?
   (c) Review the column of negative impacts. Select three of these impacts and suggest a way in which the ***environment*** could be used in a more ***sustainable*** way.
7. Describe how the ***scale*** of the following landscapes might differ around the world: deserts, polar regions, aquatic landscapes and islands.

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: Landscapes galore (int-3102)

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.
› **Grasslands**

10.3 What landforms make up Australia?

10.3.1 What processes have shaped Australasia?

The tectonic forces of folding, faulting and volcanic activity have created many of Australia's major landforms. Other forces that work on the surface of Australia, and give our landforms their present appearance, are **weathering**, mass movement, **erosion** and **deposition**.

Australia is an ancient landmass. The Earth is about 4600 million years old, and parts of the Australian continent are about 4300 million years old.

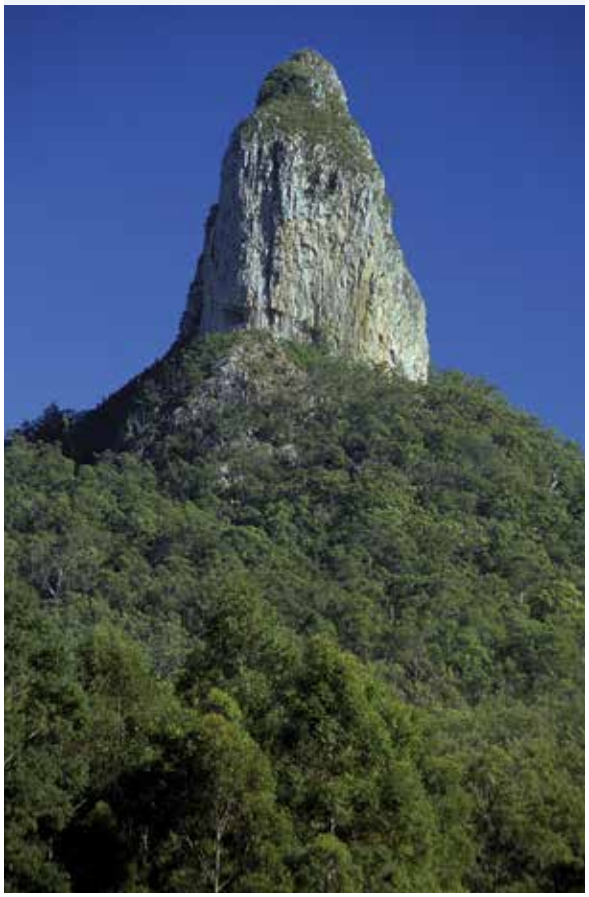
Over millions of years, Australia has undergone many changes. Mountain ranges and seas have come and gone. As mountain ranges eroded, sediments many kilometres thick were laid down over vast areas. These sedimentary rocks were then subjected to folding, faulting and uplifting. This means that the rocks that make up the Earth's crust have buckled and folded along areas of weakness, known as faults. Sometimes, fractures or breaks occur, and forces deep within the Earth cause sections to be raised, or uplifted. Over time the forces of weathering and erosion have worn these down again. Erosion acts more quickly on softer rocks, forming valleys and bays. Harder rocks remain as mountains, hills and coastal headlands.

Because it is located in the centre of a **tectonic plate**, rather than at the edge of one, Australia currently has no active volcanoes on its mainland, and has very little tectonic lift from below. This means its raised landforms such as mountains have been exposed to weathering forces for longer than mountains on other continents and are therefore more worn down.

About 33 million years ago, when Australia was drifting northwards after splitting from Antarctica, the continent passed over a large **hotspot**. Over the next 27 million years, about 30 volcanoes erupted while they were over the hotspot. The oldest eruption was 35 million years ago at Cape Hillsborough, in Queensland, and the most recent was at Macedon in Victoria around six million years ago. Over millions of years, these eruptions formed a chain of volcanoes in eastern and south-eastern Australia, that are known today as the Great Dividing Range (see figure 2 on the next page). At present, the hotspot that caused the earlier eruptions is probably beneath Bass Strait.

The present topography of much of Australia results from erosion caused by ice. For example, about 290 million years ago a huge icecap covered parts of Australia. After the ice melted, parts of the continent subsided and were covered by **sediment**, forming

FIGURE 1 Many of Queensland's mountain peaks were formed by volcanic activity around 20 million years ago. The Glasshouse Mountains, north of Brisbane, are volcanic plugs. They are composed of volcanic rock that hardened in the vent of a volcano. Over millions of years, weathering and erosion have worn away the softer rock that surrounded the vent, leaving only the plugs.



sedimentary basins (a low area where sediments accumulate) such as the Great Artesian Basin. On a smaller scale, parts of the Australian Alps and Tasmania have also been eroded by glaciers during the last ice age.

Rivers and streams are another cause of erosion, having carved many of the valleys in Australia's higher regions.

When streams, glaciers and winds slow down, they deposit or drop the material they have been carrying. This is called deposition. Many broad coastal and low-lying inland valleys have been created by stream deposition. These areas are called floodplains.

10.3.2 What are Australia's landform regions?

The topography of Australia can be divided into four major regions (see figure 3).

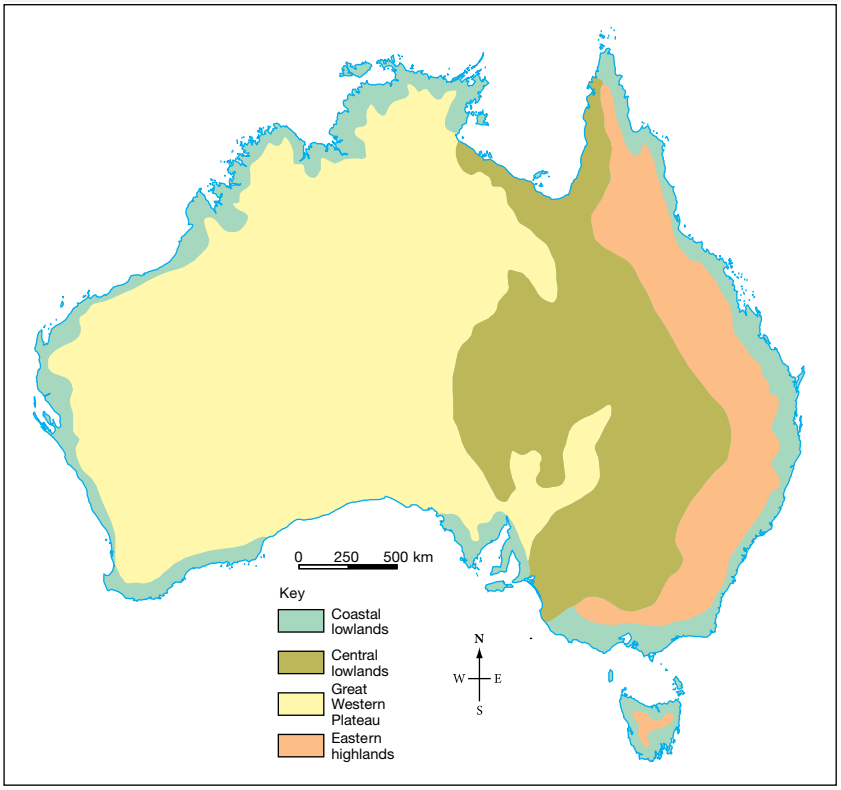
- The coastal lowlands around Australia's edge are narrow and fragmented. The plains often take the form of river valleys, such as the Hunter River Valley near Newcastle.
- The eastern highlands region (which includes the Great Dividing Range) is mainly a series of tablelands and plateaus. Most of the area is very rugged, because rivers have cut deep valleys. It is the source of most of Australia's largest rivers, including the Fitzroy, Darling and Murray. The highest part is in the south-east, where a small alpine area is snow-covered for more than half the year.
- The central lowlands are a vast area of very flat, low-lying land that contains three large **drainage basins**: the Carpentaria Lowlands in the north, the Lake Eyre Basin in the centre (see figure 4) and the Murray–Darling Basin in the south.
- The Great Western Plateau is a huge area of tablelands, most of which are about 500 metres above sea level. It includes areas of gibber (or stony) desert and sandy desert. There are several rugged upland areas, including the Kimberley and the McDonnell Ranges.

FIGURE 2 Relief map of Australia's east coast. The Great Dividing Range stretches from north of Cairns in Queensland to Mount Dandenong near Melbourne in the south.



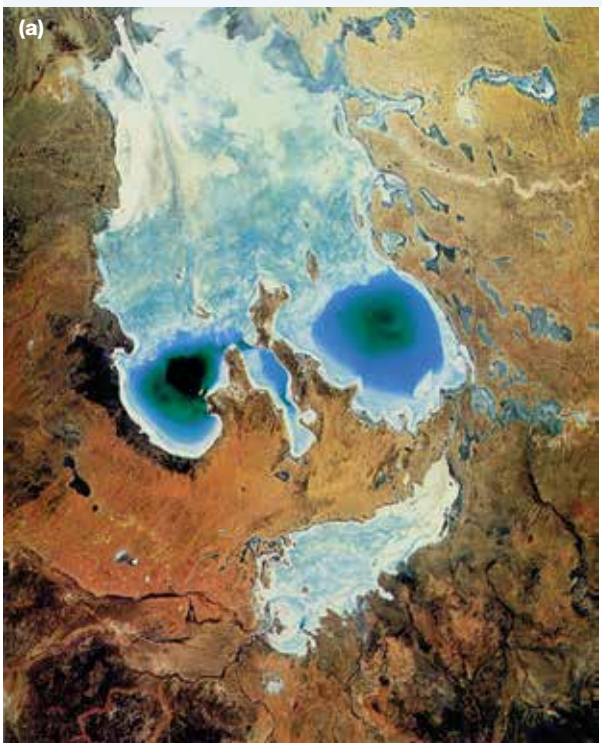
Source: Spatial Vision

FIGURE 3 Australia's four major landform regions



Source: MAPgraphics Pty Ltd Brisbane

FIGURE 4 Kati Thanda–Lake Eyre, the lowest point on the Australian mainland, is part of the Great Artesian Basin. It is 15 metres below sea level. Once a freshwater lake, the region is now the world's largest salt pan. The evaporated salt crust shows white in the satellite image (a) left. The lake fills with water only three or four times each century, transforming it into a haven for wildlife. Deep water is shown as black in image (b) right.





10.3.3 The Murray–Darling Basin

CASE STUDY

Water issues in the Murray–Darling Basin region

The Murray–Darling Basin covers about one million square kilometres, and more than 20 major rivers flow into it. It has a wide variety of landscapes, ranging from alpine areas in the south-east to plains in the west. The basin produces 43 per cent of Australia's food and over 40 per cent of Australia's total agricultural income.

The Murray–Darling Basin is the largest and most important drainage basin in Australia, covering one-seventh of the continent. However, the amount of water flowing through it in one year is about the same as the *daily* flow of the Amazon River.

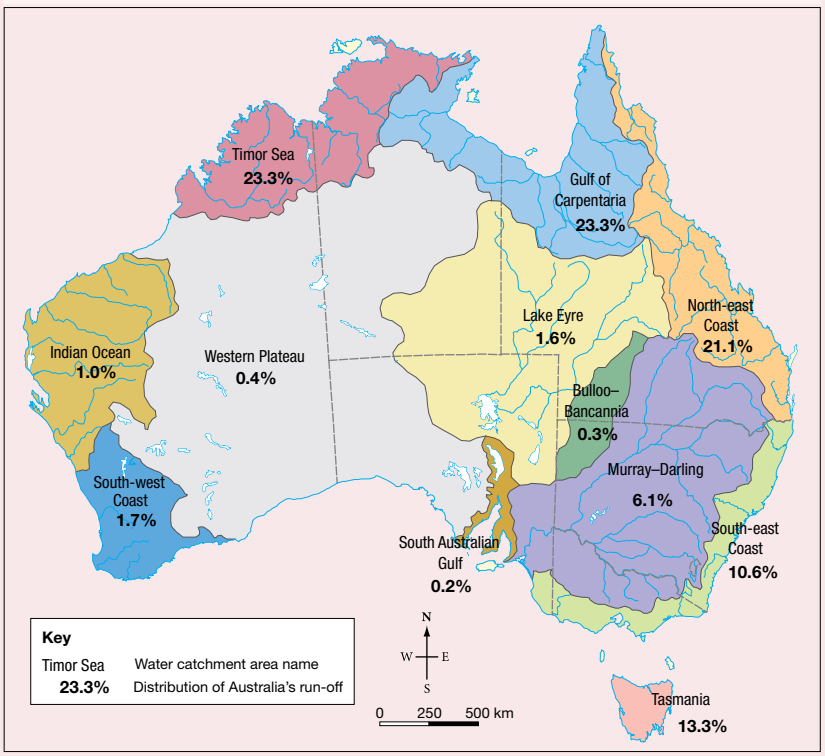
FIGURE 5 Aerial view of the Murray River, where it enters the Coorong and Lake Alexandrina in South Australia



The basin is facing severe problems.

- Only about 20 per cent of the water flowing through the basin ever reaches the sea. The rest is diverted for agriculture, industry and domestic use.
- The Murray supplies about 40 per cent of Adelaide's drinking water. The quality of the water continues to decline, mainly because of salinity levels.
- Approximately 50 to 80 per cent of the wetlands in the basin have been severely damaged or destroyed, and more than a third of the native fish species are threatened with extinction.
- In 2008, inflows into the river system were at their lowest levels since records began 117 years earlier.
- An estimate of weather trends shows that the flow to the Murray River mouth may be reduced by a further 25 per cent by 2030. However, with the added problem of climate change, it is predicted that precipitation in the Murray–Darling catchment will decrease, so that the reduction in flow to the mouth could be as high as 70 per cent.

FIGURE 6 Australia's drainage basins



Source: MAPgraphics Pty Ltd Brisbane

FIGURE 7 Kati Thanda–Lake Eyre and surrounding drainage systems



Source: Spatial Vision

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

› **Murray–Darling Basin**

10.3.4 How does water flow across the land?

Permanent rivers and streams flow in only a small proportion of the Australian continent. Australia is in fact the driest of all the world's inhabited continents. It has:

- the least amount of run-off
- the lowest percentage of rainfall as run-off
- the least amount of water in rivers
- the smallest area of permanent wetlands
- the most variable rainfall and stream flow.

Australia has many lakes, but they hold little water compared with those found on other continents. The largest lakes are Kati Thanda–Lake Eyre (see figures 6 and 7) and Lake Torrens in South Australia. During the dry seasons, these become beds of salt and mud. Yet an inland sea did once exist in this area. It covered about 100 000 square kilometres around present-day Kati Thanda–Lake Eyre and Lake Frome. South Australia is Australia's driest state, and has very few permanent rivers and streams.

10.3 Activities

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

Remember

1. In your own words, explain what is meant by the terms *folding, faulting* and *uplift*.
2. Describe some of the physical ***changes*** Australia's landmass has undergone.

Explain

3. Describe the major characteristics of Australia's four main landform regions.
4. Explain why Australia is so low in altitude and flat compared with other continents.

Discover

5. Use your atlas to list the highest mountains in each Australian state and territory. Describe the location of each.
6. Use Google Earth to view any part of the Murray–Darling Basin. Describe the landscape that you see.
7. Divide your class into four groups. Assign each group one of Australia's landform regions to investigate. Collectively compile a list of landforms that are found in each region. Then have each member of the group investigate a different landform and prepare a series of PowerPoint slides that show the following:
   (a) the landform
   (b) where it is located
   (c) how it was formed
   (d) whether people might want to visit this landform, including the reasons why it is or is not a popular landform.

   Put the individual presentations together for viewing by the rest of the class.

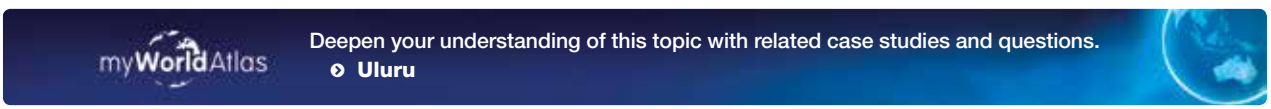
Predict

8. Use your atlas to find the Cape Hillsborough and Macedon volcanoes, or refer to figure 2.
   (a) Calculate the distance between them.
   (b) Use the information in this subtopic to work out the rate at which the Australian landmass is moving.
   (c) How far has Australia moved over the Bass Strait hotspot? Now calculate where under Bass Strait this hotspot might now lie.
   (d) Use the information in this subtopic to explain why this hotspot has ***changed*** its location over time.
9. It is said that the amount of water that flows down the Amazon River in a day is more than flows down the Murray in a year.
   (a) What does that tell you about how dry Australia's climate is?
   (b) How might this affect the way the ***environment*** around the Murray River is affected?

Think

10. Australia is an ancient landmass and has undergone many ***changes*** over millions of years. In groups, brainstorm and compile lists under the following headings.
    - Physical ***changes*** that have taken place on the Australian landmass
    - Tectonic processes that have contributed to these ***changes***
    - ***Changes*** caused by processes such as weathering and erosion

    Within your group, write a series of paragraphs that explain the ***interconnection*** between these factors.



10.4 SkillBuilder: Recognising land features

online only

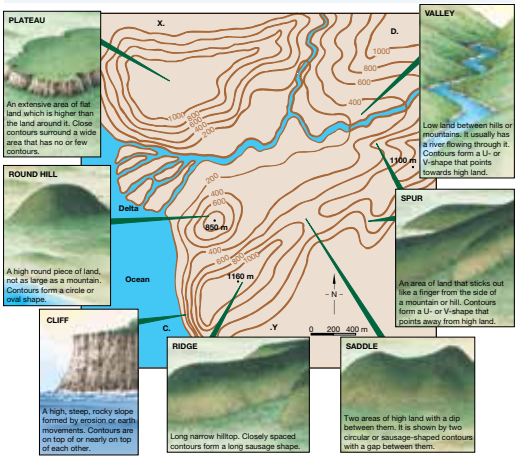
WHAT ARE LAND FEATURES?

Land features are landforms with distinct shapes, such as hills, valleys and mountains. You can recognise these as you look around your natural environment. On topographic maps you can recognise land features from the patterns formed by the contour lines.

Go online to access:

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

FIGURE 1 Landforms matched to a topographic map



learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Recognising land features (eles-1648)

Try out this interactivity: Recognising land features (int-3144)

10.5 What landforms are found in the Pacific?

online only

Access this subtopic at **www.jacplus.com.au**

10.6 What processes shape landscapes?

10.6.1 Are all processes natural?

There are processes at work that continuously sculpt and change the landscape. In the future, the Earth's surface will look very different from the way it looks today.

There are a variety of natural processes that shape and reshape not only the surface of the Earth, but also what lies beneath it. Natural processes include uplift, such as that caused by tectonic activity, erosion, deposition and weathering. People change the landscape when they clear land for agriculture or build cities and road networks. Sometimes they alter the course of a river or trap its flow behind the walls of a dam.

10.6.2 What role do tectonic forces play?

The Earth's surface, or crust, is split into a number of plates, which fit together like a giant jigsaw puzzle. These plates sit on a layer of semi-molten material in the Earth's **mantle** — the layer of the Earth between the crust and the core. Heat from the Earth's core creates convection currents within the mantle, causing the plates to move. Most of the Earth's great mountain regions were formed as a result of this movement.

When two plates collide, one plate often slides under the other, in a process known as subduction, and it becomes part of the mantle. Other rocks are forced upwards and bent or folded. Large mountain ranges that were formed in this way include the Himalayas in Asia and the Rocky Mountains in North America. You will find more information on how mountains are formed in subtopic 13.5.

10.6.3 How is the landscape worn away?

Erosion is the wearing away of the Earth's surface by natural elements such as wind, water, ice and human activity. The landscape is further eroded when agents such as wind, water and ice **transport** these materials to new locations. Eventually, transported material is deposited in a new location. Over time, this material can build up and new landforms result. The Grand Canyon in Colorado in the United States (figure 1 at right) is an example of these elements at work. These processes work more quickly on softer rocks.

Human activity also contributes to erosion. Deforestation, agriculture, urban sprawl, logging and road construction all alter the natural balance and increase erosion by as much as 40 per cent in some areas. Vegetation not only provides valuable habitat for native animals but is also vital for binding the soil together. Once vegetation is removed, it is more easily broken down and removed by wind and water. When topsoil (see figure 3 in subtopic 10.8) is removed, plants are unable to obtain the nutrients they need for growth. Sometimes wide, deep channels, known as gullies, form (figure 2 at right).

FIGURE 1 Over millions of years, the Colorado River has cut deep channels to form the Grand Canyon.



FIGURE 2 Note the scale of this gully compared to the people.



FIGURE 3 After tectonic forces cause a section of the Earth to be raised (uplifted), other processes take over and resculpt the landscape.

1 Weathering is the breakdown of rocks due to the action of rainwater, temperature change and biological action. The material is not transported (removed).

It can be physical, chemical or biological.

2 Erosion is the process whereby soil and rocks are worn away and moved to a new location by agents such as wind, water or ice.

3 Transportation is the process that moves eroded material to a new location — examples include soil carried by the wind, sediment or pebbles in a stream.

4 Deposition — materials moved by wind and water eventually come to a halt. Over time new landforms are built. Sand dunes and beaches are common landforms associated with deposition.

Physical — occurs where water is continually freezing and thawing. The water penetrates cracks and holes in the rocks. As water freezes it expands, making the cracks larger. Over time the rock breaks apart.

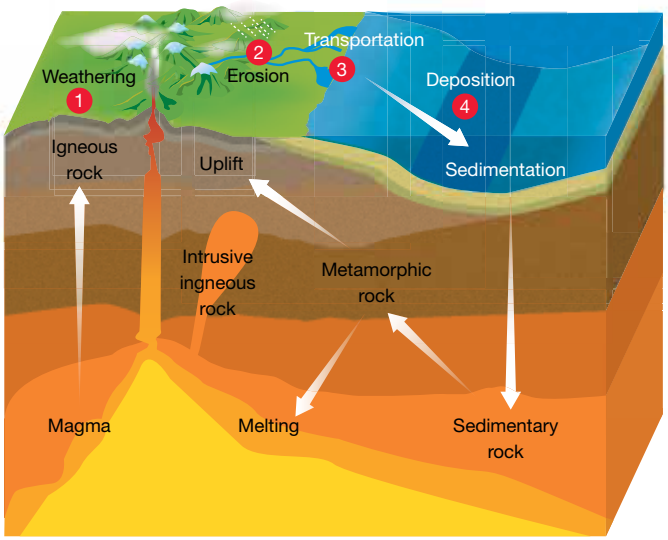


Chemical — some rocks, such as limestone, contain chemicals that react with water, causing the limestone to dissolve.



Biological — living organisms such as algae produce chemicals that break down rocks. They can also be forced apart by plant roots.





10.6 Activities

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

Remember

1. In your own words, define the natural processes at work shaping the Earth.

Explain

2. Explain how and why human activity might contribute to weathering and erosion.
3. Using terms such as *uplift*, *erosion*, *deposition*, *weathering* and *transportation*, explain the ***interconnection*** between physical processes and the ***environment***.

Discover

4. Use the internet to discover a landform that you find interesting. Copy and paste this image into a Word document. Annotate your image with information about its location and how it was formed. Add additional annotations to describe how your landform might have ***changed*** over time. Detail how it might have looked in the past and how it might look in the future. Think carefully about the ***scale*** of this ***change***.

Predict

5. Study the ***environment*** around your home or school and find a ***place*** where there is evidence of erosion. Make a sketch and label the features of the landscape. Highlight areas where erosion is evident and add annotations to explain what you think might have caused this ***change***, and in particular, the ***scale*** of this ***change***. Estimate the proportion of this ***environment*** that has been affected. What proportion do you think is the result of human activity? Compare your estimate with the figure given in this subtopic.

learnon RESOURCES — ONLINE ONLY

Try out this interactivity: Break down! (int-3101)

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
› **Active Earth**

10.7 What is hidden underground?

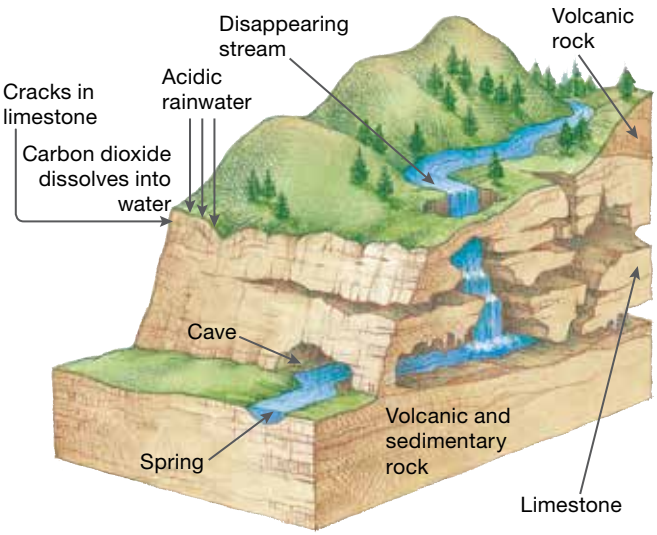
10.7.1 What is karst?

Apart from rivers and streams that flow across the surface of the Earth, vast networks of rivers also exist under the ground. The result is a network of caves and channels that carve a very different landscape, known as karst.

Karst is a landscape formed by water dissolving bedrock (solid rock beneath soil) over hundreds of thousands of years (see figure 1). On the surface of the Earth, sinkholes (holes in the Earth's surface), vertical shafts (tunnels), and fissures (cracks) will be evident. Rivers and streams may seem to simply disappear, but underground there are intricate drainage networks, complete with caves, rivers, **stalactites** and **stalagmites** (see figure 2).

Karst topography makes up about 10 per cent of the Earth's surface; however, a quarter of the world's population depends on karst environments to meet its water needs.

FIGURE 1 Formation of a karst landscape



10.7.2 How are karst landscapes formed?

Water becomes slightly acidic when it comes into contact with carbon dioxide in the atmosphere (as it does when raindrops form) or when it filters through organic matter in the soil and percolates into the ground. Acidic water is able to dissolve **soluble** bedrock, such as limestone and dolomite. This creates cracks or fissures, allowing more water to penetrate the rocks. When the water reaches a layer of non-dissolving rocks, it begins to erode sideways, forming an underground river or stream. As the process continues, the water creates hollows, eventually creating a cave. Some karst landscapes contain aquifers that are capable of providing large amounts of water.

FIGURE 2 Caves in Guilin, Guangxi Province, southern China



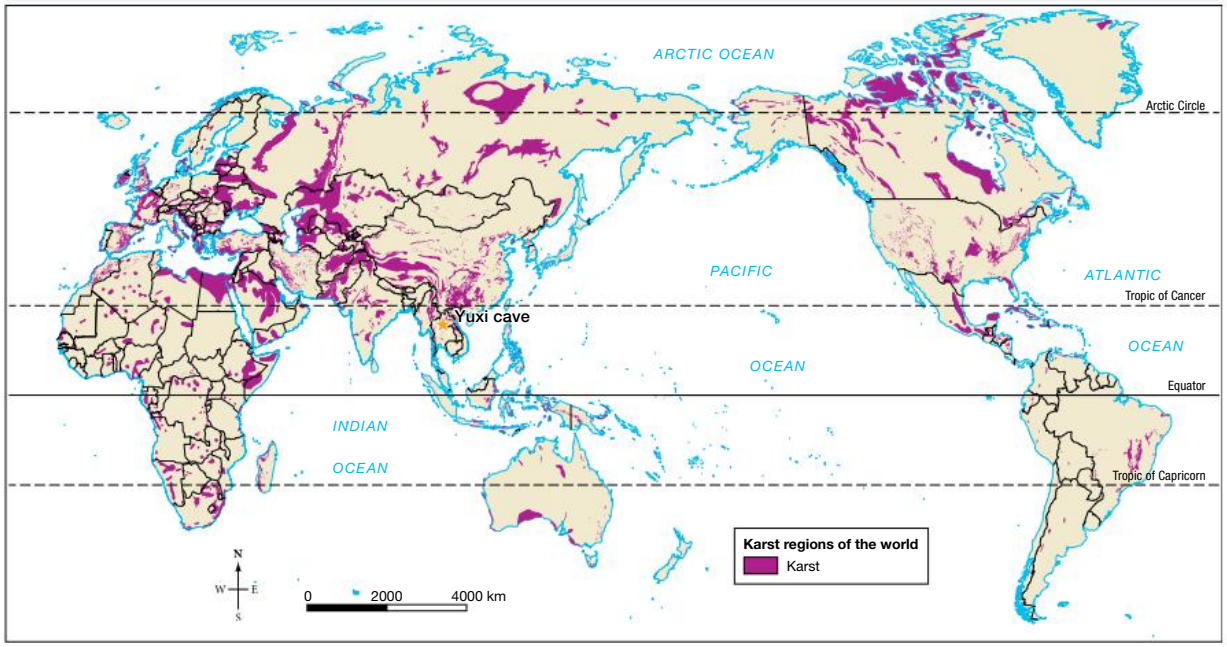
10.7.3 Where in the world do you find karst landscapes?

Karst landscapes are found all over the world, as shown in figure 3, in locations where mildly acidic water is able to dissolve soluble bedrock such as limestone and dolomite.

In tropical regions, where rainfall is very high, karst mountains sometimes develop. This is because the high rainfall levels wear away the soluble rock much faster than rock is worn away in karst areas with lower rainfall. Examples of tropical karst mountains include the peaks of Ha Long Bay in Vietnam and the Guilin Mountains in China.

The Earth's largest arid limestone karst cave system is located on Australia's Nullarbor Plain, covering 270 000 square kilometres. It extends 2000 kilometres from the Eyre Peninsula in South Australia to Norseman in the Goldfields–Esperance region of Western Australia, and from the Bunda Cliffs on the Great Australian Bight in the south to the Victoria Desert in the north. The extensive cave system provides a unique habitat for a variety of native flora and fauna. Within the caves are fossils that can reveal much about our distant past, along with important Indigenous heritage sites.

FIGURE 3 Karst regions of the world



Source: World Map of Carbonate Rock Outcrops v3.0.

10.7 Activities

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

Remember

1. In your own words, explain how a karst landscape is formed.

Explain

2. Describe the global distribution of karst landscapes.
3. Do you think we should preserve karst landscapes? Give reasons for your answer.

Discover

4. Examples of karst landscapes in Australia include the Buchan, Naracoorte, Jenolan, Labertouche, Princess Margaret Rose, Judbarra and Abercrombie caves. Working with a partner, investigate one of these ***environments*** and prepare an annotated visual display. Show its location on a map, and include the ***scale***,

features, land use and any concerns or threats to the ***environment***. Include information on what is being done to ensure the ***sustainable*** management of the ***place***. Share your findings with the rest of the class.

Think

5. The largest limestone arid karst system is found on the Nullarbor Plain, Australia.
   (a) The Nullarbor Plain is an example of a desert landscape; suggest how an ***environment*** formed by water can occur in this location.
   (b) This cave ***environment*** is a popular destination for caving groups. Use the internet to investigate this ***environment*** and why people are attracted to it. Compare this ***environment*** to the one you studied in question 4 above. Pay particular attention to the ***scale*** and ***change*** that has occurred in each ***place***. Is one more fragile than the other? Explain. Suggest strategies for the ***sustainable*** management of karst in the Nullarbor.
   (c) Describe how you think this landscape would be different if it were located in Australia's tropical north.

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Try out this interactivity: Underground wonders (int-3103)

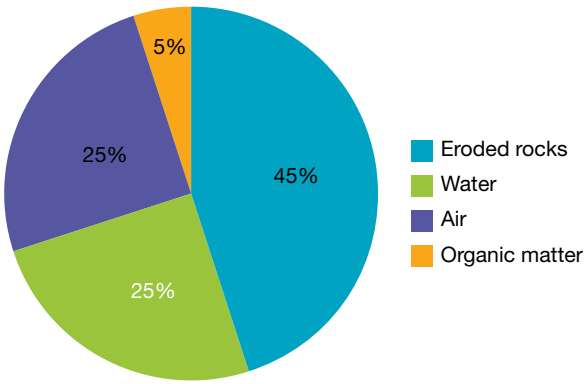
10.8 What's beneath our feet?

10.8.1 What is soil?

We rarely give much thought to the soil beneath our feet. But soil is the basis of all life on the Earth. It provides the nutrients needed for growing plants, which provide food for animals. Without soil, people could not grow crops or raise livestock. Without soil, nothing could survive.

Soil is a thin layer of material on the surface of the Earth. In it, plants can grow. In some parts of the world it is metres deep, but in Australia it is a thin layer of 15 to 20 centimetres. The composition of soil is shown in figure 1 at right and the factors that influence soil formation are shown in figure 2 in section 10.8.2.

FIGURE 1 While the composition of soil varies widely across the Earth, an average soil will have these characteristics.



Australia generally has poor soils when compared with those found on other continents such as North America and Europe. Australian soils are generally low in nutrients and, in some areas, especially arid zones, they have a high salt content. Patches of good soil, though, are scattered throughout the continent. For example, there is:

- volcanic soil on the Darling Downs in Queensland and at Orange in New South Wales
- alluvial soil in river valleys such as around the Margaret River in Western Australia and the Clarence River in New South Wales.

In many parts of Australia, it takes more than 1000 years for natural processes to produce three centimetres of soil.

10.8.2 How is soil formed?

Factors that influence soil formation are shown in figure 2.

FIGURE 2 Influences on soil formation



Climate affects the rate of weathering of soil. In high rainfall areas, soil develops more rapidly, but excess moisture also washes out or leaches nutrients. In rainforests, for example, the rich supply of humus from decaying plant matter produces lush vegetation. However, high rainfall means that without this constant supply of humus, soil fertility is quickly lost. In arid regions, where evaporation is high, soils often contain too much salt to support plant growth. Weather also plays a role; a climate with a freezing and thawing cycle will speed up the breakdown of rocks. In warm climates, the activity of soil organisms is high, and chemical processes also happen more quickly.



Surface rocks and bedrock are broken down through weathering and erosion. The type of soil that forms depends on the parent material and the minerals it contains. A coarse, sandy soil will develop from sandstone. Bedrock that is mainly granite produces a sandy loam, while shale turns into heavy clay soil.

Soil

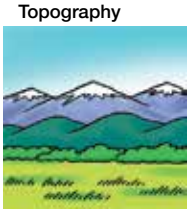


Plants and animals



Decaying plant and animal matter on the soil's surface is broken down by microorganisms into material that is incorporated into the soil, making it nutrient rich.

Topography



Surface features such as hills, valleys and rivers influence soil development. Soil is generally deeper on the top and at the base of a hill than on its slopes. Floodplains next to river valleys are often nutrientrichdue to sediment being deposited as floodwaters recede.

Time

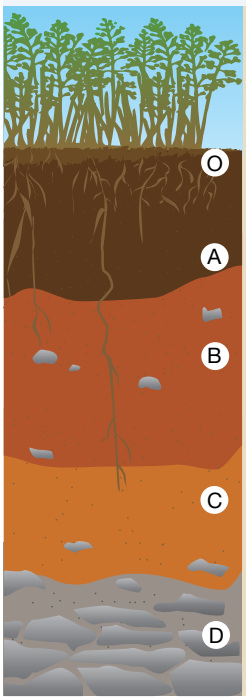


These processes take place over long periods of time. Soils undergo many changes with the passage of time.

10.8.3 What is a soil profile?

Soil forms in layers called horizons (see figure 3). A soil profile is a side view or cross-section of these different layers or horizons.

FIGURE 3 A typical soil profile



Horizon O (organic matter): Thin layer of decomposing matter, humus and material that has not started to decompose, such as leaf litter

Horizon A (topsoil): The upper layer of soil, nearest the surface. It is rich in nutrients to support plant growth and usually dark in colour. Most plant roots and soil organisms are found in this horizon. In areas of high rainfall, such as tropical rainforests, minerals are leached out of this layer. A constant supply of decomposing organic matter is needed to maintain soil fertility.

Horizon B (subsoil): Plant litter is not present in horizon B so little humus is present. Nutrients leached from horizon A accumulate in this layer, which is lighter in colour.

Horizon C (parent material): Weathered rock that has not broken down enough to be soil. Nutrients leached from horizon A are also found in this layer.

D: Underlying layer of solid rock

10.8 Activities

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

Remember

1. What is soil?
2. Why is soil important?

Explain

3. In your own words, explain how soil is formed and why it is not uniform across the surface of the Earth.

Discover

4. Use the internet to investigate soils found in desert and rainforest ***environments***. Construct a soil profile for each ***place*** and highlight the differences between them. Find out if the percentages shown in figure 1 are different in each ***place***, and add this information to your soil profiles.
5. Use the **Animated soil formation** weblink in the Resources tab. Describe the main steps in the formation of soil.

Predict

6. (a) Dig a hole outside where the soil has not been disturbed too much. Dig until you find small pieces of weathering rock. Measure the depth of your hole. How does this compare with the depth of soils in Australia and overseas?
   (b) Find two pieces of rock that show signs of weathering. Check the hardness of these rocks; the harder the rocks, the more difficult it will be to obtain a sample. Rub them together over a piece of paper. Were you able to collect a spoonful of grains in a reasonable amount of time? If so, how long did it take to rub off a spoonful of particles?
   (c) The rate of soil formation is estimated at less than 0.05 millimetres a year in eastern Australia. How long would it take to develop one centimetre of soil? How long would it take to form enough soil to replace what was in the hole you dug earlier?
   (d) Write a paragraph explaining what this exercise tells you about soil formation and the need to use soil in a ***sustainable*** manner.

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Explore more with this weblink: Animated soil formation

10.9 SkillBuilder: Using positional language

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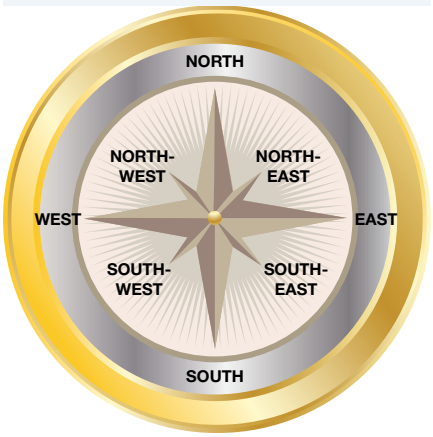
WHAT IS POSITIONAL LANGUAGE?

Positional language is the use of compass points to locate places and provide directions between places. North, north-east, east, south-east, south, south-west, west, and north-west are shown on an 8-point compass. We can use positional language to describe the location of one feature in relation to another.

Go online to access:

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

FIGURE 1 An eight-point compass



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Watch this eLesson: Using positional language (eles-1649)

Try out this interactivity: Using positional language (int-3145)

10.10 How do different cultures view landscapes?

10.10.1 The Australian context

Landscapes are the product of processes that have operated for millions of years. While all humans have come to realise the importance of the landscape and the role it plays in our lives, indigenous groups were the first to recognise that it is important to work with nature rather than always seek to change and exploit it.

FIGURE 1 Rock art



Aboriginal peoples and Torres Strait Islander peoples are recognised as the first Australians. Evidence of their presence in Australia is found across the continent in their rock art (as shown in figure 1), in **archaeological** records, and through their cultural heritage passed down through generations. As **hunter–gatherers** they relied on the plants, animals and the environment for their survival, and so have an understanding of the complex nature of Australia's varying landscape.

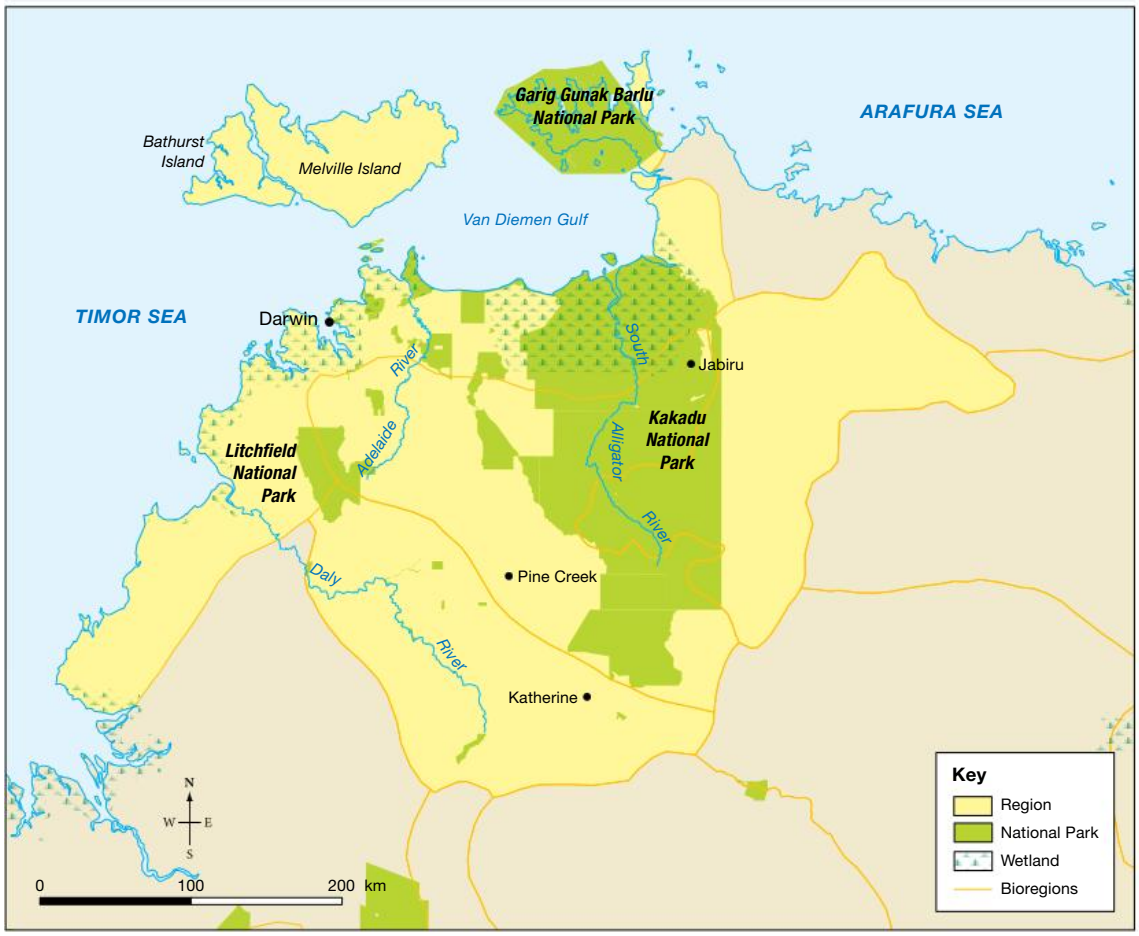
Europeans, on the other hand, arrived in 1788 and occupied the area. They had a very different view of the landscape, based on ideas they brought with them from Britain. They sought to change the landscape and adapt it to meet their needs. They established permanent settlements and depended on agriculture to provide for their needs.

The perspective of Indigenous Australian peoples is one of being part of the landscape, while the European perspective is based on the idea of land ownership. Use the **One Night the Moon** weblink in the Resources tab to find out more about the different ways in which the landscape is viewed.

10.10.2 Kakadu — Australia's first World Heritage Area

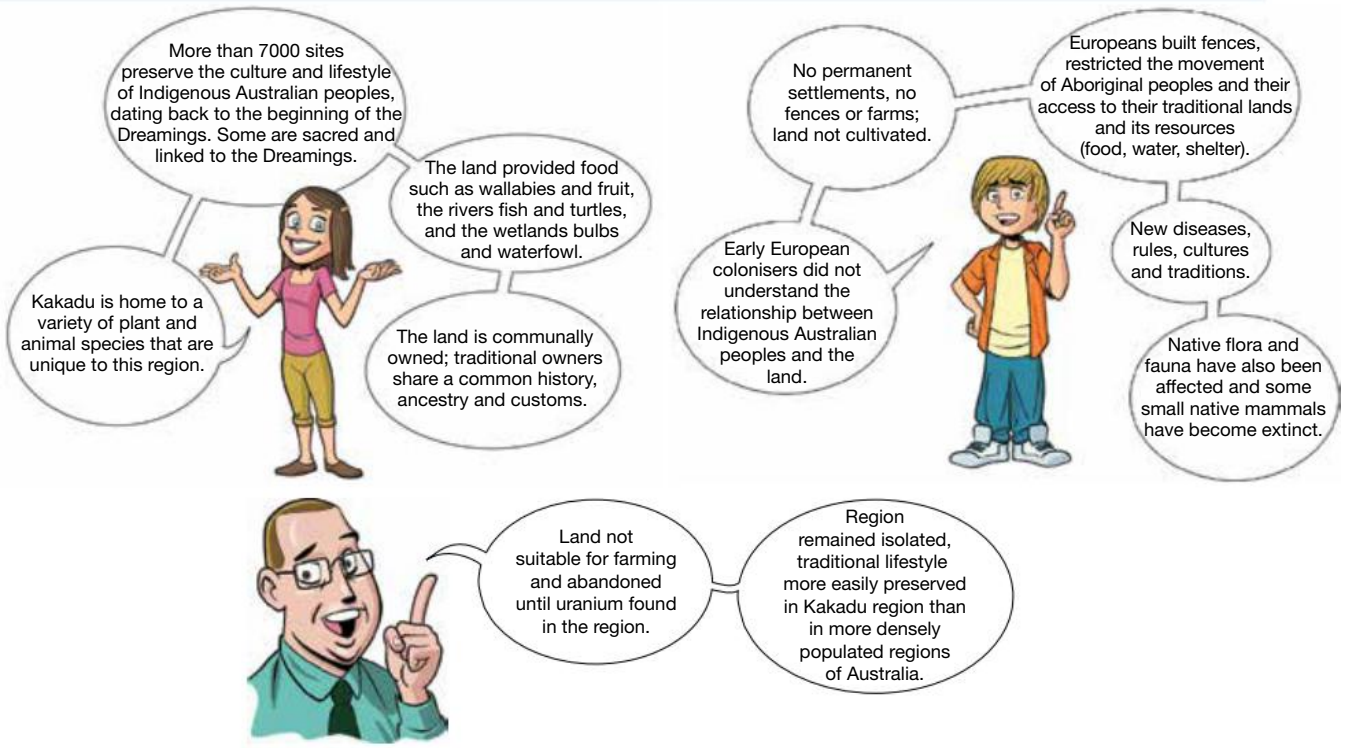
Kakadu National Park, as seen in figure 2 on the next page, covers an area of approximately 20 000 square kilometres of the Northern Territory — an area roughly a third the size of Tasmania. It stretches 200 kilometres from north to south, and spans 100 kilometres from east to west. Within the boundaries of the park are vast uranium deposits. Kakadu is unique in that it is recognised for both its natural beauty and its cultural value.

FIGURE 2 Map of Kakadu National Park



Source: Spatial Vision

FIGURE 3 Why Kakadu is valued



10.10.3 Kakadu and its resources

Kakadu is rich with the historical records and ancestry of the first Australians. In addition, it supports a treasure trove of native plant and animal species and provides a temporary home to a large number of migratory birds. More than 170 000 tourists visit Kakadu annually, attracted by its vast wetlands and scenery, including steep gorges, Aboriginal rock art, waterfalls such as Jim Jim Falls (see figure 4 at right), and lookouts.

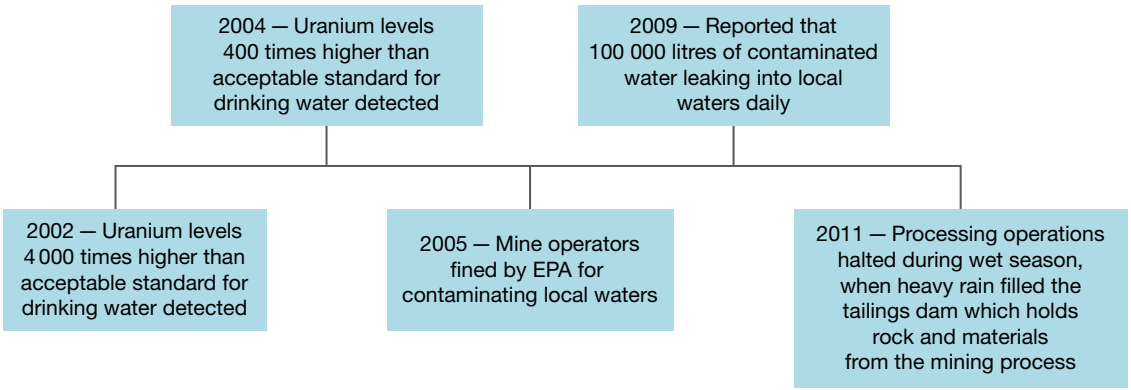
Kakadu also has vast deposits of uranium ore, which some regard as a valuable export for Australia. Opponents of uranium mining are concerned about the possibility that Australia's uranium could be processed and used to make nuclear weapons. Others fear the effects of mining on the environment and the potential for a devastating pollution event.

The Ranger uranium mine has been operating for 30 years and lies within the boundaries of Kakadu National Park. Three kilometres downstream from the mine, the Mirrar people (a local Aboriginal community) swim and fish. Since the mine opened, there have been more than 200 leaks and spills, and the mine has generated some 30 million tonnes of liquid radioactive waste (see figure 5 below).

FIGURE 4 Jim Jim Falls at Kakadu is a popular tourist destination.



FIGURE 5 Timeline of major breaches at the Ranger uranium mine since 2002



10.10 Activities

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

Remember

1. Where is Kakadu National Park and why is it important?
2. Copy the table below into your workbook and use it to compile a list of differences in the way the Australian landscape was viewed by Aboriginal and Torres Strait Islander peoples and non-Aboriginal and Torres Strait Islander Australians. The first one has been done for you.

Aboriginal and Torres Strait Islander peoples views	Non-Aboriginal and Torres Strait Islander views
The land is communally owned.	Individuals own the land.

Explain

3. (a) Where are the more densely populated regions of Australia? *Hint:* Find a map in your atlas that shows population distribution.
   (b) Why would it be more difficult for Aboriginal and Torres Strait Islander communities in these areas to maintain their traditional lifestyle and culture?
4. Describe the ***interconnection*** that Aboriginal and Torres Strait Islander peoples have with the landscape. What evidence of this ***interconnection*** is found in this subtopic and in the **One Night the Moon** weblink in the Resources tab?
5. What is uranium used for and why is it considered a valuable resource?
   (a) What risks does uranium mining pose in the Kakadu region?

Think

6. Think about your personal values and beliefs and analyse how they might be similar or different to those reflected in figure 3.

Predict

7. (a) Suggest three possible impacts on the landscape if a new uranium mine was opened in the Kakadu region.
   (b) Do you think ***changes*** would have a large-***scale*** or a small-***scale*** impact? Explain.
8. Why do you think the Australian government allows uranium mining in such an important region of Australia?
9. Predict what pressures decision-makers in Australia might face in future when balancing the needs of the different groups who have an interest in Kakadu's resources.
10. Write a letter to the editor of a newspaper outlining your views on uranium mining in ***environmentally*** sensitive areas. Explain whether you consider this type of activity is a ***sustainable*** use of the landscape.

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Explore more with this weblink: One Night the Moon

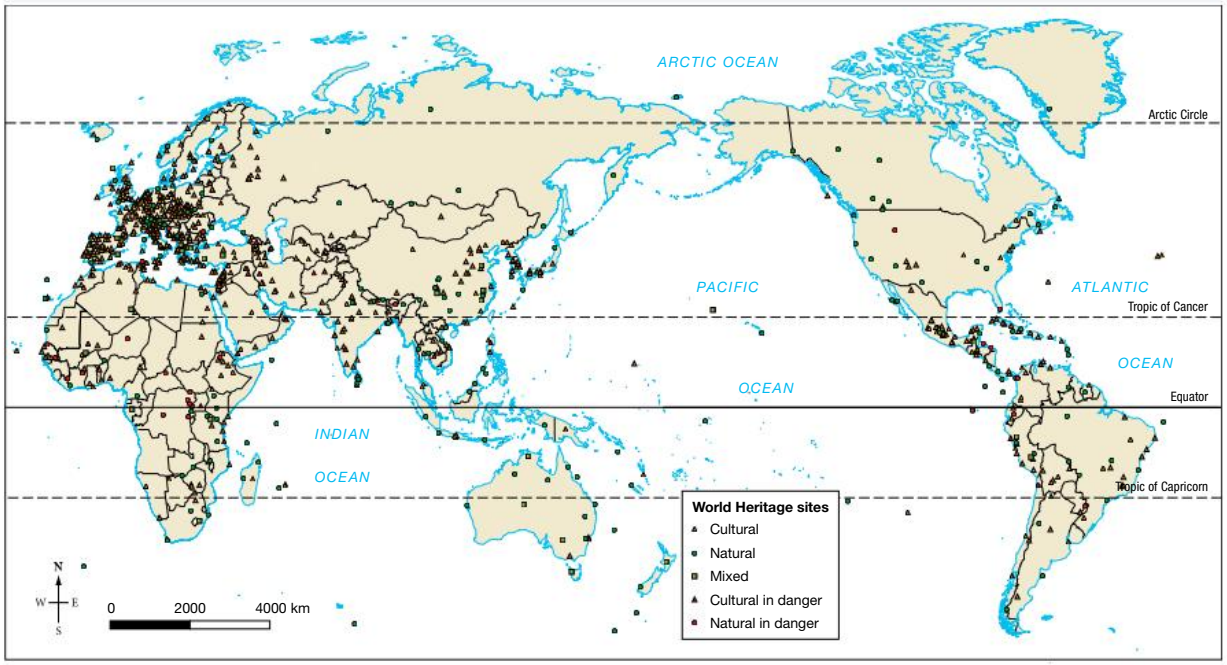
10.11 How are landscapes preserved and managed?

10.11.1 The World Heritage Convention

Worldwide, people recognise the value of landscapes and the need to protect their natural beauty and cultural heritage, and to manage their resources sustainably. Landscapes are easily damaged or destroyed but are difficult to recreate and repair. The key is to ensure that they are carefully managed so that the landscapes we value today are still present in the future.

From the middle of the twentieth century, there was growing concern about the need to protect areas of both cultural and natural significance (see figure 1 on the next page).

FIGURE 1 The World Heritage list includes 962 sites of significance.



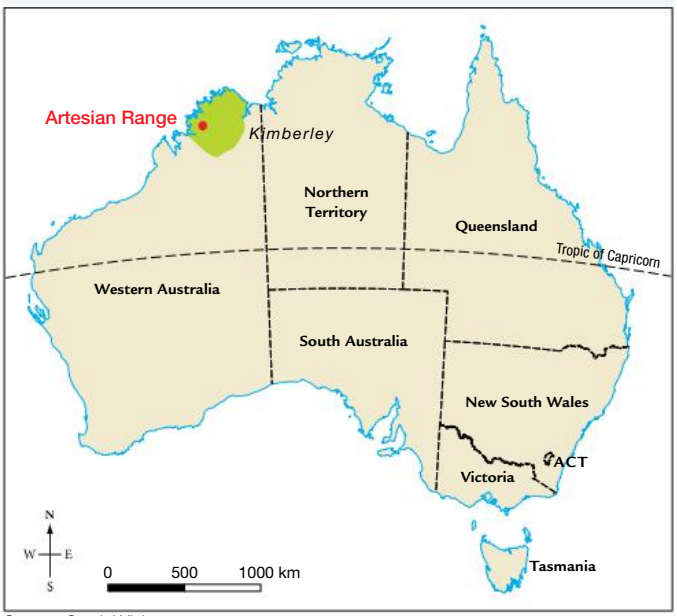
Source: Copyright © 1992–2012 UNESCO/World Heritage Centre. All rights reserved.

10.11.2 The Artesian Range

The Artesian Range is a unique part of the Australian landscape. It has been described as a lost world, a modern-day Noah's Ark, our last opportunity to protect and preserve a part of the Australian mainland that has had little contact with modern civilisation. Within its hidden valleys and canyons lies a diverse range of flora and fauna. The rich tropical rainforests and woodlands provide vital habitats for some of Australia's most endangered wildlife.

The Artesian Range covers 1800 square kilometres (see figure 2 at right). It is largely inaccessible; the only way in is by helicopter or boat. It is a maze of hidden valleys and canyons, rocky ranges and plateaus, towering **escarpments**, wide valleys and deep gorges (see figure 3 on next page). Its sandstone ranges were formed as a result of moving tectonic plate activity. These rock formations date back some 1.8 million years.

FIGURE 2 The Artesian Range covers 1800 square kilometres of the Kimberley region.



Source: Spatial Vision

Although it is difficult for humans to reach the area, exotic species such as donkeys, horses, pigs and cats have gradually invaded the Kimberley. And while fire is a natural part of the landscape, changing fire patterns and the increasing number of late-season wildfires are also a threat to the Artesian Range. Australian Wildlife Conservancy (AWC), an independent non-profit organisation funded by donations, has now secured the land, and manages it for conservation. AWC undertakes fire management, feral animal control, and biological surveys and monitoring, protecting the full length of the Artesian Range.

FIGURE 3 The Artesian Range is a rugged and largely inaccessible landscape, renowned for its natural beauty and unique wildlife.



Source: AWC/Wayne Lawler

10.11 Activities

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

Remember

1. Why is it important to protect sites that have cultural or natural significance?
2. Describe the location of the Artesian Range and why is it unique.

Explain

3. Suggest why the Artesian Range has been largely inaccessible to people.
4. Explain how exotic species such as cats, foxes and camels have been able to become established in the Artesian Range when it is difficult for people to enter the region.

Discover

5. Use the **World Heritage list** weblink in the Resources tab and select a site in one of the countries listed on the map. Prepare a visual presentation of one of the sites listed, outlining its importance and how it is protected.

Predict

6. In small groups, investigate an invasive species and describe the ways in which it has ***changed*** the ***environment***. Is this ***change*** occurring on a small or large ***scale***? Explain. Suggest a strategy that the Australian Wildlife Conservancy could employ to eradicate invasive species from this ***environment***.

Think

7. (a) Explain what you understand by the terms *cultural significance* and *natural significance*.
   (b) Is it possible for ***places*** to have both cultural and natural significance? Draw up a table like the one below. With the aid of a partner, add as many ***places*** as you can to the list. Try to have a balance of Australian and international examples. Compare your list with that of another pair of students.

Cultural significance	Natural significance	Cultural and natural significance

   (c) Which column has the most entries? Suggest a reason for the pattern you observe.
   (d) Select one ***place*** from column 3. Find a picture of this ***place*** and copy and paste it into a Word document. Add annotations to explain the major features of your chosen ***place*** and why it is of cultural and natural significance.
8. Evaluate the ways in which the community demonstrates the value it places on cultural diversity and why this is important to the community.

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Explore more with this weblink: World Heritage list

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.
› **World Heritage sites**

10.12 Review

online only

10.12.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

10.12.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

10.4 SkillBuilder: Recognising land features

10.4.1 Tell me

What are land features?

Land features are landforms with distinct shapes, such as hills, valleys and mountains. You recognise these as you look around your natural environment. On topographic maps you recognise land features from the patterns formed by the contour lines.

Why is it useful to recognise land features?

By recognising land features, we understand our natural environment. This is useful for a wide range of activities including:

- planning housing estates, freeway routes and reservoirs
- organising outdoor recreational pursuits such as orienteering, trail-biking and flying
- managing hazards such as flooding.

Model

FIGURE 1 Landforms matched to a topographic map

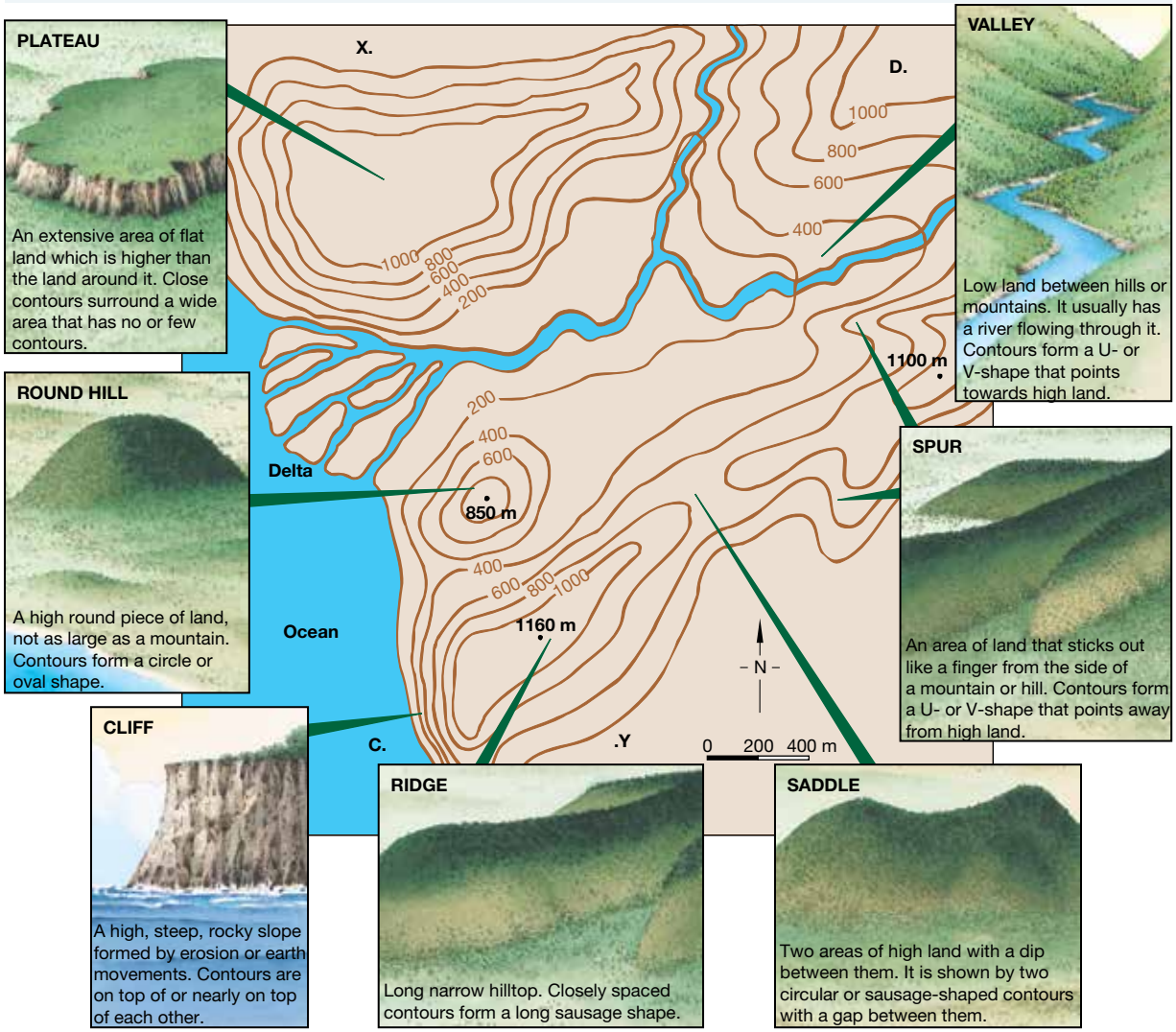


Figure 1 on the previous page shows a simple topographic map including a spur, cliff, valley and plateau. These land features are identified by the way the contour lines come together to create shapes on the map.

Recognising land features on a map involves identifying the shapes created by the pattern of contours.

10.4.2 Show me

How to recognise a land feature

By reading the contour lines an understanding of the shape of the land is obtained. Land features are identified from the contour lines.

You will need:

- a topographic map.

Procedure:

Use the contour lines to identify land features.

STEP 1

Look at the contour lines on figure 1. You will see that sometimes the lines are close together and sometimes the lines are further apart. Identify two areas where this is the case.

STEP 2

Using your hand, create the shape of a hill. For every 50 metres increase of the hill slope, move your hand higher and at each step visualise that this is the next contour line on a map.

Try this for some other landforms that you are familiar with, such as a valley or a beach cliff.

Did you recognise that if the contours are close together then the shape of the land is steep, and if the contours are further apart then the land is flatter?

STEP 3

Landforms have distinctive shapes with contours, which a geographer recognises on a topographic map as a particular land feature. Use figure 1 as a guide to understanding the shapes on maps as land features. Create your own hand models of the shape of each land features.

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Watch this eLesson: Recognising land features (eles-1648)

10.4.3 Let me do it

Developing my skills

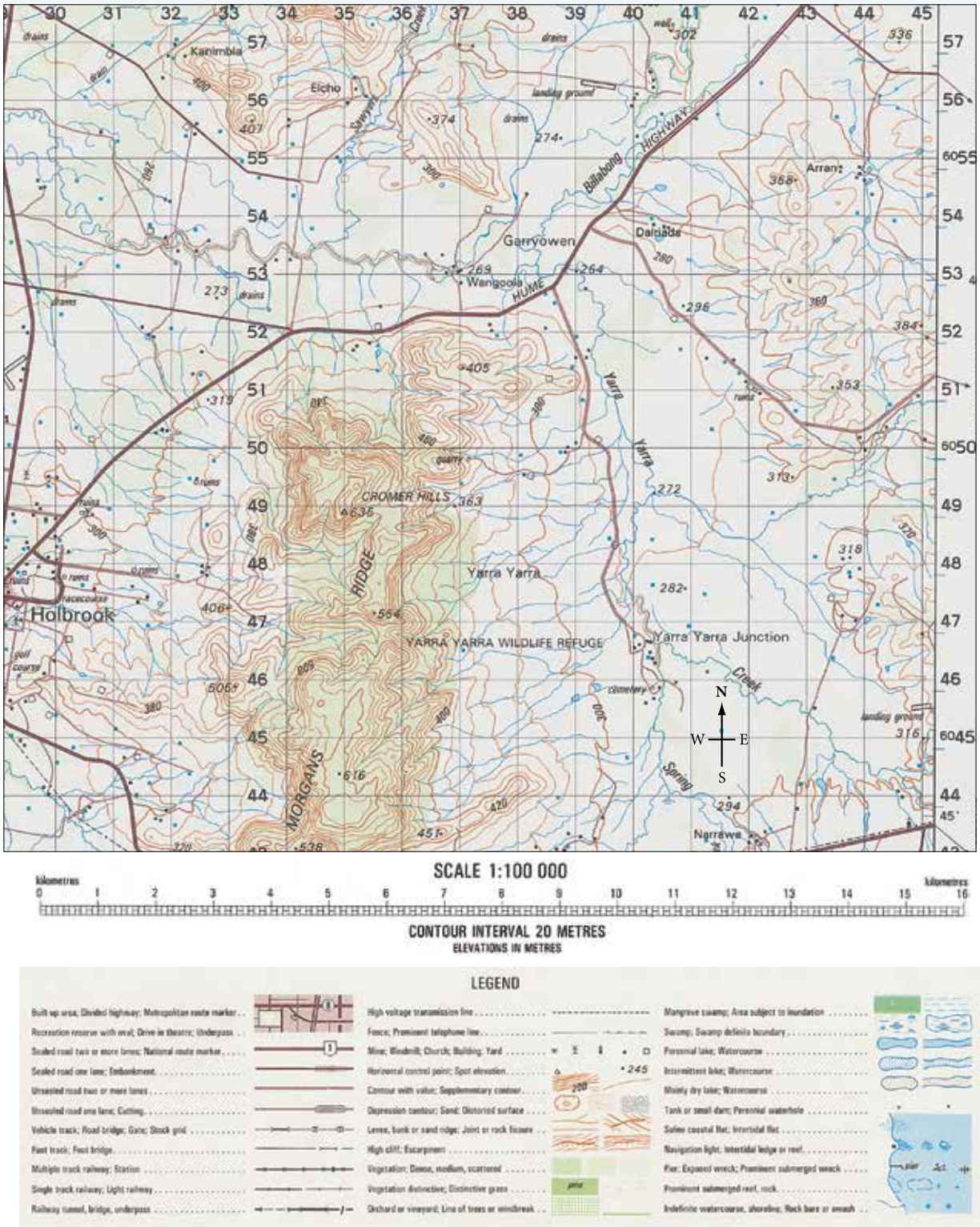
Use figure 2, the map of Yarra Yarra Creek basin, New South Wales, on the next page to identify the following landforms.

1. Ridge
2. Wide valley
3. Very steep slope
4. Spot height of 635 metres
5. Spur
6. Plateau
7. Saddle

Questions

1. Which slope of Morgans Ridge would be the most difficult to climb?
2. What two natural features can be seen from Morgans Ridge to the east?
3. What are the heights of the peaks on Morgans Ridge?
4. Can you see the town of Holbrook from Wangoola? Explain your answer.
5. What land features form part of Morgans Ridge?

FIGURE 2 Topographic map of Yarra Yarra Creek basin



Source: Spatial Vision

Checklist

I have:

- recognised the major land features on a topographic map.

Skills questions

1. Land features on a topographic map can be identified by:
   (a) spot heights
   (b) symbols
   (c) labels
   (d) shapes made from contour lines.
2. Contour lines very close together indicate:
   (a) a gentle slope
   (b) a cliff
   (c) a valley
   (d) a hill.
3. How do contour lines help to identify land features?
4. Why do geographers draw diagrams of land features?

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Try out this interactivity: Recognising land features (int-3144)

10.5 What landforms are found in the Pacific?

10.5.1 What is the Pacific landscape like?

The Pacific Ocean is the world's largest ocean, and occupies almost a third of the Earth's surface, making it larger than all the Earth's land areas combined. It stretches from the Arctic in the north to Antarctica in the south and is bordered by Australia and Asia in the west and the Americas in the east. The 25 000 Pacific Islands of Polynesia, Micronesia and Melanesia (including Papua New Guinea) are home to around 10 million people.

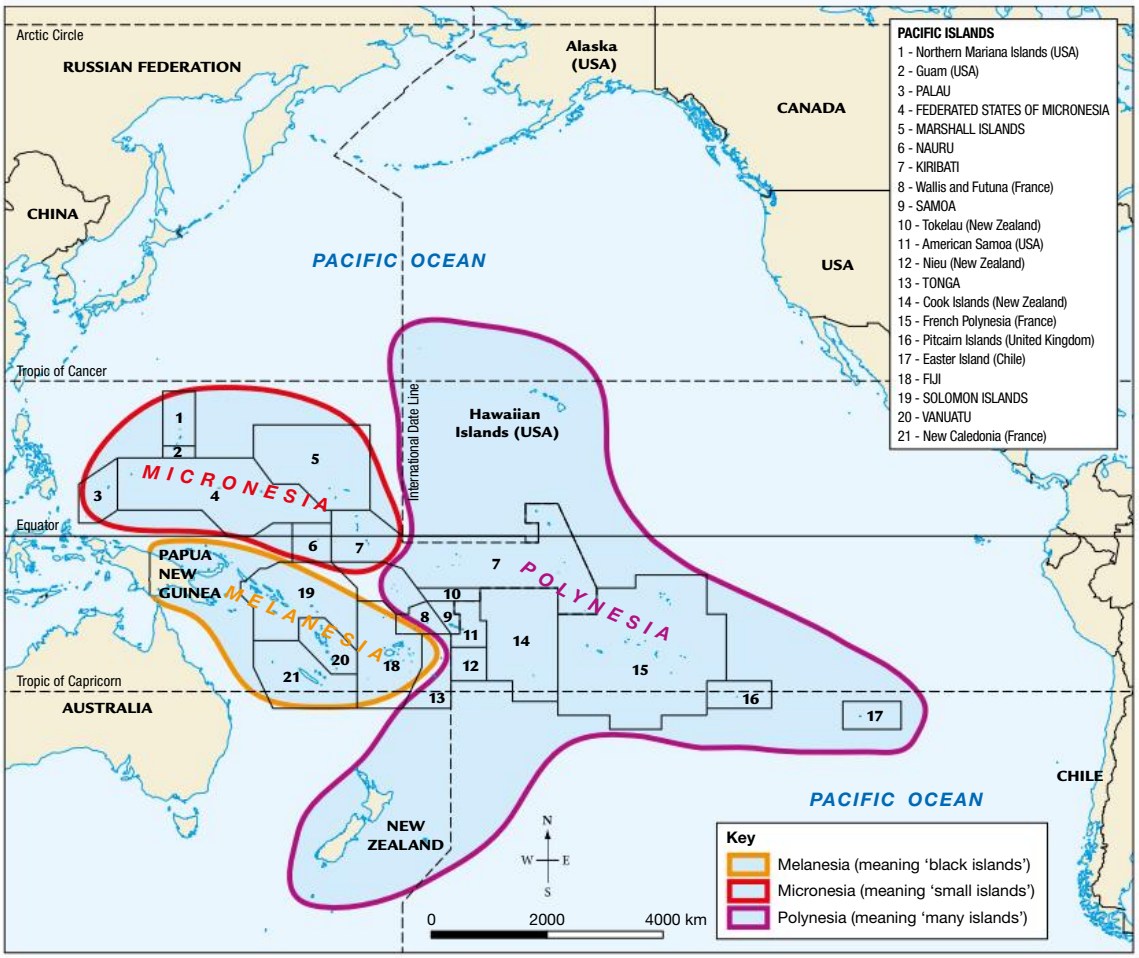
The Pacific islands are broken up into three main island groups (see figure 1 below).

Melanesia extends north and north-east of Australia, from the west Pacific Ocean to the Arafura Sea. It includes the islands of New Guinea (the nation of Papua New Guinea and the Indonesian province of Papua), New Caledonia, Vanuatu, Fiji and the Solomon Islands.

Micronesia has hundreds of small islands and is located north-east of Papua New Guinea. It is bounded by the Philippines in the west, Indonesia in the south-west and Melanesia to the south. Micronesia includes the Northern Marianas, Guam, Palau, the Marshall Islands, Kiribati, Nauru and the Federated States of Micronesia.

Polynesia forms a triangle, with its three corners at Hawaii, New Zealand and Easter Island. There are around 1000 islands in this part of the central southern Pacific Ocean. The other main islands are Samoa, Tonga, French Polynesia, Tuvalu and the Cook Islands.

FIGURE 1 The Pacific Ocean



***Source*:** Spatial Vision

10.5.2 What records does the Pacific hold?

Apart from being the world's largest ocean, the Pacific holds a number of other records.

- At 10 203 metres, Mauna Kea in Hawaii is the highest mountain from base to summit.
- Mauna Loa is the world's largest active volcano. It is 120 kilometres long and 50 kilometres wide. It has been active for over 700 000 years and will most likely continue to erupt for another 500 000 years.
- The Mariana Trench in the western Pacific is the deepest point on Earth — 11 032 metres.
- Australia's Great Barrier Reef is the world's largest coral reef, stretching some 2027 kilometres.
- Kwajalein in the Marshall Islands, with a length of 125 kilometres, is the world's largest **coral atoll**. It actually comprises 97 islands and **islets** and surrounds one of the world's largest **lagoons**, covering 2173 square kilometres.
- Grand Lagoon Sud in New Caledonia is the world's largest lagoon, covering an area of 3145 square kilometres.
- The Pacific Ocean is encircled by the Pacific Ring of Fire, the world's most active tectonic region. Approximately 75 per cent of the world's active volcanoes and 90 per cent of the world's earthquakes are here.

10.5.3 What are low islands?

Some of the low islands in the Pacific are the remains of volcanoes that have eroded over time and are now only just above sea level. Examples include some of the smaller islands in Hawaii and Bora Bora in French Polynesia.

Other low islands are reefs, or atolls built on coral reefs, and are usually quite small, some barely reaching above sea level. Low islands are often a series of very small islands and islets with a lagoon at their centre, known as atolls.

Some coral atolls were built by volcanic activity millions of years ago. Eventually, when the volcanic island erodes, it leaves a lagoon in its place.

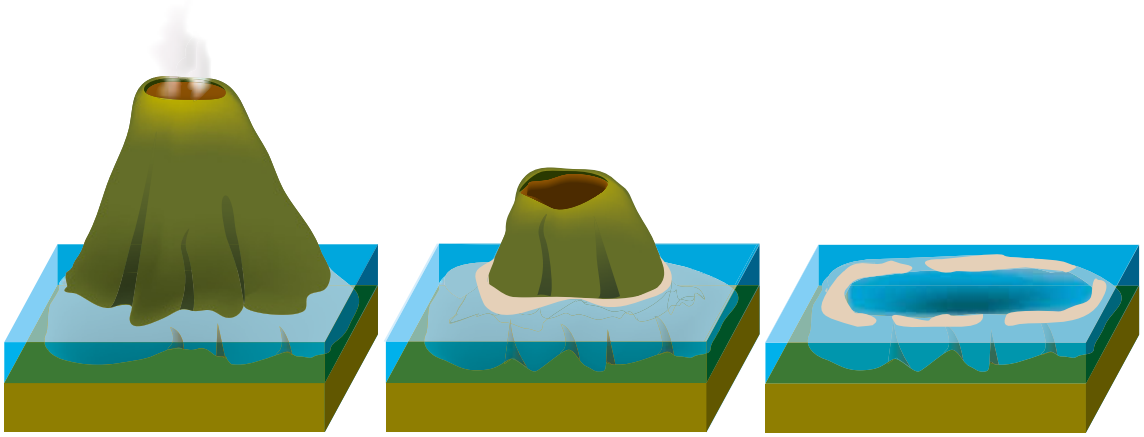
Micronesia and Polynesia are dominated by low islands. Mount Orohena and Mount Aorai on the island of Tahiti and Mount Tohiea on the island of Moorea (both in French Polynesia) are examples of old volcanoes. They have fringing reefs surrounding a shallow lagoon formed when the island was eroded. These reefs have become barrier reefs that protect the island and the lagoon from the force of the ocean waves.

Coral atolls have no rivers, and the soil is generally thin and not very fertile. Some low islands receive high rainfall, and have more fertile soils that can sometimes support forests.

FIGURE 2 The volcanic island of Moorea, French Polynesia, surrounded by a fringing reef



FIGURE 3 Development of lagoons and fringing reefs



Coral colonises the sides of a volcano, forming a reef.

The volcano cools over thousands of years; the volcano starts to sink and its summit is eroded.

Eventually the volcano disappears from view and a lagoon forms in the area once occupied by the volcano.

10.5.4 What are high islands?

A number of the high islands in the Pacific were once part of either the Australian or Asian continents. These include New Zealand, New Guinea and most of the islands in Melanesia.

Other high islands are volcanic and are really the tops of undersea mountains. They are made up of magma that was forced up through fissures (cracks) in the ocean floor before being cooled by sea water and hardening. Many of the islands found in Micronesia and Polynesia were formed in this way. Sometimes volcanic islands are formed in a chain called an archipelago.

New Zealand has more than 200 islands and 220 mountains higher than 2300 metres, the highest being Mount Cook at 3754 metres.

New Guinea is also mountainous. It has a central spine formed by high mountain ranges, the highest of which is Puncak Jaya at 5030 metres. Tahiti, Fiji, Vanuatu, the Caroline Islands and Raratonga in the Cook Islands are also volcanic islands.

FIGURE 4 An underwater volcanic eruption in 2009 created a new island off the coast of Tonga, an island group in the South Pacific.



Many large rivers flow from these high mountains, including the Fly River in Papua New Guinea, the Waikato in New Zealand, and the Rewa and Sigatoka Rivers on Viti Levu in Fiji. Many high islands have fertile volcanic soils that support a variety of vegetation types, including rainforest, mangrove forests and palms.

10.5 Activities

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

Remember

1. Explain the difference between low islands and high islands.
2. Explain the ***interconnection*** between the Pacific landscape and tectonic activity.

Explain

3. (a) Which island groups in the Pacific Ocean are dominated by low islands and which are dominated by high islands?
   (b) Do any of the island groups contain both low and high islands? If so, which ones?
   (c) Make your own sketch of a Pacific island and annotate your sketch to show how this ***place*** might ***change*** over time. Indicate the type of island you are describing.
4. More people in the Pacific islands live on the larger volcanic islands in Melanesia than in other parts of the Pacific. Suggest two reasons why this might be the case.

Discover

5. Pacific islands are popular tourist destinations. Have each member of your class investigate a different island as a possible holiday destination. Prepare an itinerary for a one-week holiday. Include information about the formation, landforms and culture of the island as well as activities that might be undertaken by a tourist.
6. Use an atlas to locate 10 of the ***places*** and features mentioned in this subtopic. Use direction, latitude and longitude to create a 'What am I?' or 'Where am I?' puzzle. Swap your quiz with another member of the class and see if they can solve your puzzle.

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions:

- Pacific nations

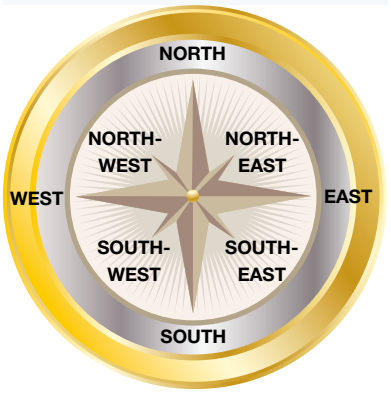
10.9 SkillBuilder: Using positional language

10.9.1 Tell me

What is positional language?

Positional language is the use of compass points to locate places and provide directions between places. A magnetic compass will always point to north. All other directions are taken from this reference point. An 8-point compass — north, north-east, east, south-east, south, south-west, west, and north-west — is standard in most geography books and atlases. A 16-point compass provides even further detail.

FIGURE 1 An eight-point compass

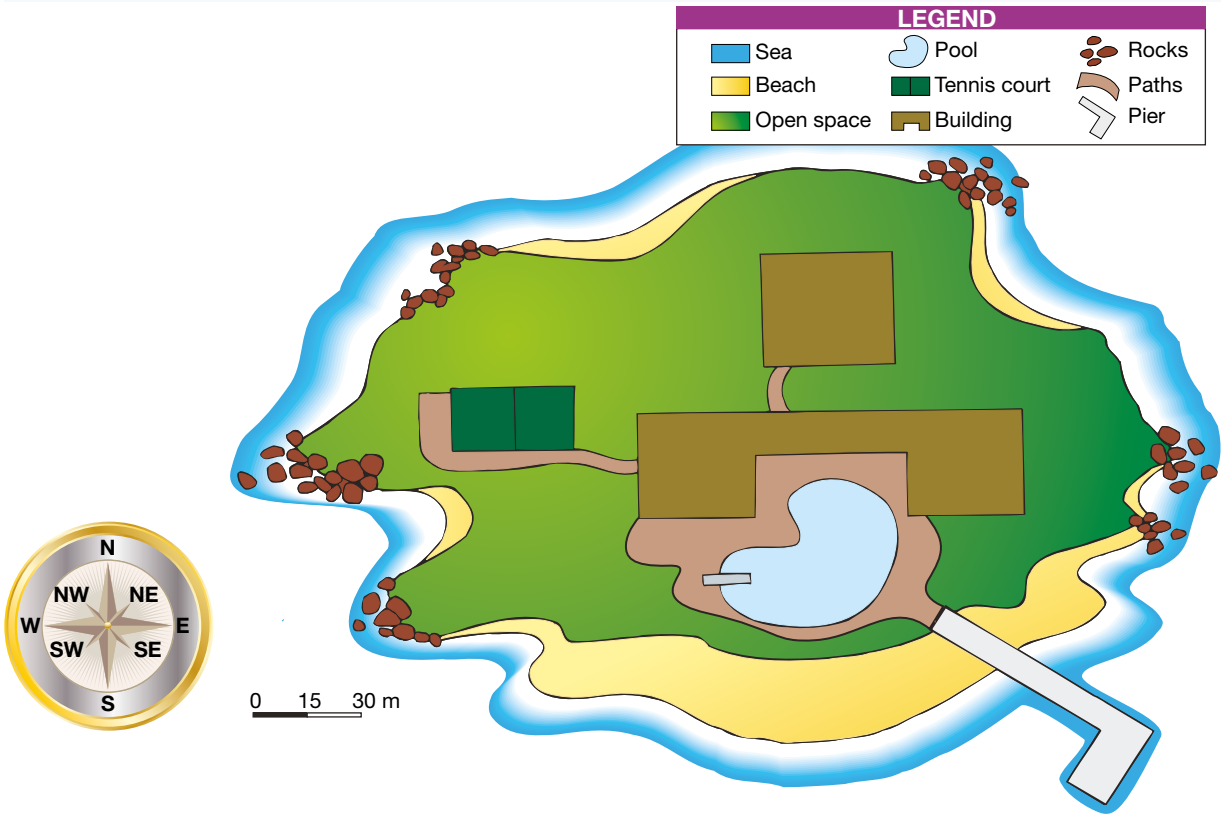


Why is positional language useful?

Positional language allows geographers to be accurate when giving directions and locations of places. It avoids confusion with positioning if the words such as left and right, up and down, top and bottom are used. No matter what direction you are facing, compass direction always remains the same, based around north.

Model

FIGURE 2 A cartographer's map of Holiday Island



As we check in at the main building for our stay on Holiday Island, a guide explains the features of the holiday resort. 'You arrived at the pier, which is to our south-east. On the way to this building you passed the paved poolside area, which is now to your south. There are four beach areas — the largest is to the south, a small moon-shaped beach is to the west and the other beaches are to the north-west and north-east across the open spaces. To the …'

10.9.2 Show me

How to use positional language

You will need:

- the map in figure 3
- a pencil
- tracing paper.

Procedure:

Practising using the positional language of a 16-point compass can be done with any type of map such as in an atlas, street map, topographic map, a plan, sketch or an image such as aerial images, oblique images and satellite images.

STEP 1

On the piece of tracing paper draw a simple 16-point compass based on that shown in figure 1 on the previous page. You will need to add the following points: NNE, ENE, NNW, WNW, SSE, ESE, SSW, WSW. Ensure that you mark the centre of the compass with a dot.

STEP 2

Place the centre of the 16-point compass (the dot) on the point of origin from which a direction is being given. Ensure that north is in the vertical position. On all maps/images, unless an indicator determines otherwise, north is assumed to be vertical (points to the top).

For example, to discover that place A is north-west of place B, this direction is taken from place B and so the centre of the compass is on place B.

STEP 3

Read the compass direction from the centre dot to the place identified and write down that direction.

STEP 4

The placement of the centre of the compass must be moved for each individual direction required.

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Watch this eLesson: Using positional language (eles-1649)

10.9.3 Let me do it

Developing my skills

The completed example in table 1 below uses the map in figure 3 (figure 2 in subtopic 10.10) to show directions from one place to another place.

In this example, you are at Kakadu National Park and you want to give a direction so that someone arrives at Litchfield National Park.

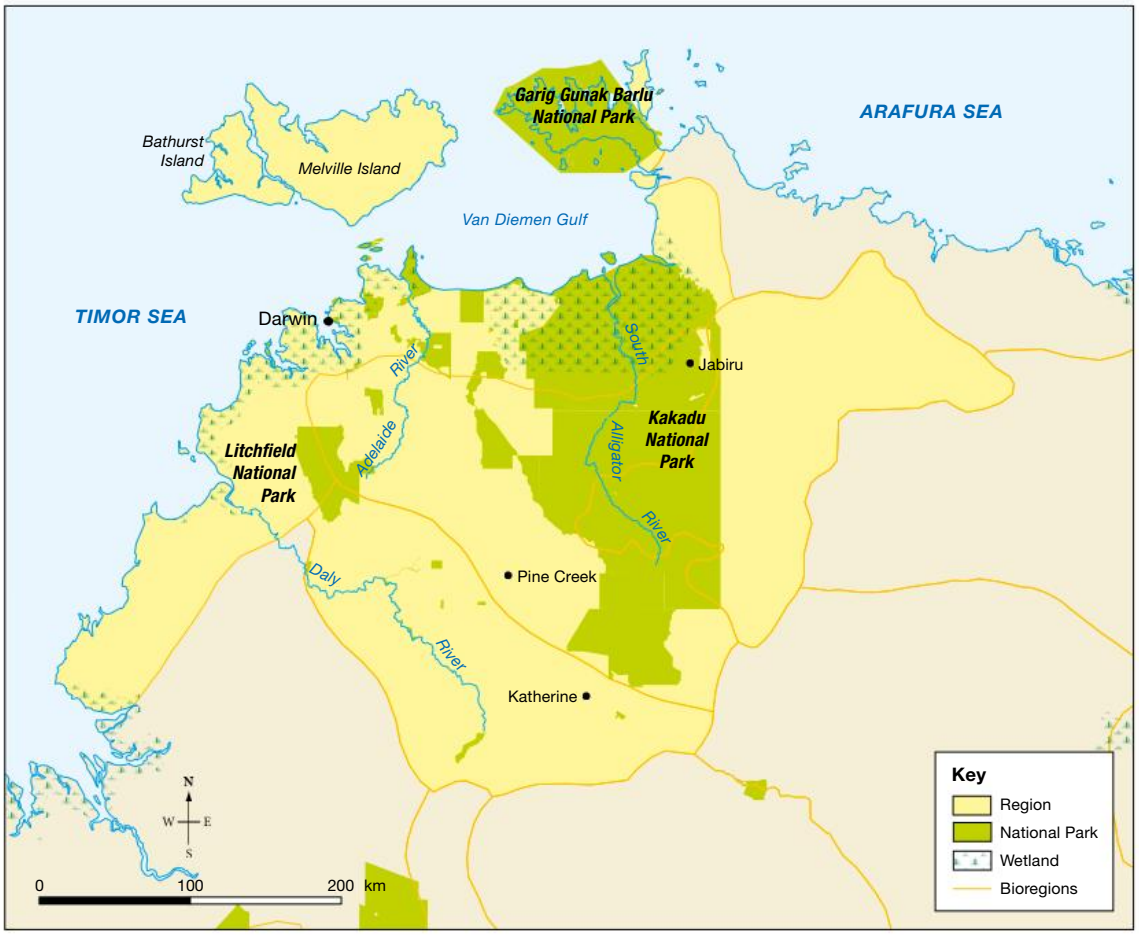
Using the map and your tracing paper compass, create five more examples of positional language in table 1.

TABLE 1 Examples of positional language

Place of origin	Place of arrival	Direction
Kakadu National Park	Litchfield National Park	West

Ask a class member to check your directions.

FIGURE 3 Map of Kakadu National Park



***Source*:** Spatial Vision

Questions

1. In which direction from Katherine would you need to fly to get to Kakadu National Park?
2. In what direction is Jabiru in Kakadu National Park from Darwin?
3. In what direction is Jabiru from Pine Creek?
4. If I was to drive from Katherine in a north-west direction, would I arrive in Jabiru or Darwin?
5. I want to drive from Pine Creek to Jabiru. Describe the directions in which I would need to travel while on the road.

Checklist

I have:

- drawn and labelled an accurate 16-point compass.

Skills questions

1. Compass points are used to:
   (a) stop you getting lost
   (b) find your way
   (c) avoid confusion over directions
   (d) make life difficult.
2. A 16-point compass is used to:
   (a) provide more detail than an 8-point compass
   (b) provide less detail than an 8-point compass

(c) provide the same amount of detail as an 8-point compass
(d) provide no information at all.

3. Why would north be used as the starting point for positional language?
4. When using a compass on a map or image, why is it necessary to put the central dot on the ***place*** from which a direction is given?

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Try out this interactivity: Using positional language (int-3145)

10.12 Review

10.12.1 Review

1. Copy the table below. The first column lists factors that influence variations within landscapes and their location. In the second column, provide an example of how this feature influences a particular landscape.

Factors that influence landscapes	Example
Climate	
Geographical features	
Latitude	
Impact of humans	

2. Match the following terms with the correct definition in the table below: aquifer, artesian basin, erosion, escarpment, fault, folding, weathering.

Term	Definition
	Rocks that buckle and fold under pressure
	Fractures or weakness in the Earth's crust
	The breaking down of bare rock, mainly by water freezing and cooling as a result of temperature ***change***
	A body of permeable rock below the Earth's surface which contains water, known as groundwater
	The wearing away and removal of soil and rock by natural elements, such as wind and water, and by human activity
	A steep slope or long cliff formed by erosion or vertical movement of the Earth's crust along a fault line
	An underground layer of water-bearing rock from which groundwater can be extracted using a well

3. Study the landforms in figure 1 showing the Colorado Plateau, which has been shaped by natural processes over millions of years.
   (a) Make a sketch of the landscape and add annotations to explain how the Colorado Plateau is the result of natural processes that have taken place over a long period of time. In your answer, explain how these processes would have sculpted this ***environment***.
   (b) Describe how this landscape might have looked in the past and how it might look in the future.
   (c) What process do you think is currently dominating the ***changes*** taking place in this landscape? Give reasons for your answer.

FIGURE 1 Part of the Colorado Plateau



4. The rock statues shown in figure 2 are found on Easter Island (Rapa Nui) and guard the entrance to a six-kilometre ancient cave system that dates back to times when tribal warfare was commonplace.
   (a) Do you think these statues might be of historical or cultural significance? Give reasons for your answer.
   (b) Explain how and why you think these statues and the caves they guard were made.
   (c) What threats might this landscape face?

FIGURE 2 Easter Island



10.12.2 Reflect

Human and physical interactions

5. Use figure 3 to describe what the Antarctic landscape is like.
   (a) What problems would be faced by people living and working in this ***environment***?
   (b) Do you think people could live and work in this ***environment*** if there were no settlements like the one shown below?
   (c) Suggest ways in which people could adapt this settlement to meet their needs.
   (d) What impact do you think this human settlement would have (or might potentially have) on this landscape?

FIGURE 3 Mawson station — a research facility in Antarctica



Source: 3707C5 — Mawson Station. Photograph by Wayne Papps, Australian Antarctic Division, © Commonwealth of Australia

6. (a) Explain the title of the news article in figure 4.
   (b) Who are the 'aliens' referred to and how do they travel to Antarctica?
   (c) Explain the impact these aliens have had on World Heritage–listed Macquarie Island.
   (d) What does this tell you about the fragile nature of different landscapes?
   (e) Select another landscape and outline how it could be threatened by alien invaders.

FIGURE 4 The invasion of aliens in Antartica

SAVING THE LAST FRONTIER

There's an alien invasion under way, and the polar regions are in the frontline.

A key project initiated by the Australian Antarctic Division is *Aliens in Antarctica*, which is examining the exposure of the South Pole ecosystem to alien species over the past 200 years. Alien organisms include microbes, fungi, grasses, sedges, insects and feral mammals such as cats and rat.

Each year about 40 000 people go to the Antarctic — scientists, researchers, technicians and tourists. Each of them might unintentionally be carrying alien life in the form of seeds, insects or their eggs, and bacteria in soil particles.

These can be carried in a variety of personal equipment, such as clothing, shoes, day-packs, camera tripods, fresh food and other cargo.

Invasive species can have a dramatic impact on habitat, which, coupled with climate, can have a devastating effect on polar mammals and birdlife.

An example is Macquarie Island, 1500 kilometres south of Australia in the Southern Ocean.

It is home to more than four million birds and is one of the world's most important seabird nesting habitats. It is also a haven for four threatened albatross species, and is the only remaining Australian nesting site of the grey-headed albatross.

$24.6 million was spent in a joint venture to eradicate rats and rabbits on the island and protect its fragile ecology. Since the eradication of feral cats in the 1980s, rabbit numbers exploded from 10 000 to 100 000.

This killed off tussock grasses that were previously bird nesting sites and caused major erosion and large landslips. Twenty landslips were recorded in a single month, killing hundreds of nesting king penguins.

However, teams of rabbit hunters have been going to the island to eradicate the rabbits. Only 13 rabbits were found after the 2011 eradication season, and the island's vegetation is starting to make a strong comeback.

Source: From 'Saving the last frontier' by Vincent Ross/onejourneyman, *The Sunday Mail*, *Escape* Supplement 13 July 2008.

TOPIC 11
Coastal and riverine landscapes

11.1 Overview

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

11.1.1 Introduction

Water is one of the most powerful agents in creating landscapes. If you have ever been caught outside in a heavy downpour, walked through a fast-flowing creek, or been dumped in the surf, then you have felt and seen the energy of flowing water. It can knock you off your feet, move buildings and carve huge holes in the Earth's surface. Landscapes created by water are found everywhere.

Starter questions

1. Use the **Iguazu Falls** weblink in the Resources tab to watch a video of the Iguazu Falls, which highlights the power of flowing water.
   (a) List as many adjectives as you can to describe the power of water.
   (b) Use these words to write a short performance poem or rap that beats with the power and potential of water to change an ***environment*** or to shape a landscape. Perform these for your class.
2. Landscapes created by flowing water can be both beautiful and dangerous. Identify two examples of each type of landscape and explain why you believe it to be beautiful or dangerous.

Pacific Ocean waves pounding against lava cliffs



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Watch this eLesson: Landscapes sculpted by water (eles-1624)

Explore more with this weblink: Iguazu Falls

11.2 Which landscapes are formed by water?

11.2.1 How does water change landscape features?

A torrent of gushing water can shift rocks, remove topsoil or shape river valleys. Gentle rain can change the chemical structure of any surface material, making it more likely that soil will be transported by the next heavy shower. In cold climates, frozen water in glaciers works like a slow-moving bulldozer to erode land and create unique landscape features. Once fresh water has made its way to the ocean, the power of waves creates coastal landscape features.

As you saw in topic 10 'Introducing landforms and landscapes', landscapes are predominantly changed or created by two processes: erosion and deposition. Water is one of the most powerful agents of change, causing erosion and deposition, and thereby breaking up, moving and repositioning material across the Earth's surface. In figure 2 on the next page you can see the power of water as it rushes over a rockface and carves pools in its hard surface. You may have seen pools of a similar shape carved by waves in rocky coastal landforms.

FIGURE 1 The Twelve Apostles in Port Campbell National Park, Victoria. How might the potential for erosion change along this coast if the waves were larger and it was high tide?

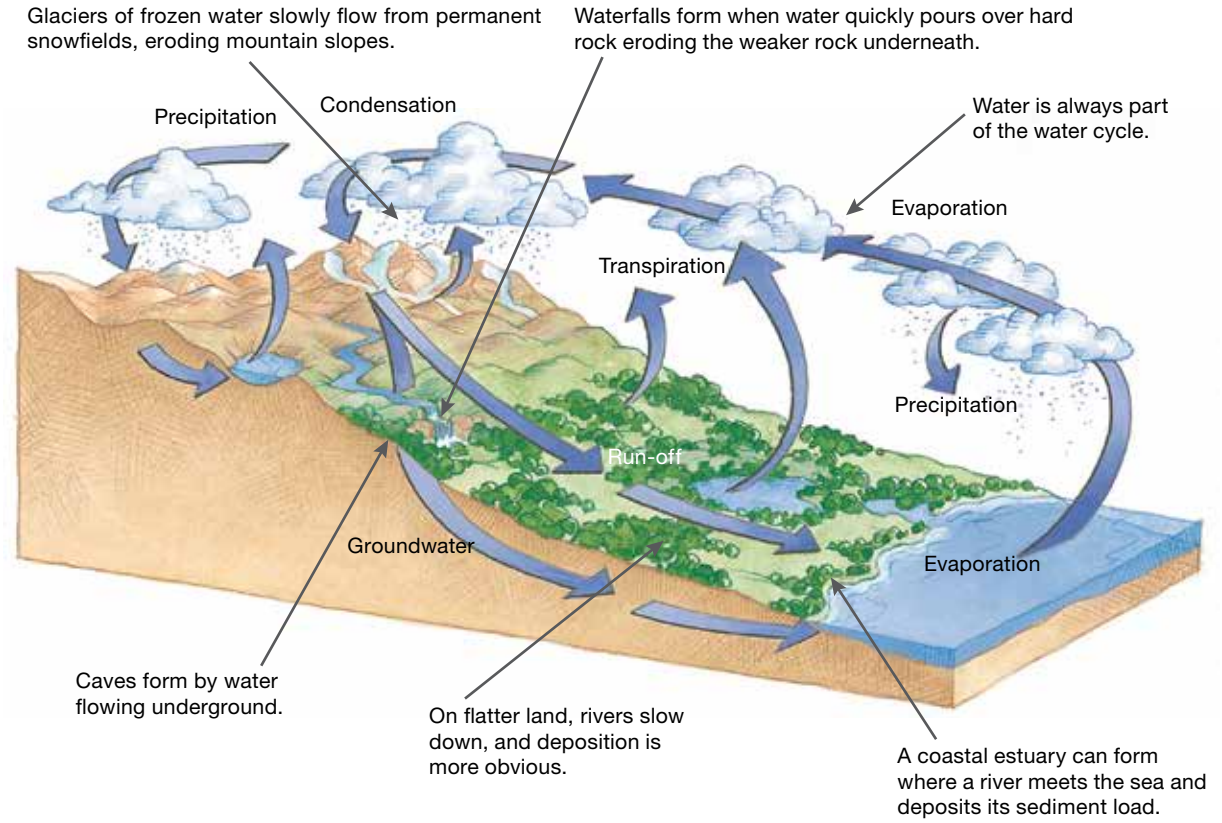


As water makes contact with landscapes, it can change the shape and size of its features or landforms (figures 2 and 3). The coastal landscape that you see today is not the same as it was hundreds or thousands of years ago. Figure 1 above is a photo of the Twelve Apostles, located on the coast of south-western Victoria. The name suggests that there may once have been twelve pillars of rock, or stacks, visible along this stretch of coastline. In the foreground you can see the remnants of two quite recently collapsed stacks. Even these stacks were once joined to the cliffs as part of the mainland. This highly erodible coastline has been constantly altered by many years of rainfall and wave action on the soft limestone cliffs. The resulting coastline has seen much creation and destruction of stacks over time.

FIGURE 2 How is the flow of water changing this landscape?



FIGURE 3 Water constantly moves over and through the Earth and through the air.



11.2 Activities

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

Remember

1. Landscapes are in a state of continual ***change***.
   (a) Which two natural processes powered by water are most responsible for continually ***changing*** landscapes?
   (b) How are these two processes linked?

Explain

2. Where would figures 1 and 2 be ***placed*** on the landscape depicted in figure 3? Explain.
3. Explain how the water cycle and the formation of landscapes are ***interconnected***.

Discover

4. Use your research skills to create a list of world water facts on the following:
   (a) the biggest glacier
   (b) the longest river
   (c) the biggest wave
   (d) the highest waterfall
   (e) the widest river
   (f) the biggest ocean
   (g) a world water fact of your choice.
   Show on a map where each is located.

Predict

5. Many landscapes ***change*** rapidly; for example, the Twelve Apostles. With a partner or group, discuss another example of a landscape that has been shaped by the power of water. Do you think the ***changes*** to the landscape have been positive or negative? To what extent should people try to stop the ***changes*** caused by water?
6. Water can be considered one of the most important architects of desert landscape features. After looking at the images on this page, try to explain how you think water can change the landscapes of arid or desert environments.
7. Identify three possible ways that people can ***change*** the flow of water, either across the surface of the Earth or along the coast. Predict how you believe this may alter landscape features. Examples may include the use of river water for irrigation or the construction of a marina.

11.3 What is coastal erosion?

11.3.1 How are coastal landscapes eroded?

The coast is the zone or border between land and ocean. It is in this collision zone that the movement of sea water and the impact of the ocean on the land together create coastal landscapes. Coastal landscapes have landforms that are common to coastlines in different places around the world because they are built up or worn away in similar ways.

Powerful ocean waves crash onto rocky coastlines, wearing away the cliff base between the high and low tide marks. In figure 1 in subtopic 11.2, showing the Twelve Apostles, the most powerful wave impact on this coast would be to the seaward side of the stacks or rock pillars. Wave impact has progressively knocked over some stacks, and the rock that they were made from has eroded into sand, which now forms part of the beach at the cliff base.

Coastal erosion is mostly caused by waves moving sand and other material and energy to and from the beach. For example, you may have seen sand being churned up by the waves when you have been at the beach. The waves that wash on to the beach are called **swash**. Waves returning down the beach into the sea are called **backwash**. A powerful ocean swell created by offshore storms forms **destructive waves**. These are the waves that produce good surf, and dump you while you are swimming. As these waves rush back into the sea, the force of the water and sand they carry can make it difficult for you to get back onto the beach. Destructive waves often have a powerful backwash that can carry beach sand offshore. Figure 1 shows backwash filled with sand that is being moved from the beach.

FIGURE 1 Backwash filled with sand



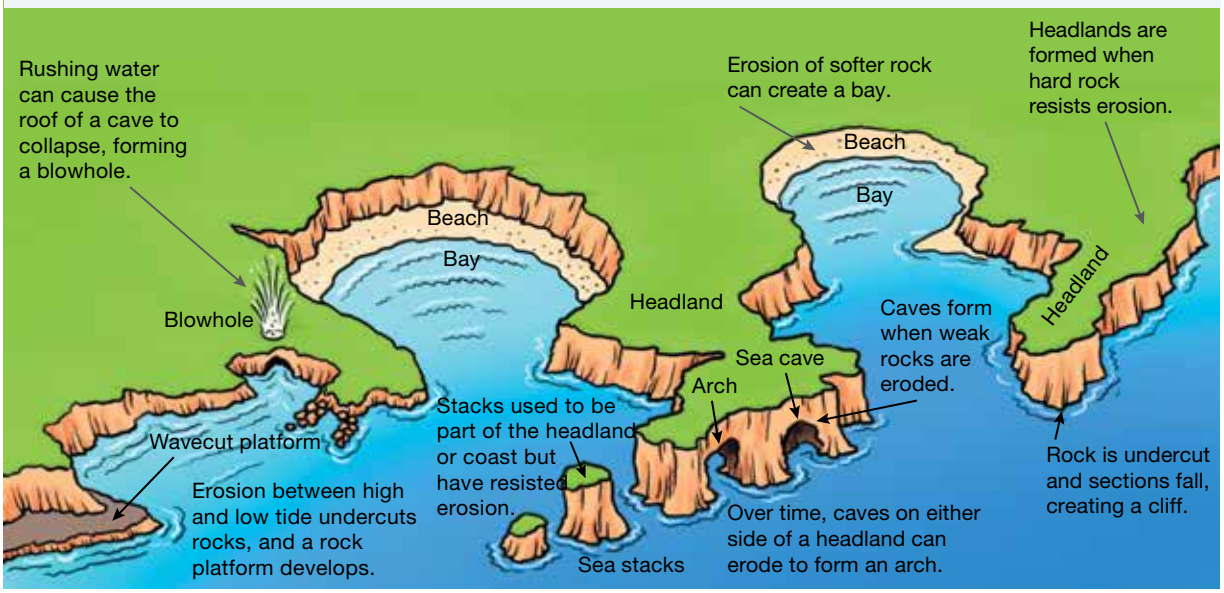
However, not all aspects of coastal landscapes are solely created by the power of water. Other physical processes can also greatly affect the coastal landscape; for example, the tectonic force of earthquakes and volcanoes; changing sea levels; and human activities such as building roads, ports and houses, and damming rivers.

Which coastal landscape features are created by erosion?

Features such as cliffs, headlands, bays, caves and stacks are all landforms found along an eroding coastline (figure 2 below). These features are formed by wave action and rainfall, which attack the cliffs and find points of weakness that are then eroded. Water running off a cliff face can carry eroded material into the sea below. When waves hit the cliff face, they undercut the base of the cliff to form a notch. As the notch increases in size, the undercut section of the cliff becomes unstable and falls into the sea.

Destructive waves can also alter a sandy coastline. They can remove sand from a beach, destroy the vegetation on dunes, and remove management features designed to protect landscape features.

FIGURE 2 Coastal landforms created by erosion.



11.3 Activities

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

Remember

1. What are three physical processes that have influenced the creation of coastal landforms?
2. What are three human activities that have influenced the creation of coastal landforms?

Explain

3. Create an annotated diagram that explains the difference between swash and backwash.
4. Place the following landforms in the order in which they would be created:
   (a) arch, cave, headland, stack
   (b) blowhole, cave, cliff.

Discover

5. Watch the **Stack formation** weblink and/or the **Cliffed Coast** weblink in the Resources tab. Take note of the process of erosion of a cliff face.
6. In a small group, create your own claymation or stop-motion movie, Prezi, or animated PowerPoint to show the ***changes*** that happen to a cliffed coast eroding to form a notch, cave, arch and stack.
7. Find an image of a sandy coastline that has recently been affected by destructive waves. Explain the process that has occurred. Use the terms *swash* and *backwash* in your explanation.

Predict

8. Most Australians live within an hour's drive of the coast, and many people either spend regular holidays on the coast or move to the coast in their retirement, for a 'sea change'. How might the continually ***changing*** coastal landscape (as seen in figure 2) affect coastal housing and popular holiday ***places***? Brainstorm this with a small group.
9. Identify, using a sketch map, how several of the ***changes*** identified in question 8 might affect the coastal landscape of your favourite beach.
10. Do you think people will still feel the same way about a coastal landscape such as the Twelve Apostles when only two or three are still standing? How might the ***changing*** landscape affect the value or pleasure people get from visiting this ***place***? Write a short paragraph to comment.

Think

11. Rising sea levels, whether they are a naturally occurring process or have resulted from human activity, will affect coastal landscapes. Use a diagram, with annotations, to explain how rising sea levels could ***change*** two of the landforms illustrated in figure 2.

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Try out this interactivity: Coastal sculptures (int-3124)

Explore more with these weblinks: Stack formation, Cliffed Coast

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
› **Coastal processes**

11.4 Which coastal landforms are created by deposition?

11.4.1 How are depositional coastal landforms formed?

Not all waves are destructive. Some waves gently lap the shoreline. Smaller, gentler waves that carry less energy than destructive waves are known as **constructive waves**. The movement of these waves towards the land is more likely to push material such as sand and shells and deposit them on the beach, building new coastal features.

A beach is a good example of a depositional coastal landform (figure 1 on next page). Sand has been deposited and built up over a period of time. Constructive waves build coastal landscape features by repositioning wave-born materials to also create spits, sand dunes and lagoons.

The coastal features created by deposition can be created only when material is brought onshore by the swash of constructive waves. The construction material is in the form of sand, shells, coral and pebbles.

The source of the construction material may come from eroding cliffs, from an offshore source, or from rivers which, when they enter the sea, dump any material they were transporting.

This construction material is then shaped by prevailing winds. Figure 2 below illustrates the cross-section of a beach formed when there is plenty of sand being pushed onshore by the swash. This construction material is dried by the sun and blown inland to create dunes.

Beach material can also be shifted by waves, which get their energy from the wind. The wind influences or directs the angle that waves move towards the coast. Waves come from the direction of the **prevailing wind**. This means that waves often move towards the shore at an angle, and their swash pushes any material they are carrying onto the beach at an angle. As the backwash of the wave returns to the sea, its path takes the shortest possible route down the beach towards the water. This action is known as longshore drift, and it is shown in figure 3 on the next page. Longshore drift moves material along the beach in a zigzag pattern that follows the direction of the prevailing wind. Longshore drift moves sand along the beach and creates spits and bars. If the prevailing wind changes direction, then so does the direction of longshore drift.

FIGURE 1 Depositional landforms: coastal landforms created by deposition.

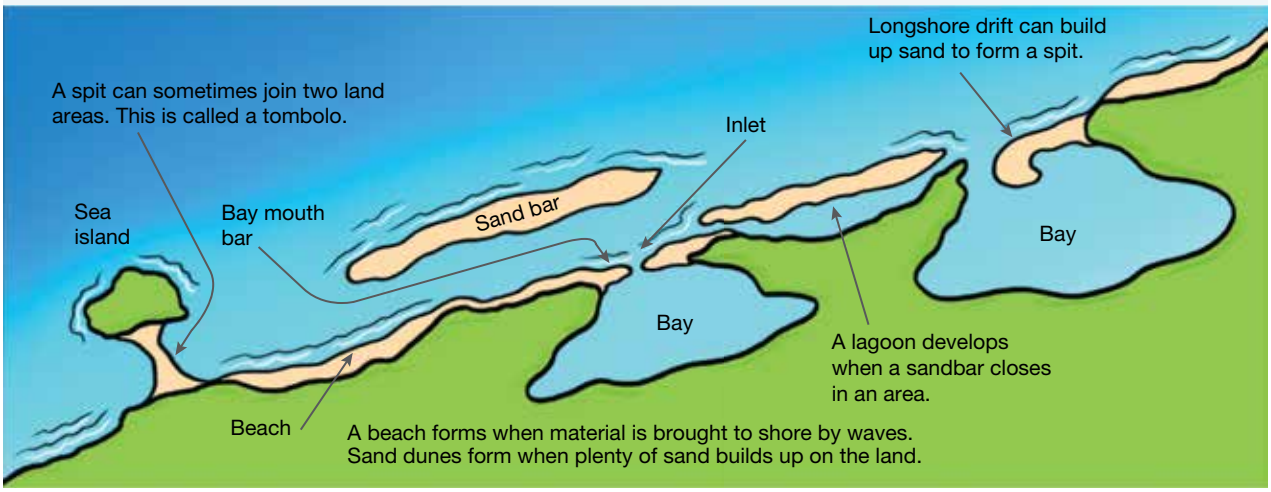


FIGURE 2 The formation of sand dunes.

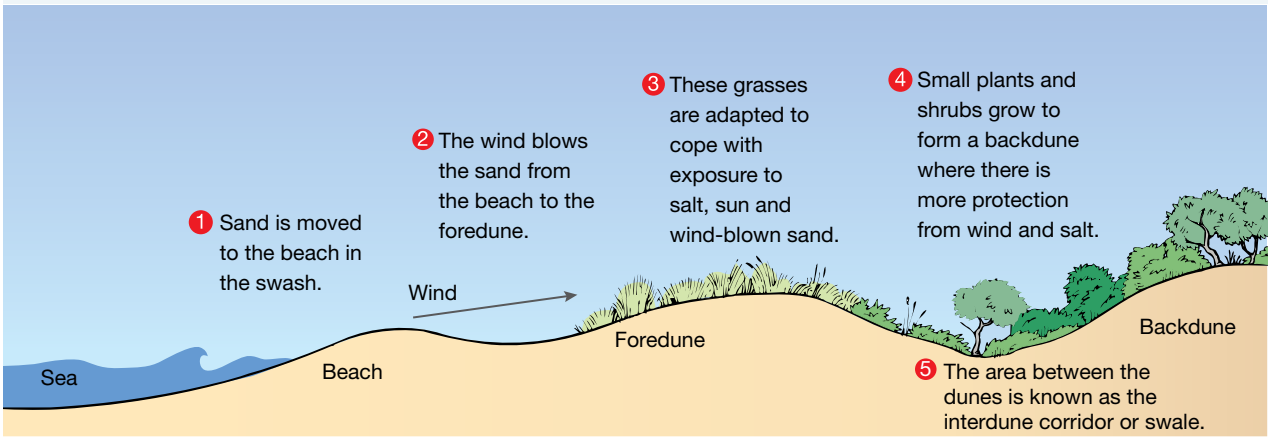


FIGURE 3 The process of longshore drift.

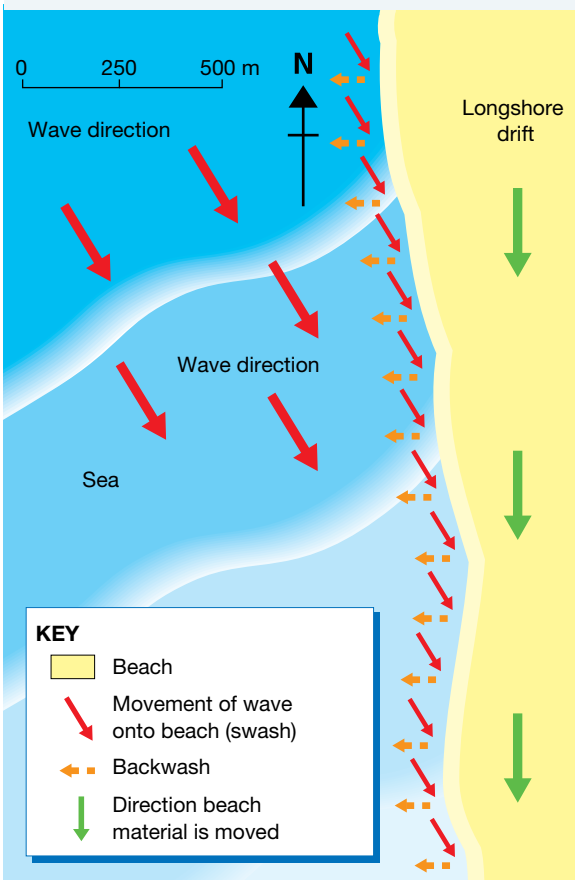


FIGURE 4 The depositional landforms of the coastal landscape at Tutukaka in Northland, New Zealand.



CASE STUDY

The Murray mouth, South Australia

The Murray River is Australia's most important river and the world's sixteenth longest river.

When water for home use and irrigation in the Murray–Darling Basin is not balanced by rainfall, the amount of water that reaches the river mouth decreases. This means that the deposition of longshore drift is stronger than the trickle of water reaching the mouth. In 2009, $24 million was allocated by the Federal government to dredge the mouth of the river in an effort to keep it open.

11.4 Activities

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

Remember

1. Where does the material come from that builds beaches?
2. Either scan and enlarge a copy of figure 4 or draw a sketch of it, then label or annotate it to identify the depositional landform features of this coastal landscape.

Explain

3. The formation of sand dunes cannot happen unless there is plenty of sand in the swash to allow them to grow. Use the information in figure 2 to provide the evidence for you to agree or disagree with this statement.
4. How is weather involved in the formation of sand dune ***environments***?

Discover

5. Use your atlas plus the internet to locate and name ***places*** in Australia that have the following coastal landforms: a spit, a beach with dunes, a bay, a headland (point, cape or promontory) and an estuary. Find four examples of each landform and mark them on a map. You could create a Google map of your results, with links to images of each feature.

Think

6. (a) In which direction is sand moving on the beach in figure 3?
   (b) How will this beach ***change*** if the longshore drift continues in this direction?
   (c) Redraw this diagram to show how the movement of sand along this beach would ***change*** this ***environment*** if the prevailing wind ***changed*** to come from the south-west.
7. Referring to figure 2, sketch a new diagram to show what you think would happen to these sand dunes if a fire destroyed the vegetation on the foredune.
8. Describe how coastal landforms are the result of ***interconnections*** between the sea and the atmosphere.

11.5 How are coasts changed?

11.5.1 Who uses the coast?

Coasts are very popular places for people to live near and visit. The first Europeans to Australia arrived by sea, and the first areas inhabited by the Europeans were within coastal landscapes. However, the increasing popularity of coastal environments can result in crowding, pollution, a loss of **habitat**, and the building of permanent structures in zones that should be allowed to undergo the natural changes of a coastal landscape.

Aboriginal peoples and Torres Strait Islander peoples travelled from what is now Asia to the north, first settling along the coast. They enjoyed coastal food **resources**, such as fish, shellfish and sea birds; nearby forest resources for food and shelter; and the moderate coastal climate. Figure 1 shows a coastal landscape feature built by Indigenous peoples. Centuries of regular camps in these dunes resulted in the construction of a midden from the discarded shells of meals of oysters and cockles. To encourage sustainable harvesting of coastal resources, the top layer of the midden showed the next visitors what had been eaten most recently. They would then know to eat something else and not overuse a single food source.

FIGURE 1 Why the coast needs to be managed.



FIGURE 2 Shell midden in the dunes of the Coorong National Park, South Australia.



There are many thousands of similar sites in all Australian states and in other countries. They are evidence of the use and habitation of coastal landscapes by people for thousands of years.

Since 1788, the coastline of Australia has been used as:

- the main highway linking Australian cities to other places in Australia
- a place to dispose of liquid and solid waste
- a holiday playground
- a resource for fishing
- a place for mining
- a very popular scenic area.

CASE STUDY

Cape Peron

A tombolo is a coastal depositional feature where a sand spit has joined an island to another island or to the mainland. One of the best examples of a tombolo in Western Australia is found at Cape Peron, south of Rockingham. Cape Peron and the surrounding islands are part of the Shoalwater Marine Park. At the end of the last ice age, some 10 000 years ago, Cape Peron was part of a limestone ridge which created high points in a north to south line along the coast. Sea levels rose, creating a chain of islands. Wave action slowly moved sand between the islands and a cuspate spit formed, connecting Cape Peron to the mainland. Cuspate spits form where wave action deposits material from two directions. In the last 2000 years, this process has slowly created a tombolo. Today, another island, Penguin Island, is slowly being joined to the coast by a sand bar.

Other parts of the marine park show evidence of erosion. Cape Peron has many erosive landform features such as cliffs, arches, and collapsed bridges. To the west there are a number of offshore reefs and stacks.

The eastern shore of Cape Peron is sheltered from storms and prevailing winds and is characterised by stretches of sandy beaches.

FIGURE 3 Coastal landforms at Cape Peron



11.5.2 Why does a coast need to be managed?

The popularity of a coastal location, and the many competing ways people use it, means that it must be looked after to protect it from damage caused by overuse (see figure 1).

Coastal landscapes can also be changed by wave action from strong winds. The roads and buildings located on both rocky and sandy coasts are vulnerable to damage from attack by destructive waves.

However, it is possible to manage or protect the natural and built features of coastal landscapes from the physical processes that strive to alter them.

11.5 Activities

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

Remember

1. Why is it important for people to manage their use of the coastal landscape?
2. List as many examples of coastal use and management as you can identify in figure 3.

Explain

3. How did Indigenous Australian peoples protect the features of the landscape along the coast?
4. Why does the material that a coastal landscape is made from affect the ability of water to shape it? Compare a cliffed coast like the Twelve Apostles to a surf beach with dunes. Refer to subtopics 11.2 and 11.4.
5. Suggest four strategies which could be used at Cape Peron to reduce the impact of human activities on the natural environment.

Think

6. Describe some of the possible ***interconnections*** between Cape Peron and the nearby urban community of Rockingham.
7. What might be some of the impacts on Cape Peron of the construction of a marina development in the area marked 'Sandy beaches' in figure 3?

11.6 What differences exist in coastal landforms between places?

11.6.1 How do coastal landforms differ?

Although coastal landforms can be similar in different parts of the world, they can also be very different. Some differences are climatic and some are geomorphic. Coastal landscapes are created by the interconnections between the sculpting power of the oceans, coastal topography and the material that is available to sculpt.

Limestone stacks, such as the Twelve Apostles in Victoria (figure 1, subtopic 11.2), have been shaped by the power of the Southern Ocean. Similar stacks have been formed by the erosive power of the waters off the coast of Thailand (figure 1 at right) and along the Portuguese and Welsh coasts.

FIGURE 1 Ko Tapu rock near Phuket, Thailand



The Gippsland Lakes in south-eastern Victoria are a network of coastal lakes and lagoons fed by six rivers but they are often cut off from the sea by a barrier of silt. The Gippsland Lakes are at the mouth of the Mitchell, Avon, Thompson, Latrobe, Nicholson and Tambo Rivers. When there is little rainfall, the rivers flow slowly and

deposit sediment in the lakes. This, along with the longshore drifting of the sea current in Bass Strait, creates lakes by moving sediment to seal the lakes with offshore barriers. After heavy rainfall the level of water in the Lakes rises and the barrier breaks, allowing access of fresh water to the sea and salt water into the Lakes. This lake system had an artificial entrance cut by humans in the late 1800s to allow fishing boats into and out of the Gippsland Lakes and to reduce the chance of algal blooms.

In south-eastern Iceland the melting Vatnajökull glacier (figure 2) flows into the Atlantic Ocean through a glacial lake. This glacier once flowed directly into the sea, but a warming local climate has meant that the glacier's snout is now 1.5 kilometres inland. The melting ice has created the large 18-square-kilometre glacial lake named Jökulsárlón. Since the climate is cold and the sunshine has little heat, the large chunks of ice that fall from the glacier remain as slowly melting icebergs. These icebergs float in the lake until they become small enough to roll down a channel into the sea. During winter the lake freezes and traps the icebergs until the summer thaw. Humans have created a narrow channel to link Jökulsárlón with the sea. This channel is designed to reduce the chance of summer floods and to protect the major highway that brings tourists to this beautiful place.

FIGURE 2 Jökulsárlón Glacier Lagoon, Iceland



These two coastal lakes have formed in very different places, with different climates, but the geomorphic process of deposition has meant that human intervention has been required to allow their waters to flow into the sea.

11.6 Activities

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

Remember

1. What material are the Twelve Apostles and Ko Tapu rock both made from?

Explain

2. How has climate ***changed*** the entrance of the Vatnajökull glacier into the sea?
3. Describe the way that the geological process of deposition has ***changed*** the Gippsland Lakes and Jökulsárlón.

Discover

4. Use the internet to collect at least six images of limestone stacks from different ***places*** in the world.
5. Attach these images to a Google map to create a global distribution of limestone landscapes.
6. Describe the similarities and differences between the images.

Predict

7. The Vatnajökull glacier is expected to have melted within 80 years. What might this ***place*** look like when there is no longer a glacier? Draw a sketch map to explain your answer.
8. Look at a map of the Gippsland Lakes. Predict how they might look if part of the barrier washes away during a huge storm. Draw a sketch map to explain your answer.

11.7 How are coasts managed?

11.7.1 How can a coast be managed?

It is possible to reduce or slow the change to coastal landscapes if we understand the **physical processes** and human activities that cause it. While it is not possible to change the speed and direction of the wind or the number of months each year when destructive waves reach a shoreline, it is possible to redistribute or trap the sand shifted by storm waves or longshore drift. It is also possible to protect coastal houses and roads using barriers to reduce the direct impact of waves.

Some of the most common structures built to protect coastal landscapes and manage change are sea walls and breakwaters, as seen in figure 1, or rock barriers and groynes as seen in figure 2.

FIGURE 1 The coastal village of Pennan, Scotland, is protected by its sea wall and breakwater.



FIGURE 2 A groyne and rock barrier protect a sandy beach in Wales, United Kingdom.



Do these management strategies always work?

An integrated strategy like the one designed for Adelaide's beaches has a much better chance of protecting existing coastal landscapes (particularly the beaches) and structures built nearby, because it has taken into account the prevailing wind conditions, as well as the movement of sand. If a structure like the groyne in figure 2 above is built on a beach, it will certainly trap sand on the side that interrupts the direct flow of the longshore drift. But this structure will also reduce the flow of sand to beaches further along the coast, on the other side of the groyne. Building a sea wall or breakwater may interrupt the flow of longshore drift and actually silt up the mouth of the harbour it is protecting. A sea wall can deflect the power of waves and increase erosion on an unprotected part of the nearby coast, or reduce the erosion of material from a cliff face that had been replenishing sand on the local beaches. Coastal management is quite a tricky issue. Do you manage to protect the existing coastal landscape or do you manage to allow the action of wind and waves to create a naturally evolving landscape?

FIGURE 3 Piping sand along a beach.



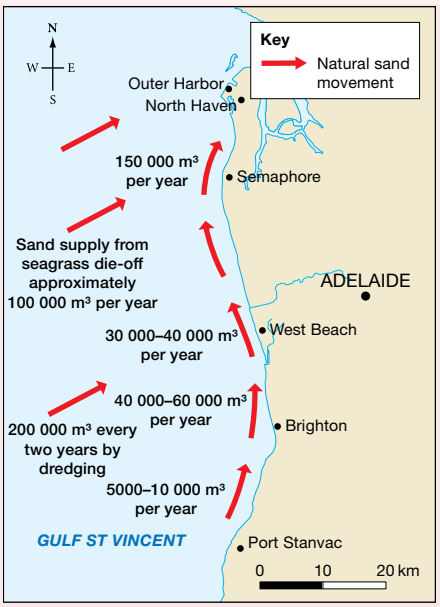
11.7.2 Adelaide's coast

CASE STUDY

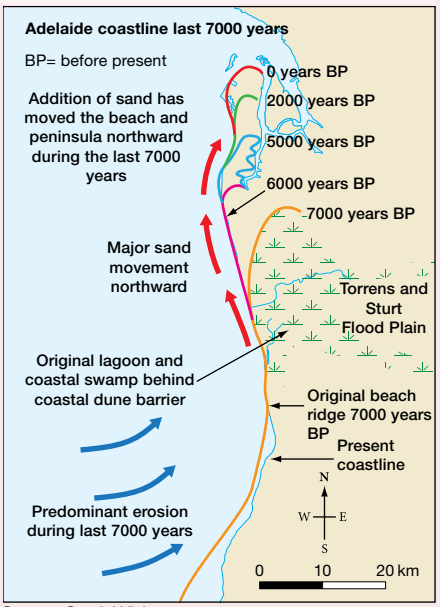
Managing Adelaide's living beaches

The problem: The beautiful sandy beaches closest to Adelaide are under constant threat from erosion. Figure 4 identifies the problem. For the past 7000 years the beaches south of Adelaide have been eroding, and the prevailing winds from the south-west have driven this material northwards. This longshore drift has removed material from the south and relocated it in North Haven, where a **peninsula** has grown and a large dune system has been created. For the past 30 years the beaches in the south have been replenished by adding truckloads of sand. The plan is to find a better way to manage Adelaide's beaches by reducing the cost of moving sand.

FIGURE 4 The movement of sand northwards along the Adelaide Metropolitan coastline.



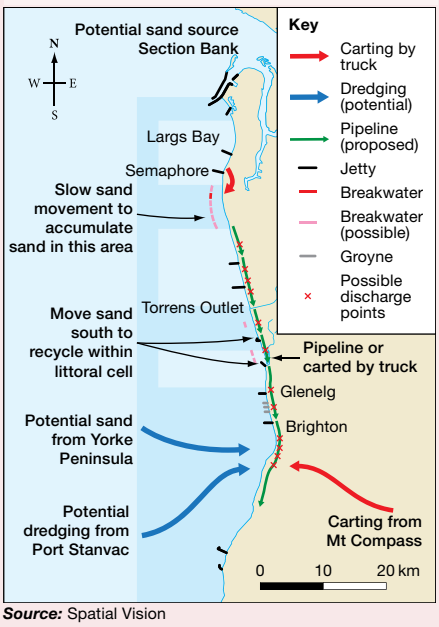
Source: Spatial Vision



Source: Spatial Vision

The solution: Adelaide's Living Beaches Strategy. Figure 5 illustrates the solution. Although sand will still need to be recycled from north to south, the plan is to use a pipeline instead of trucks to do most of the transportation. The pipeline will extend along the coast and will send sand back to the southern end of the beach. Figure 3 on the previous page shows sand being piped along a beach. A series of structures such as breakwaters and groynes will be built in several places to trap sand at important locations. Fewer trucks will be used, and it is expected that the cost of beach restoration will be reduced.

FIGURE 5 Adelaide's Living Beaches Strategy



Source: Spatial Vision

11.7 Activities

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

Remember

1. How do groynes and sea walls help to manage or protect a coastal landscape?
2. Draw a diagram to explain your answer to question 1. Refer to figure 3 in subtopic 11.4 to help with your diagram.

Explain

3. Describe what will happen to Adelaide's southern beaches if they stop being replenished with trucks of sand.

Discover

4. Research another example of coastal landscape management. Identify why the management strategies were put in place and comment on their success. Examples of ***places*** that would be good to research include Cape Woolamai, the Gold Coast, Melbourne bayside beaches, Polder coastline of the Netherlands, Bondi, Cottesloe, Venice Beach or Waikiki.

Think

5. Imagine that you own a holiday house that is built on coastal dunes within 15 metres of the beach. After a powerful storm, the beach in front of your house is eroded and your house is now only five metres from the sea. What are your options? Work out a series of strategies that you could implement which may save your house from falling into the sea. Include diagrams to illustrate your plan.
6. Identify the strengths and weaknesses, for your house and your neighbours' houses, of the management proposal you created to answer question 5.
7. (a) Refer to figure 4. Describe the ***changes*** that have occurred to Adelaide's coastline over the past 7000 years.
   (b) Refer to figures 3 and 5. Describe the ***changes*** the Living Beaches strategy has made to the Adelaide coastline and the reasons for these ***changes***.

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
› **Managing coasts**

11.8 How do I undertake coastal fieldwork?

11.8.1 Your fieldwork task

The best way to understand the physical processes and human activities that affect a specific coastal landscape is to visit it. A fieldwork activity will allow you to put the knowledge you have gained in the classroom into practice. Your fieldwork will also allow you to enjoy the coastal landscape in magnificent 3D.

Any coastal landscape would be suitable to investigate. Once a fieldwork site has been identified, there is quite a lot of planning that you should do before you get there.

What is your fieldwork task?

Your task is to identify the landforms and dynamic nature of a coastal landscape and to recognise and assess the influence of people on it.

In class

1. Prepare a base map of the fieldwork site or sites. On this base map, mark in the location of the coastal landscape's natural features (such as beach, rock, dunes, water, vegetation) and **human features** (such as seawall, groyne, steps, lawn, shelter, jetty). Using Google Maps or a topographic map is an excellent way of identifying the specific details of the coastal landscape.
2. Looking at the aerial shot on Google Maps will also allow you to see the pattern of the waves as they move to the shore. Does it look as if longshore drift is occurring on the day this image was taken?

On your field trip

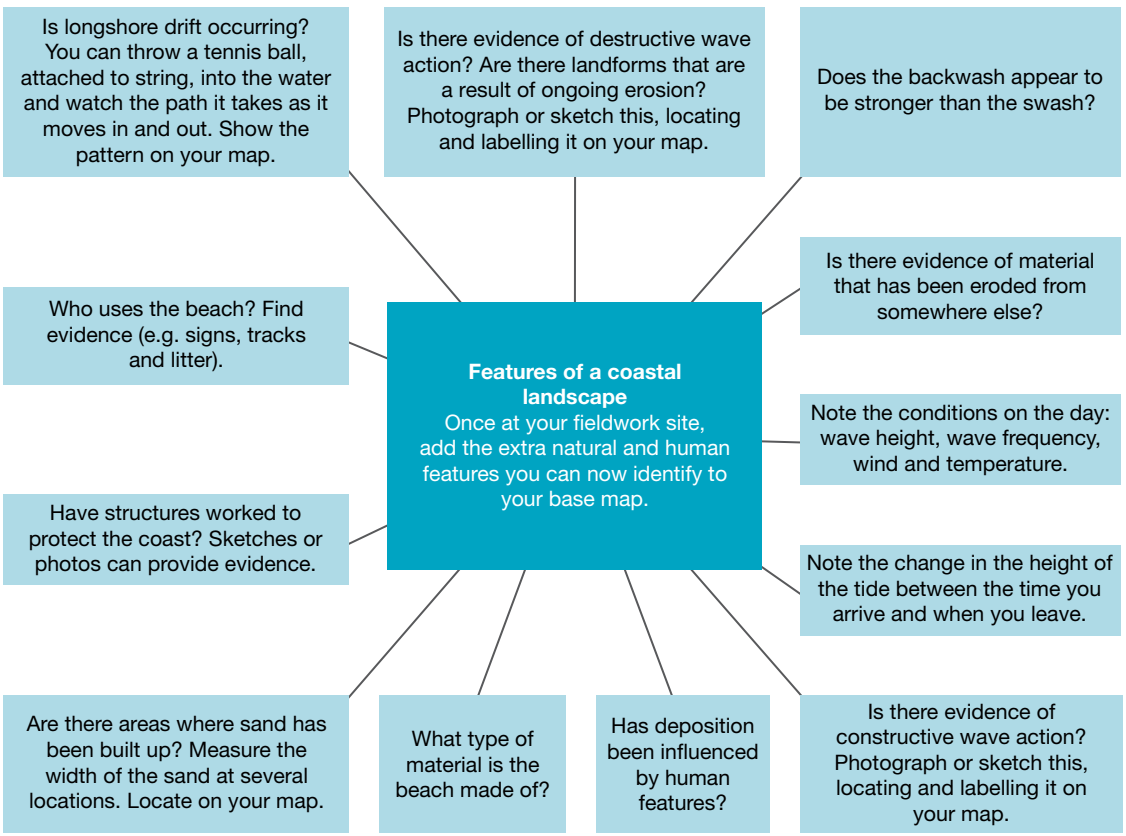
What do you need to do at the coast to collect your information?

It is good to work in groups to collect your data in the field. It is then possible for some students to take measurements and some to record. Sharing tasks means that there will be others with whom to discuss what you have recorded. On returning to class you can pool your observations. You will need recording sheets, pencils, a digital or phone camera, tape measure, compass and maybe a clinometer. You could also collect information using data logging equipment, a GPS locator, weather recording equipment and notepads. Your group should decide what equipment is the most practical and relevant for collecting the data you need.

You may not be able to return to your fieldwork site, which means your data needs to be very detailed.

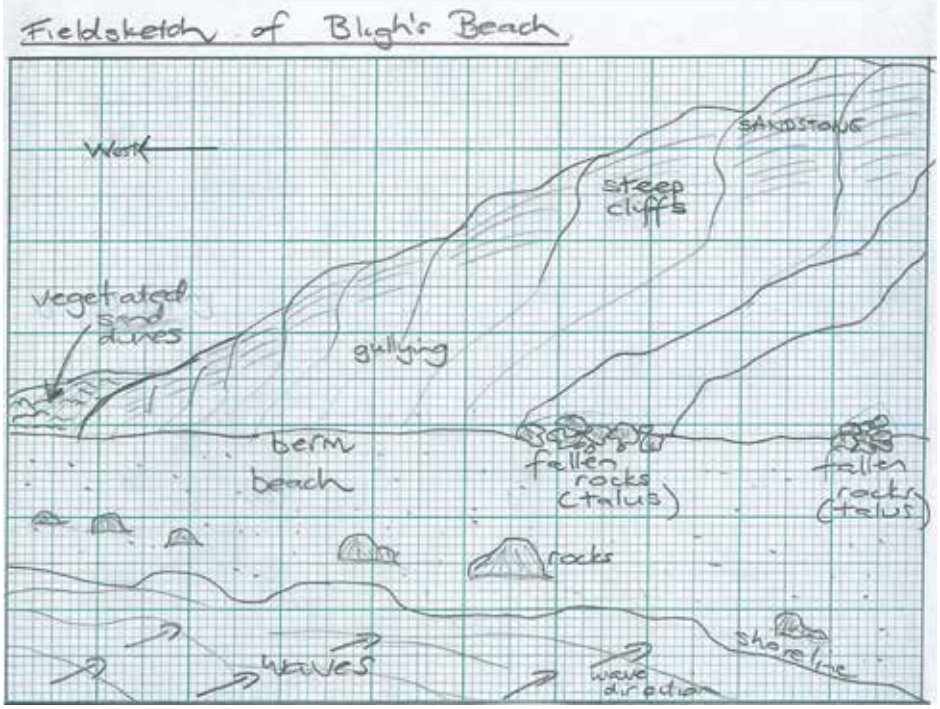
- Always record the location of the information on your map.
- Take photos of the coastal landscape, including the landforms and human structures.
- Measure distances and heights.

FIGURE 1 The information you need to collect at your fieldwork location.



- Draw **field sketches** to remind you of details. Even when you have photographed something, a field sketch allows you to annotate the diagram so that you can remember important characteristics about how it was formed or the direction of longshore drift. Do not worry if you are not a gifted artist, as there are apps that allow you to convert your photos to sketches when you get back to class.

FIGURE 3 Field sketch



Source: Alex Rossimel

FIGURE 2 Investigating the rocky shores of a coastal landscape.



FIGURE 4 Students on a fieldwork trip, measuring the slope of a sandy beach.



Back in class

Now that you have collected your information in the field, you need to present your findings about the coastal landscape you visited.

There are many ways that you could present this information. Your fieldwork report could be presented as a poster, website, PowerPoint presentation, booklet, blog, movie, news report or podcast. Consider using Google Maps and uploading images of the sites you visited. You will need to present the data you collected and describe your findings.

11.9 SkillBuilder: Constructing a field sketch

online only

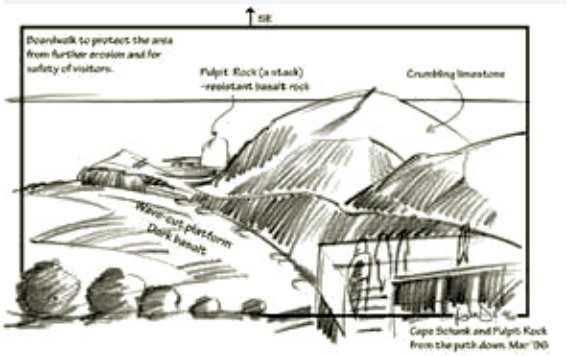
WHAT ARE FIELD SKETCHES?

Field sketches are drawings completed during fieldwork — geography outside the classroom. Field sketches allow a geographer to capture the main aspects of landscapes in order to edit the view, focusing on the important features and omitting the unnecessary information.

Go online to access:

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

FIGURE 1 Field sketch of Cape Schanck



Source: © Geography Teachers' Association of Victoria Inc. *Interaction*, journal of the GTAV, June 1998. Illustration redrawn by Harry Slaghekke.

learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Constructing a field sketch (eles-1650)

Try out this interactivity: Constructing a field sketch (int-3146)

11.10 What's in a rip?

11.10.1 What is a rip current?

The movement of water within the coastal landscape can be hazardous to people as well as to coastal landforms.

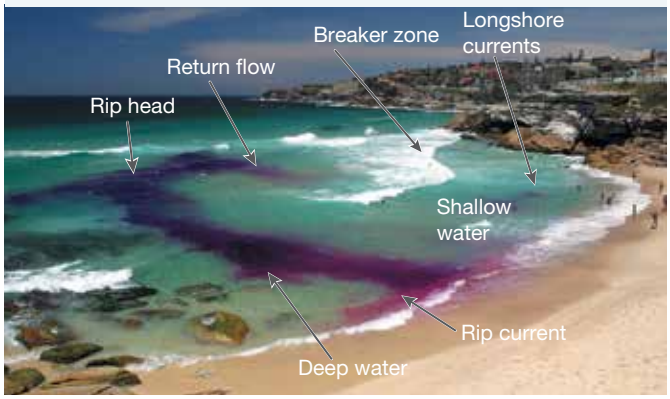
If you have ever walked along a surf beach, you know about the uneven power of waves as the water returns to the ocean. This backwash can either be a gentle, non-threatening flow or it may be so powerful that it can be difficult for you to remain standing. The powerful flow of water returning to the sea is called **undertow**. If the seabed adjacent to the beach has an even slope, then the undertow is relatively harmless. Water returns to the sea and washes ashore in the next wave. Undertow can also take material from the beach and deposit it in the wave zone. If the seabed adjacent to the beach has an uneven topography, or shape, the undertow will be more threatening.

Where the flow of an undertow is concentrated, as occurs in a gap between offshore sandbars, or in a deeper seabed channel, this may result in the formation of a **rip current**. A rip current, or rip, is a strong current that runs offshore from the beach. If you are caught in a rip, it feels as if you are in a fast-moving river channel being whisked out to sea. The fast-moving water erodes a deep channel in the sea bed.

FIGURE 1 Rips at Bondi Beach, Sydney. Rips are often easier to identify from a height.



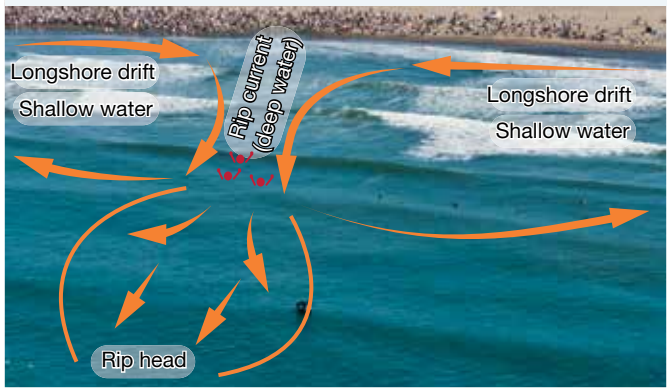
FIGURE 2 A rip current highlighted with purple dye.



11.10.2 How do you identify a rip?

Before you swim at a surf beach, it is important to try to identify the location of possible rips. If the beach is patrolled by surf lifesavers, the yellow and red flags will be placed in a rip-free part of the beach. Looking at figures 1 and 3, you can see that the sea where the rip current is found is actually different from the sea on either side of it. Typically, where there is a rip current, the sea looks calmer, with surface ripples indicating a flow of water away from the beach. The waves are not as big and the water may be a darker colour because it is deeper. The calmer water often tricks swimmers into thinking that this is a safer place to swim.

FIGURE 3 A rip current can take you offshore very quickly, although it will not carry you far out to sea.



11.10.3 What should you do if you are caught in a rip?

Rips do not actually pull you under the water, but being caught in a rip current causes many people to drown on our beaches each year. Figure 3 on the previous page shows that a rip will not take you far out to sea, although it will take you offshore very quickly. If the waves are large, then the speed of the rip will be faster and more dangerous.

If you are caught in a rip, the most important thing to do is not to panic. Do not try to swim against the rip, because even the strongest swimmer will get tired. Most drownings at Australian beaches occur when the beach is not being patrolled. This means that the best way to avoid the hazard created by a rip current is to swim between the flags at a patrolled surf beach.

FIGURE 4 Rip warning poster



11.10 Activities

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

Remember

1. How is undertow different from a rip current?
2. What colour are the flags used by lifesavers to identify the safe part of a beach for swimming?

Explain

3. Explain why a beach that has large waves would have more powerful rip currents.
4. Using the information illustrated in figure 4, make a list of five things that you should do to ensure your safety if you are caught in a hazardous rip current.
5. If you are caught in a rip, explain why you should not try to swim towards the shore. Annotate a diagram of a rip to explain your answer.

Discover

6. True or false? Rip currents tend to have less wave activity than surrounding areas.
7. What are the features of a rip current that make them potentially dangerous to swimmers?
8. Download several images of surf beaches from the net and annotate them to identify potential rip currents. Give reasons for the ***places*** you marked as rips.

Think

9. Design a rips awareness campaign to warn swimmers about the potential hazards caused by rip currents. It may be a campaign for television, radio or newspapers. Select the most effective campaign strategies and, as a class, make it your task to promote rip current awareness within your school.
10. Describe the ***scale*** of the rips in figure 1 in relation to the whole Bondi Beach region.

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: Ripped out (int-3105)

11.11 How does water form river landscapes?

11.11.1 Moving water

Erosion, transportation and deposition by running water are the main processes that create our landscapes. Some rivers, such as the Gordon River in Tasmania, are **perennial**; some, such as Coopers Creek in Queensland, are **intermittent**; others, such as the Colorado River in the United States, have eroded amazing landforms like the Grand Canyon.

Water is always on the move. It evaporates and becomes part of the water cycle; it rains and flows over the surface of the Earth and into streams that make their way to a sea, lake or ocean; and it soaks through the pores of rocks and soil into **groundwater**.

FIGURE 1 Rivers of the world: the longest river on each continent.



11.11.2 River systems and features

A river is a natural feature, and what we see is the result of the interaction of a range of inputs and processes. All parts of the Earth are related to the formation of river landscapes. This includes the lithosphere (rocks and soil), the hydrosphere (water), the biosphere (plants and animals) and the atmosphere (temperature and water cycle). Changes can happen quickly and over a very long period of time. Changes at one location along a river can have an effect at other locations along the river.

Water flows downhill, and the source (the start) of a river will be at a higher altitude than its mouth (the end). As the water moves over the Earth's surface, it erodes, transports and deposits material.

The volume of water and the speed of flow will influence the amount and type of work carried out by a river. A fast-flowing flooded river will erode enormous amounts of material and transport it **downstream**. As the speed or volume of the water decreases, much of the material it carries will be deposited.

FIGURE 2 A river system

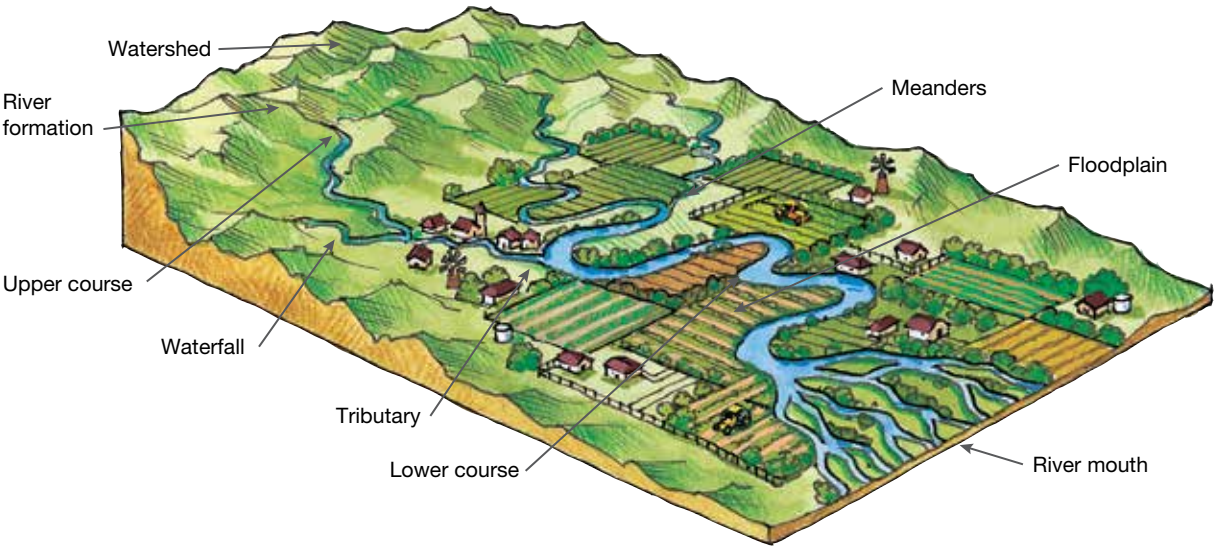
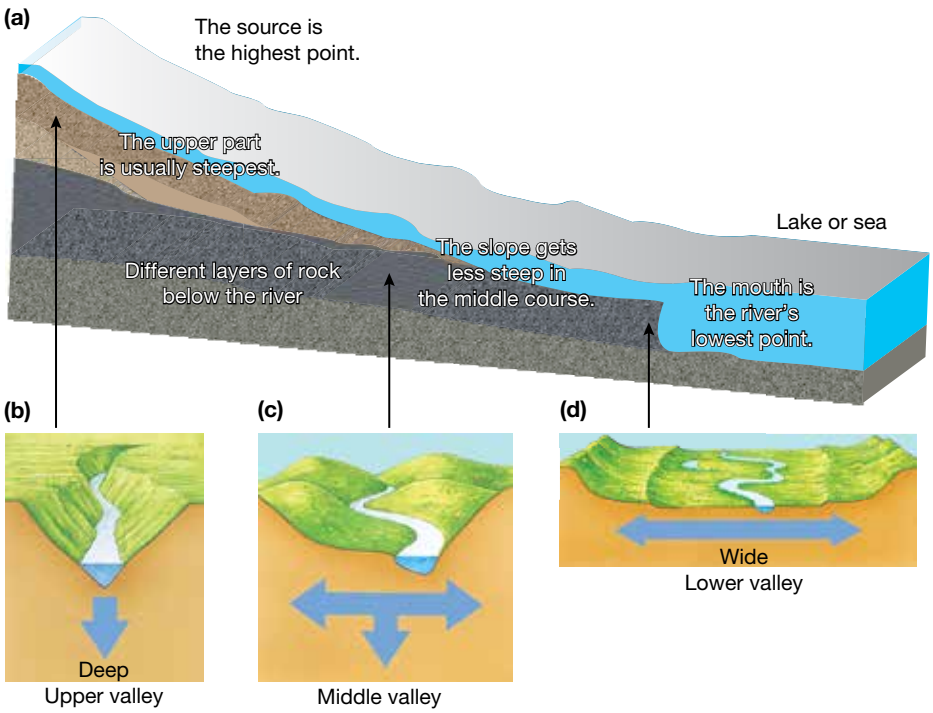


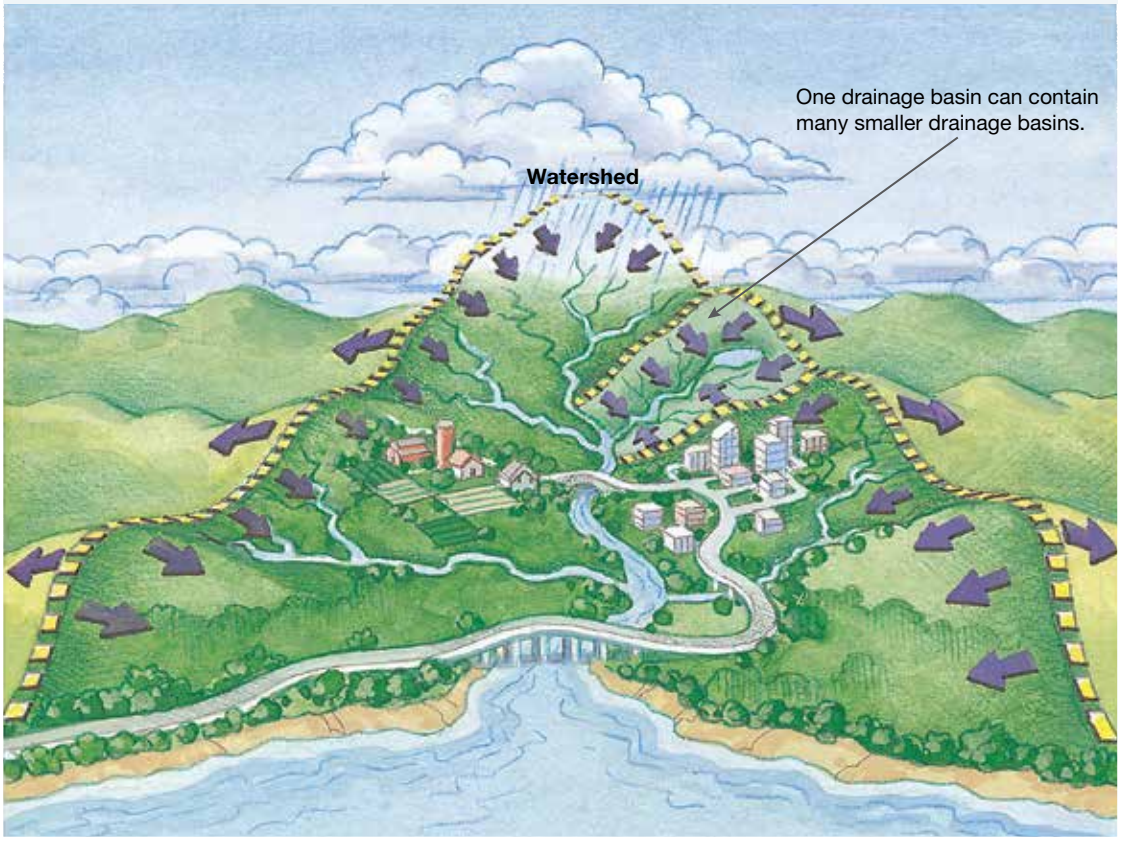
FIGURE 3 (a) Long profile of a river — a view along its length. The slope of the river tends to get flatter and the riverbed gets smoother as it moves downstream. (b)–(d) Cross-sections showing the shape of the river channel and valley at three points along the river. Arrows indicate the main direction of erosion.



Watershed

A river gathers its water from a region known as its drainage basin, or catchment (figure 4 on the next page). The boundary of this region is identified by mountain tops, hilltops or any land that is slightly higher than surrounding land. This is known as the watershed, and it is the point that divides the direction of water flow.

FIGURE 4 The watershed and catchment, or drainage basin of a river system.



Source: Adapted from an image by RecycleWorks www.RecycleWorks.org

River formation

Even the biggest rivers begin with water from rain or melting snow in mountains or hills. This water has collected in tiny depressions called rills. These rills grow larger when they collect more water, and when they combine they begin to look like streams. Many streams contribute to a river (see figure 2).

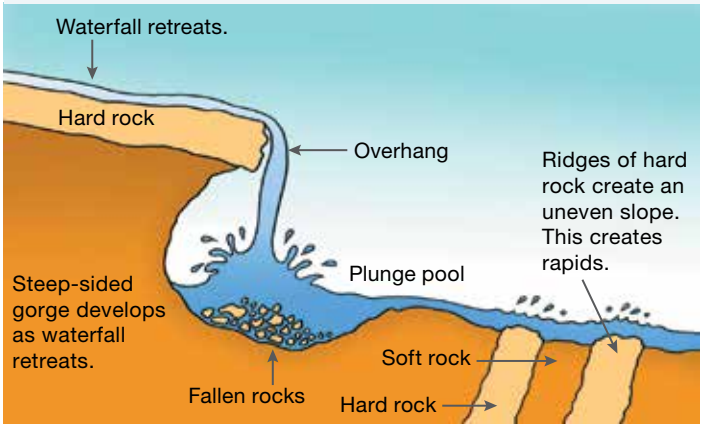
Upper course

Waters in a river channel flow over steeper slopes in the upper reaches. The force of rushing water on a steep slope cuts downwards and creates a V-shaped valley. The river then tends to follow a fairly straight course (see figure 3 on previous page).

Waterfall

When a river meets resistant rock, a waterfall can occur (see figure 5 at right). If the river has to cross bands of resistant rock, rapids will form. The turbulent water flow in rapids is called white water. A plunge pool forms at the base of a waterfall when rocks and soil moved by the fast flowing water erode the banks and base of the river.

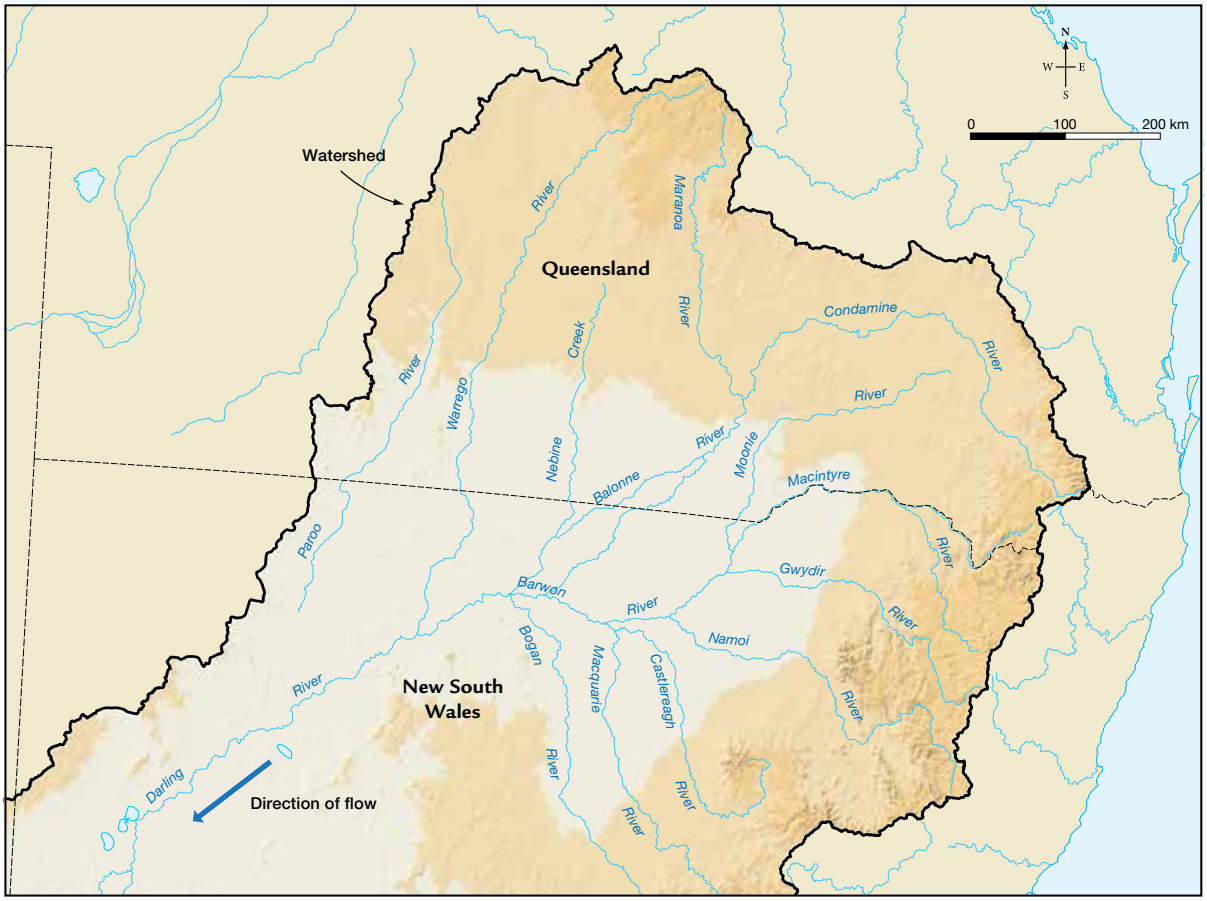
FIGURE 5 A waterfall



Tributary

A river or stream that adds or contributes water to the main river is known as a **tributary** (see figure 6). The place where two rivers join is called the confluence.

FIGURE 6 Tributaries of the Darling River which, in turn, is a tributary of the Murray River.



Source: Spatial Vision

Meanders

On flatter land, a river is wider than it is in the hills, and water added from tributaries has increased its volume (see figure 3). Much of the erosion is in a sideways direction, and the valley of a river is much wider. Sideways erosion causes meanders (curves) along its course (see figure 7). Over time, a meandering river will change the path it follows, as some bends become more obvious and some disappear. A meander that is cut off is called an oxbow lake.

Floodplains

Flooding over thousands of years creates floodplains. During a flood, the water flows over the banks of the river. Once outside the river, it slows down and deposits the alluvium it was transporting. This alluvium is often very fertile (see figure 2). These regions are highly suitable for farming and settlement (see figure 8).

River mouth

Deltas are found at the mouths of large rivers, like the Mississippi. A delta is formed when the river deposits its material faster than the sea can remove it. The material is a mix of mud, sand and clay. The river will sometimes split up into smaller streams to find its way through the deposited material. These little streams are called distributaries. We recognise three main shapes of delta: fan shaped, arrow shaped and bird-foot shaped. The shape is influenced by tides, ocean waves and the volume of sediment and river water.

Sometimes a river will have a wide mouth, where fresh water and salt water mix. This is known as an estuary.

FIGURE 7 The formation of a meander and oxbow lake.

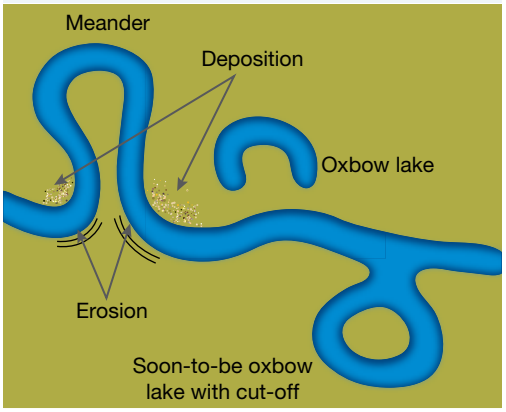


FIGURE 8 Murray River meanders



11.11 Activities

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

Remember

1. Refer to figure 1 and compare the ***scale*** of Australia's longest river with the world's longest river.
2. Sketch the long profile shown in figure 3 and label the source, the mouth and the direction the river flows.
3. What feature, other than water, has to be present for waterfalls and rapids to form? Refer to figure 5.

Explain

4. Explain how rivers are part of the water cycle.
5. Why do people settle and farm on floodplains?

Discover

6. Identify a river that flows through the capital city in one state or territory in Australia. Describe its source, any tributaries, and its mouth.
7. After some rain, investigate an area of bare ground on a small slope near school or home. Sketch the pattern that the rills have made. Identify the watershed and catchment for each rill.
8. Using Google Earth or an atlas, find the Nile delta, the Ebro delta and the Mississippi delta. Draw a sketch and write a short description of the shape of each delta, presenting your findings in a table.

Predict

9. Refer to figure 8. Sketch a diagram to show the course of the meandering Murray River. Mark in the course that the river used to take. Predict and label where the next oxbow lake might form. Show the possible future course of the river.
10. What do you think will happen to deltas if sea levels rise?
11. Predict the ***changes*** that will occur to the waterfall in figure 5. Justify your answer.

Think

12. Produce a flowchart or animation to explain the formation of an oxbow lake, a delta, a waterfall or rapids.
13. Refer to the paragraph about meanders and to figures 3 and 7. Sketch a cross-section (like figure 3) of a river at a meander. This will show the shape of the riverbank on each side of the river. What are the advantages and disadvantages of living on each side of the river?
14. What ***changes*** will occur along a river if there is unusually high rainfall in its upper course? Think in terms of erosion and deposition.

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Try out this interactivity: River carvings (int-3104)

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
Fjords

11.12 How are river landscapes managed?

11.12.1 Mississippi River

Rivers are vital. Plants and animals depend on their waters for survival. People also rely on rivers for their waters and have diverted rivers for flood control, irrigation, power generation, town water supplies, waste disposal and recreation.

The mighty Mississippi River is approximately 3700 kilometres long and is the second longest in the United States. It flows through 10 states (see figure 1 below). The drainage basin, or catchment, for the river covers 40 per cent of the country, and includes all or part of 31 states and two Canadian provinces. The drainage system is made up of thousands of rivers and streams, including the Missouri.

Importance of the river

The Mississippi has been a major contributor to the economic growth of the United States.

- It is important for transporting goods, such as fuel, coal, gravel, chemicals, steel, cement and farm produce. The **barges** on the river are able to connect to ocean shipping at Baton Rouge in Louisiana.
- It supplies water for cities and industries and irrigation for farming.
- Much of its floodplain has been cleared for farmland.
- The river basin also supports natural biodiversity. It has many species of mussels, 25 per cent of all fish species in North America, and over 300 species of birds that use the river during migration and breeding.

FIGURE 1 The Mississippi drainage basin



Source: Spatial Vision

Floods

The river has created the geographical characteristics that have always attracted settlement. The source of the river is at an altitude of 450 metres above sea level, and the river drops in altitude very quickly. The last 1000 kilometres of the river's journey is through a wide floodplain that is the result of many floods over hundreds of years. Under natural conditions, the river had high water levels in early spring and much lower levels by early autumn.

Floods are a major issue for businesses, homes and farms. There have been many significant floods; for instance, in 1849, 1850, 1882, 1912, 1913, 1927, 1983, 1993 and 2011. After the floods of 1927, the Mississippi River and Tributaries Project was set up with the goal of preventing destructive floods and keeping the river open for navigation.

River management

The Mississippi River and Tributaries Project uses many strategies to manage the river. The aim is to satisfy the needs of farming, towns, industry, transport and **ecosystems**. There are many dams to control water levels in the river.

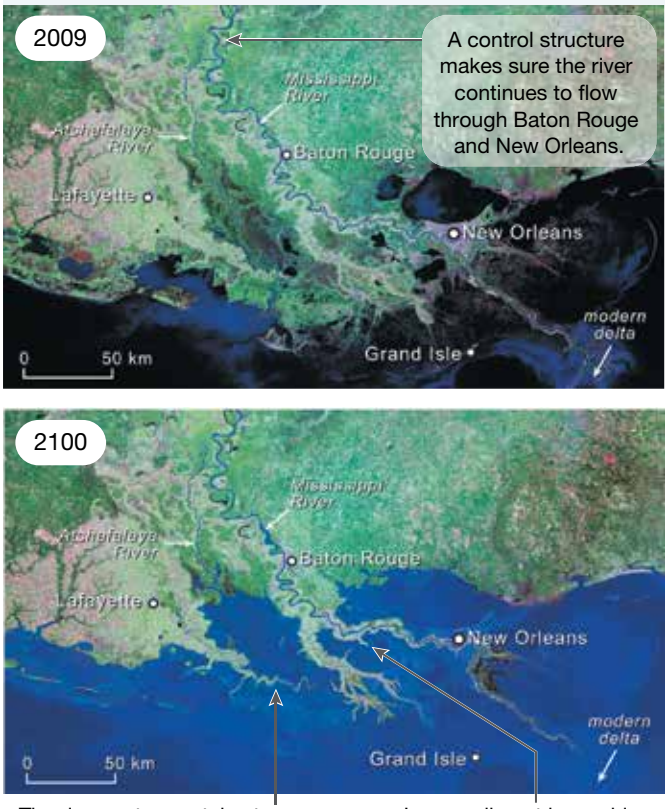
Management issues

- The strategies are expensive.
- Continuous dredging is needed.
- Levees are being built higher — some now seven metres high — and it is hard work to make sure they don't leak or break.
- Water is powerful and the river still wears away at weak points along the banks.
- If a levee breaks or if water goes over the top, flood damage can be very bad.
- The floodplain does not receive much sediment from the river.
- The river water is not as clean as it used to be.
- Natural habitats are damaged by dredging or concreting.
- The delta is decreasing in size.

FIGURE 2 Examples of management strategies



FIGURE 3 Predicted changes to the Mississippi Delta, 2009 to 2100



11.12 Activities

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

Remember

1. Refer to figure 1 and name key tributaries of the Mississippi River. In which general direction does the Mississippi flow from its source to its mouth?

Explain

2. Why is the river important to the United States? Classify each reason as one or a combination of the following: social, economic or ***environmental***.

Discover

3. How close will Baton Rouge be to the sea in 2100?
4. Use the **Land loss in the Mississippi delta** weblink in the Resources tab. Which parts of the delta have been most affected by erosion?
5. Use the **Mississippi River watershed** weblink in the Resources tab to watch a video about the river. What do you notice about the ***scale*** of the watershed and the location of the Mississippi River?

Predict

6. What do you think would be the main management strategies on the Mississippi River during a year of heavy rainfall? What do you think would be the main management strategies during a drought?

Think

7. Do you agree or disagree with the following statement? 'A strategy implemented in one part of the river will have an impact on another part of the river.' As you find evidence from this topic, place it in a table, or under subheadings. Write a conclusion based on your findings.

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Explore more with these weblinks: Land loss in the Mississippi delta, Mississippi River watershed

11.13 Which landscapes are formed by ice?

online only

Access this subtopic at **www.jacplus.com.au**

11.14 Do all rivers flow to the sea?

11.14.1 Okavango River

Some rivers do not reach the sea. The Okavango River in Africa has created an inland delta, its water finally disappearing into ancient salt pans.

This perennial river has its source in the highlands of Angola, flows roughly south-east for about 1000 kilometres, passing along the Namibian border, to its delta in Botswana. Very little rain is added to the river in Botswana and it takes about a month for the water to flow from its source to the delta. The delta doubles in size when it floods in the dry season. This makes it an oasis in the Kalahari Desert.

The delta region contains many islands and is fairly flat. When the volume of the river increases, the water slowly spreads out with some of the water making it as far as the Makgadikgadi Salt Pans. A lot of water is lost from the delta through very high rates of evaporation.

FIGURE 2 Average temperature and rainfall for Huambo, Angola (1990–2012). This region provides nearly all the water to the Okavango River.

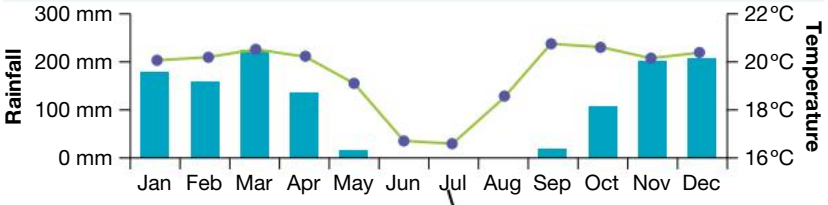
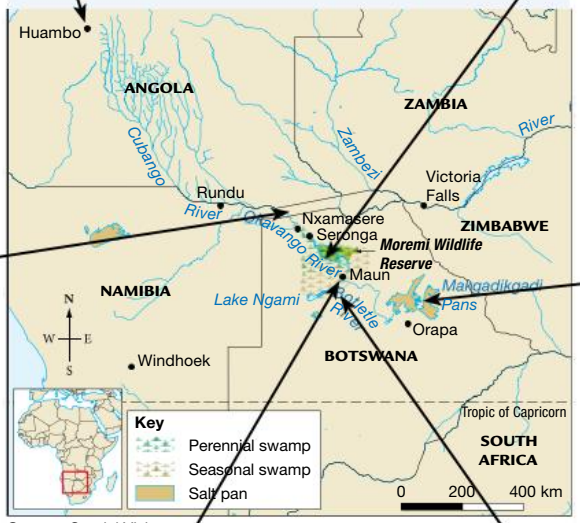


FIGURE 3 Plants and animals have adapted to cope with changes in water level.



FIGURE 1 Location of Okavango River and delta



Source: Spatial Vision

FIGURE 4 The Makgadikgadi Salt Pans are at the end of the river.



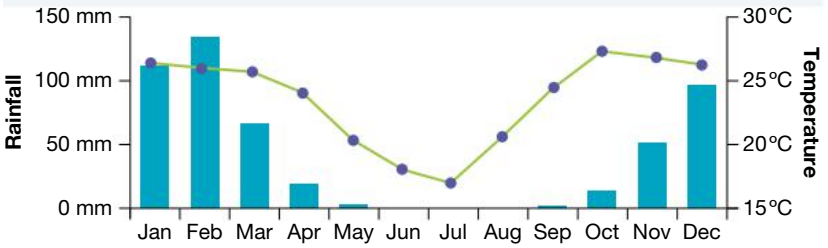
FIGURE 7 When the Okavango enters Botswana it is a wide meandering river.



FIGURE 5 The desert landscapes near the Okavango delta



FIGURE 6 The average temperature and rainfall for Maun, in Botswana (1990–2012); it has much less rain than Huambo.



11.14.2 Diamantina River

CASE STUDY

The Diamantina River flows into Kati Thanda–Lake Eyre

The Diamantina River in Australia is an intermittent river about 900 kilometres long, with its source in Queensland and its mouth in inland South Australia at Kati Thanda–Lake Eyre. It is one of the rivers in the catchment of Kati Thanda–Lake Eyre. Some local rain adds to the water in the lake, but most of the water comes from cyclones and tropical rain in northern Queensland. Water can take three to 10 months to flow all the way to the lake. There are a few permanent waterholes along the river and there can be many dry years between the short periods when the river flows.

The temperatures in the catchment are high and only a small fraction of the Queensland rain reaches the lake. Water seeping into the soil also reduces the level of the lake. About once every eight years there is significant water in the lake. Kati Thanda–Lake Eyre is in an arid environment. The wet and dry periods influence the patterns of life of flora and fauna.

FIGURE 9 The river divides into many small channels.



FIGURE 10 Average rainfall and temperature at Swords Range (1990–2012), the source of the Diamantina River

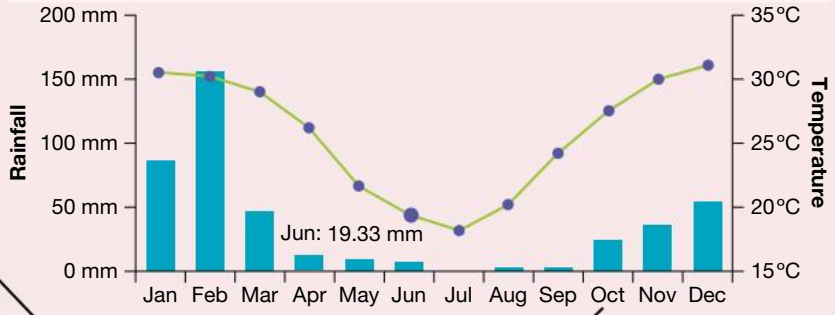
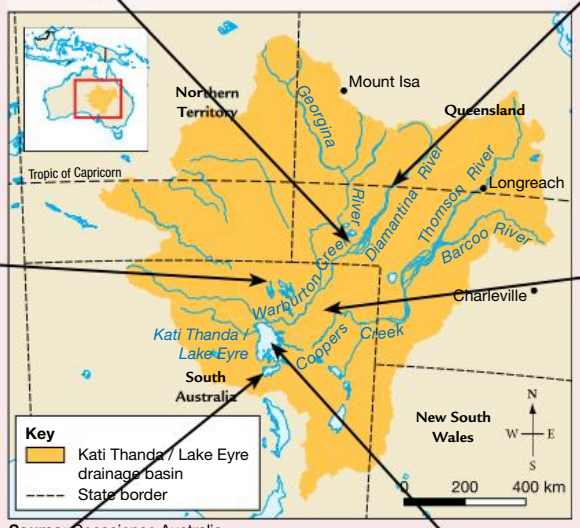


FIGURE 14 High temperatures lead to high evaporation of water, leaving a very salty mixture behind.



FIGURE 8 The location of the Diamantina River



Source: Geoscience Australia

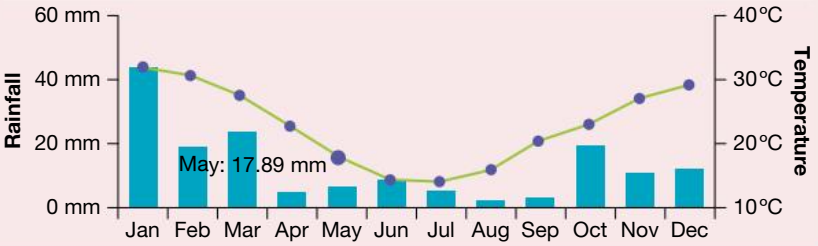
FIGURE 11 The desert environment surrounding the lake



FIGURE 13 Birds fly long distances to breed and feed on the fish life in the water.



FIGURE 12 Average temperature and rainfall at Kati Thanda–Lake Eyre (1990–2012). The lake is in a hot, dry region.



11.14 Activities

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

Remember

1. What is the difference between the average annual rainfall at the source and the mouth of the Diamantina River?
2. Describe the distribution of rain in a year at Huambo and at Swords Range.
3. Refer to figures 7 and 9 and describe the difference in the shape of the river channel.

Explain

4. Distinguish between a perennial river and an intermittent river.
5. How is it possible that the Okavango delta floods in the dry season?
6. Refer to figures 3 and 13 and compare the flora and fauna at the mouth of each river.
7. How does high temperature lead to water loss?

Discover

8. In which hemisphere are the Okavango and Diamantina Rivers?
9. In which continent is each river?
10. What is a cyclone? Name another ***place*** in Australia that is affected by cyclones.
11. Find out about one species that flourishes at Kati Thanda–Lake Eyre when the lake has water. How has this species adapted to the ***environment***? What other species is it relying upon?

Predict

12. The Okavango is the only permanent source of water in Namibia. What would happen to the delta ***environment*** if Namibia diverted water from the river as it flows along its border? Think about the possible impact on people, on the ***environment*** and on the economy.
13. ***Changes*** to the climate are likely to make the Kati Thanda–Lake Eyre region hotter and drier. What impact will this have on the ***environment*** of the lake and the native species that flourish there?

Think

14. Compare the Okavango River and the Diamantina River. Present your findings in a visual manner to show similarities and differences. Consider characteristics such as the location of the river, length of river, rainfall at source, rainfall at mouth, perennial or intermittent nature, ***environment*** surrounding mouth, speed of flow, evaporation rate at mouth, water added along course, fauna at mouth, flora at the mouth, shape of the river channel and final end point of the river.
15. The Okavango Delta and Kati Thanda–Lake Eyre are both popular tourist destinations. Provide two reasons why you think people are attracted to these places. Which one has a permanent tourism industry? How is this possible? When would be the best time to visit each location?

11.15 SkillBuilder: Reading contour lines on a map

online only

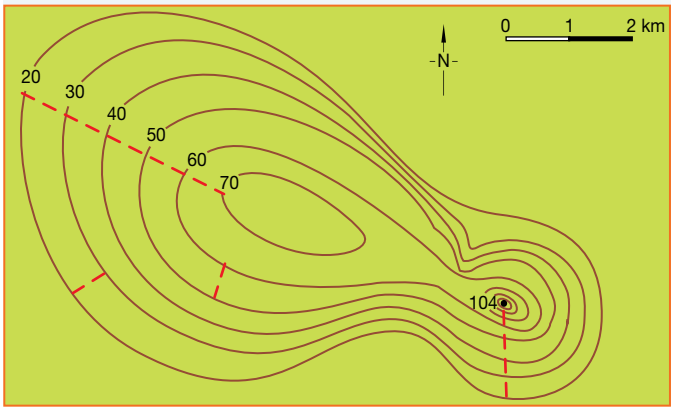
WHAT ARE CONTOUR LINES?

Contour lines drawn on the map join all places of the same elevation (height) above sea level. Contour maps are used to show the relief (shape) of the land and the heights of the landscape. Maps with contour lines show the relief of the land and help people to identify features.

Go online to access:

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

FIGURE 1 How contour lines show the shape of the land.



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Watch this eLesson: Reading contour lines on a map (eles-1651)

Try out this interactivity: Reading contour lines on a map (int-3147)

11.16 Review

online only

11.16.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

11.16.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

11.9 SkillBuilder: Constructing a field sketch

11.9.1 Tell me

What are field sketches?

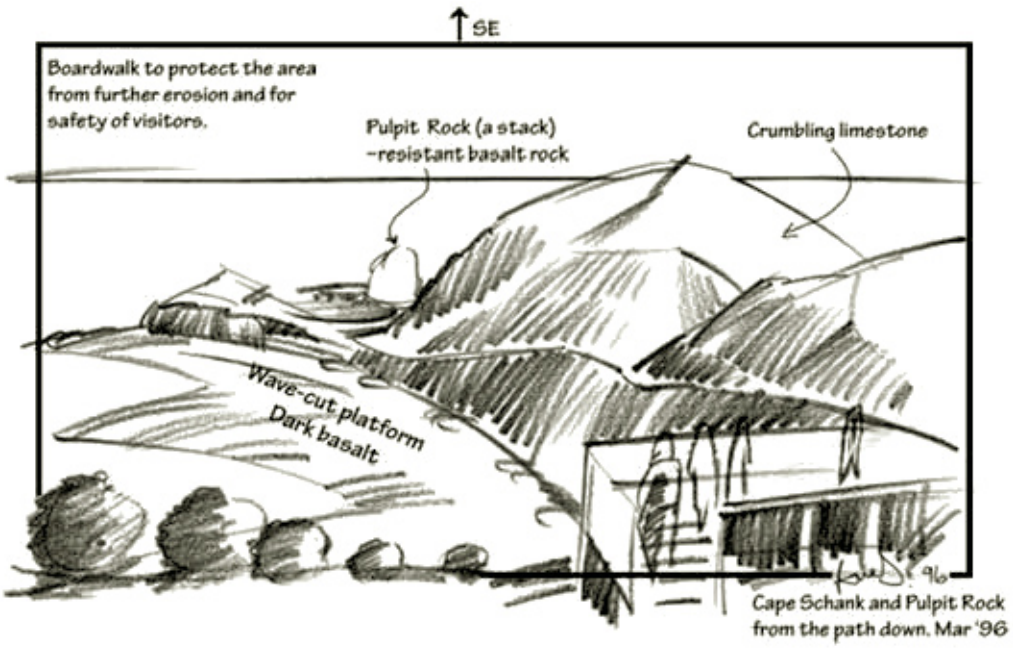
Field sketches are drawings completed during fieldwork — geography outside the classroom. Field sketches allow a geographer to capture the main aspects of landscapes in order to edit the view, focusing on the important features and omitting the unnecessary information. Field sketches are free-hand drawings with annotations. Colour may be added but is not a requirement. A field sketch aids our sense of observation and allows us to record and interpret environments. Following a few basic steps, everyone can construct a field sketch!

Why are field sketches useful?

Field sketches capture the important information. You might think it is easier to take an image on your phone or with a camera, but you are then capturing the non-relevant data as well. By making a drawing in the field you are interpreting the environment, analysing the landscape and highlighting a geographical understanding of what you see by careful and clear labelling.

Model

FIGURE 1 Field sketch of Cape Schanck



Source: © Geography Teachers' Association of Victoria Inc. *Interaction*, journal of the GTAV, June 1998. Illustration redrawn by Harry Slaghekke.

A good field sketch has:

- been completed on plain paper
- been drawn in pencil
- a title
- a date
- labels of key features
- an indicator to show direction
- shading.

11.9.2 Show me

How to complete a field sketch

You will need:

- plain paper
- a clipboard
- a grey pencil (soft)
- a ruler
- an eraser.

Procedure:

Here is an example of a coastal field sketch. To complete a coastal field sketch you need to be in a coastal environment. Any environment though can be sketched — natural or human-altered. You can choose an environment near you.

STEP 1

Choose the field of view to be sketched; that is, 'from this tree to that bend in the stairs' (as in figure 1). Make yourself comfortable as you'll need to stay in the one place while you complete the sketch.

STEP 2

Partly close your eyes so that you are peeking at the world — all the small details will disappear and your eyes will focus on the main outlines. These main outlines are the first parts drawn. Practise looking at the environment.

STEP 3

Attach your paper securely to the clipboard as wind plays havoc with field sketching. Using a pencil, draw a border (frame) in which you are going to sketch. Always draw in pencil and keep your eraser handy.

STEP 4

Draw in the horizon as a baseline; that is, where the land meets the sky.

STEP 5

Divide your sketch horizontally into three portions: background, middle ground and foreground (the closest to you).

STEP 6

Peek at the landscape through partly closed eyes and now add the main outlines to your sketch. Start with main features in the background (most distant), then middle-ground and lastly foreground. There will be a few shapes on your page, but no detail.

FIGURE 2 Initial outline

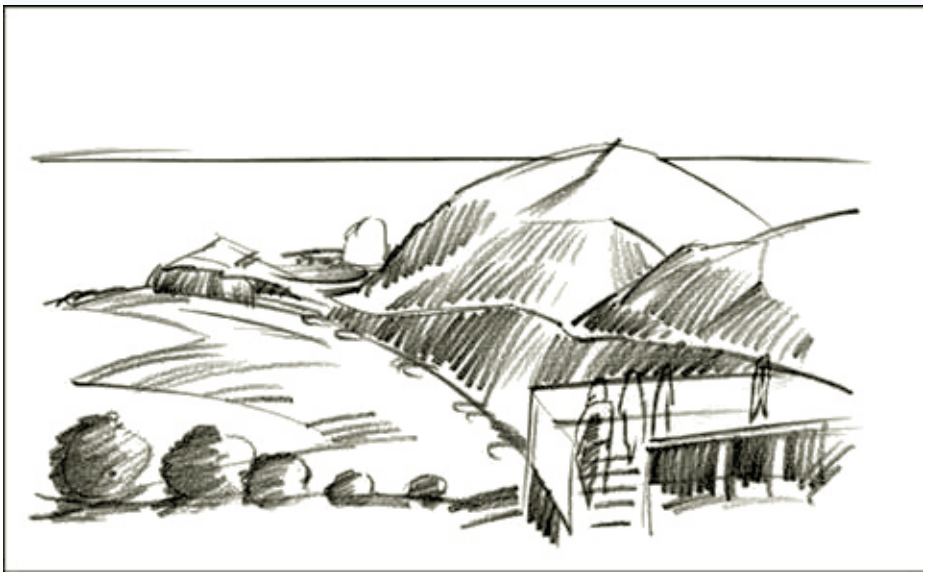


Source: © Geography Teachers' Association of Victoria Inc. *Interaction*, journal of the GTAV, June 1998. Illustration redrawn by Harry Slaghekke.

STEP 7

Using this base you can now add details and provide shading to relevant aspects. Identify those aspects that are relevant to your study. In this coastal example, there are natural features — a wave-cut platform, a stack, a headland and limestone ridges — and a human feature, the boardwalk.

FIGURE 3 Further detail and shading



Source: © Geography Teachers' Association of Victoria Inc. *Interaction*, journal of the GTAV, June 1998. Illustration redrawn by Harry Slaghekke.

STEP 8

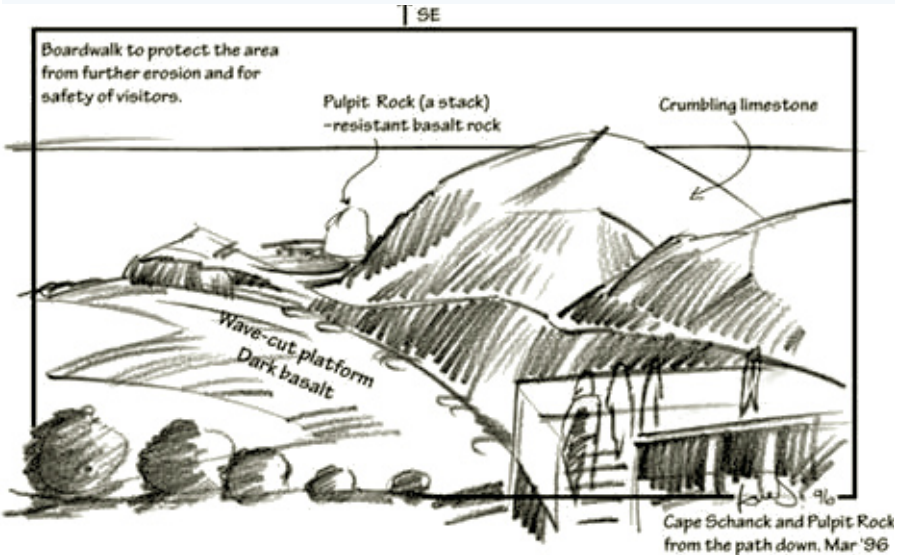
Annotate (label) your sketch to draw attention to the landscape features. Ask yourself what the connection is between the natural features and the human-altered features. Can your labelling assist in making this interconnection clear to those who view your field sketch?

STEP 9

Finishing touches:

- on the border, add a direction indicator as to which way you are looking at the landscape
- title your sketch — identify the place with as much detail as possible
- date your drawing
- include the direction you are facing (if known).

FIGURE 4 Completed field sketch with annotations



Source: © Geography Teachers' Association of Victoria Inc. *Interaction*, journal of the GTAV, June 1998. Illustration redrawn by Harry Slaghekke.

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Watch this eLesson: Constructing a field sketch (eles-1650)

11.9.3 Let me do it

Developing my skills

Your teacher may take the class into the school grounds and ask you to do a field sketch of an area within the school boundary, or you may be able to view an environment beyond the fence line.

OR

At home, select a street view or a garden view and complete an annotated field sketch.

Now that you have practised this technique, you are ready to apply this skill to any fieldwork.

Questions

1. What natural features have been labelled in the field sketch?
2. What human-altered features have been labelled in the field sketch?
3. Is there any interconnectedness between the natural environment and human activities?
4. How do your five senses respond to this environment?
5. How might this place change in the future?

Checklist

I have:

- drawn a border
- added a compass direction
- titled the sketch
- dated the sketch
- shaded to give depth
- clearly labelled the significant aspects.

Skills questions

1. Field sketching is better than using a camera because:
   (a) the picture is clearer
   (b) it takes longer to complete
   (c) it identifies the key features
   (d) it takes time.
2. The purpose of field sketching is to:
   (a) show your artistic talent
   (b) interpret the environment
   (c) save time
   (d) be able to go outside.
3. Why is labelling important to a field sketch?
4. What additional value is gained by the use of shading on a field sketch?

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Try out this interactivity: Constructing a field sketch (int-3146)

11.13 Which landscapes are formed by ice?

11.13.1 What are the features of a landscape that has been created by moving ice or glaciers?

In cold parts of the world, such as the poles and high mountains, water freezes, and moves more slowly than when it is a liquid. When ice deposits thicken, the same gravitational force that moves flowing water also moves ice, and it begins to flow. Glaciers trace a path downhill from permanent snowfields. The weight of snow and ice crush and scrape surface rocks to produce some distinctive landscapes. Fluctuations in climate cause glaciers to change in length, width and depth, and each change results in alterations to the glacial landscape.

Today there are about 160 000 glaciers that cover about a tenth of the Earth's land surface. Glaciers are predominantly found in Greenland and Antarctica, although many are also found in high mountain environments. The closest glaciers to Australia are found in the mountains of West Papua (Indonesia) and the alps of New Zealand.

FIGURE 1 Franz Josef Glacier in New Zealand's South Island



During the most recent ice age, up to 30 per cent of the Earth's land surface was glaciated. Glaciers have a huge impact on landscapes, and the forces of erosion and deposition they exert are responsible for dramatic changes.

Moraine is any material carried by the glacier. This eroded material may have been picked up from the valley floor or it may have been eroded from the valley wall. Moraine comes in many sizes, from fine silt to very large boulders. As the glacier melts or retreats, it dumps its load of moraine because it no longer has the energy to push it down slope. Figures 2 and 3 on the next page illustrate the movement of the ice as it changes and shapes the environment.

FIGURE 2 Three types of glacial erosion: plucking, abrasion and freeze–thaw

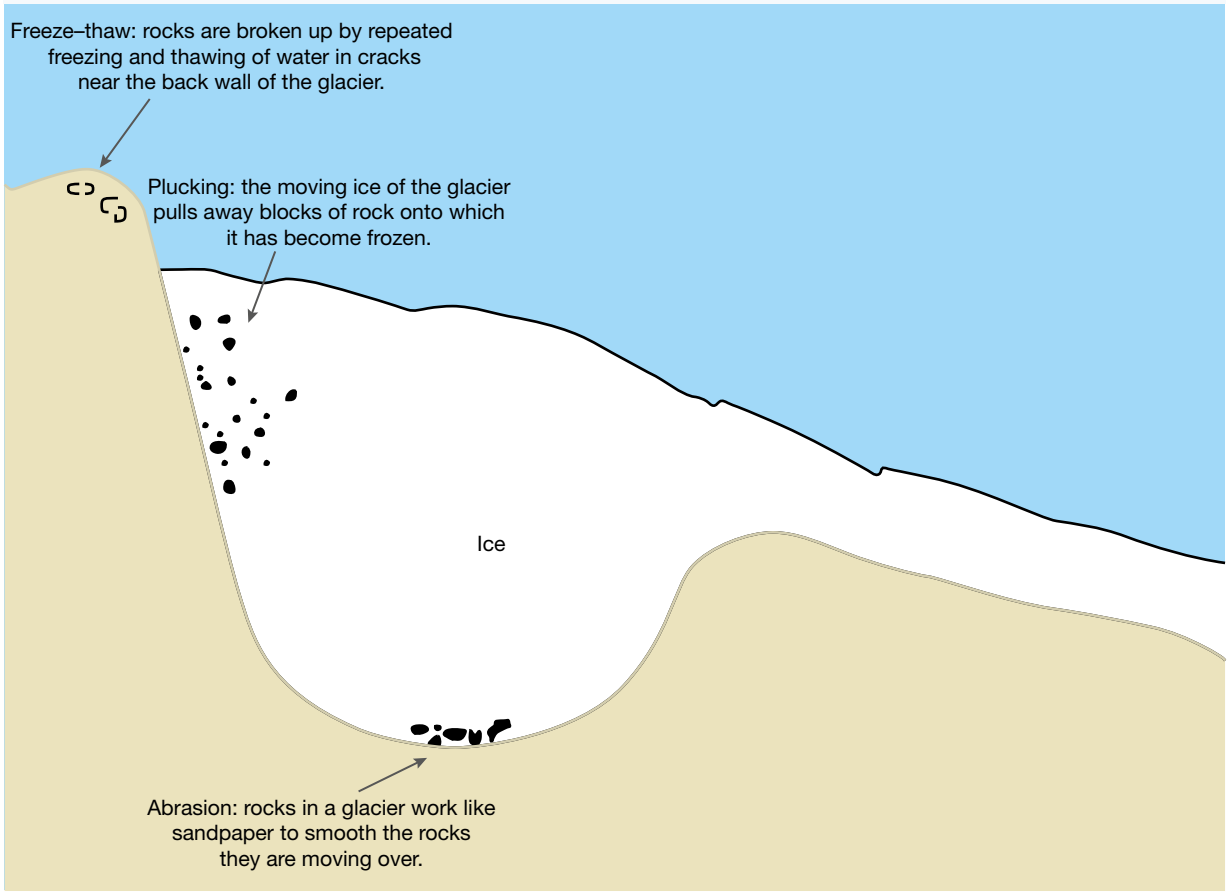
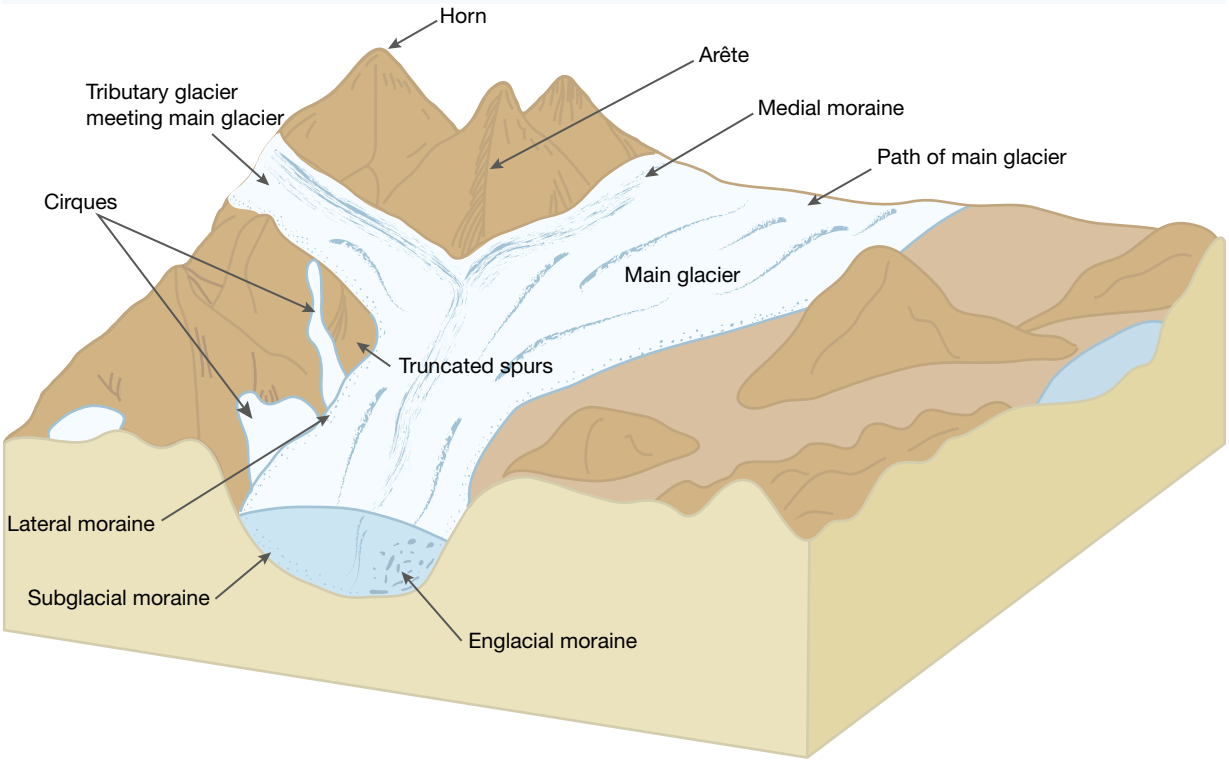


FIGURE 3 A glacier flowing from its source in a permanent ice field towards its snout, which is the point where it starts to melt.

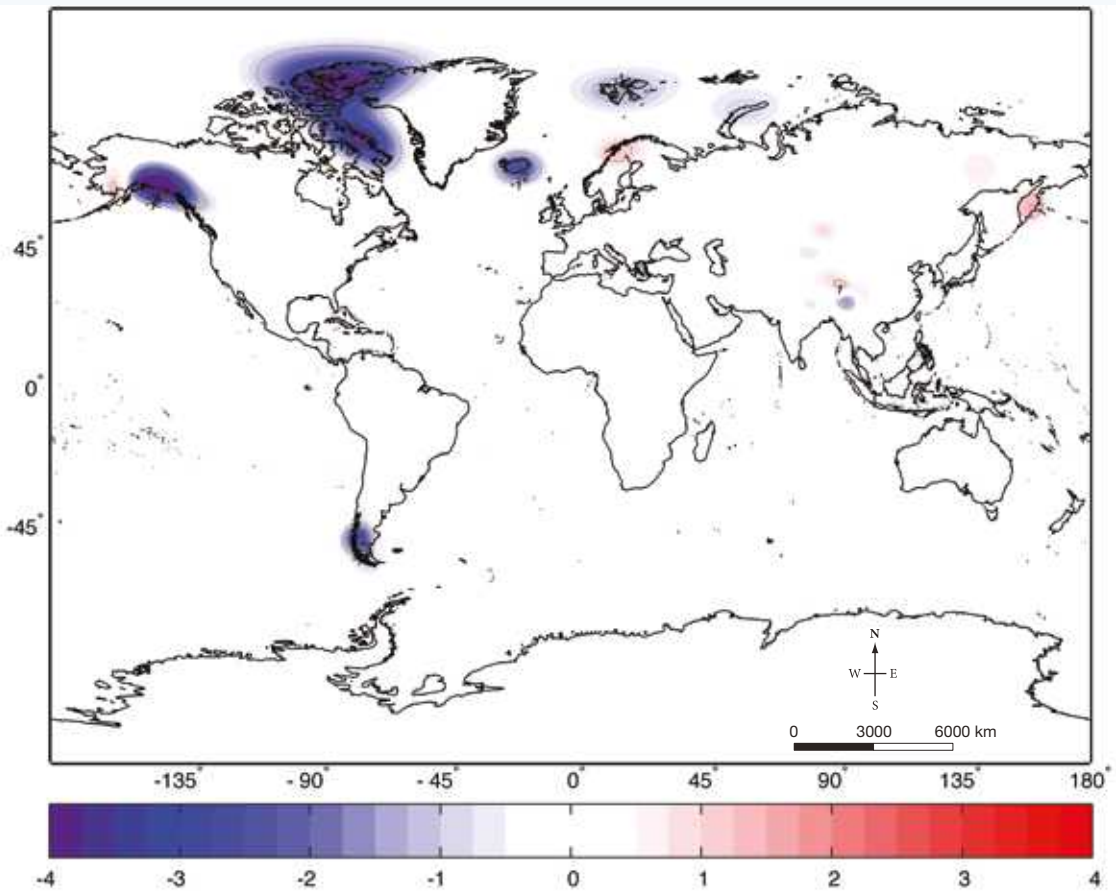


11.13.2 Why are glaciers important?

About three-quarters of the Earth's fresh water is held in ice sheets and mountain glaciers. Glaciers serve as a natural regulator of regional water supplies. During periods of warm weather, or during dry seasons or droughts, glaciers melt quite quickly. Glaciers provide a water source that feeds rivers and streams. During cold, rainy seasons, glaciers produce less meltwater. They store the rainfall as ice and reduce the chance of a **flash flood**.

The small tropical glaciers of West Papua in the Moak Mountains of the western central highlands are likely to disappear within five to 10 years. Although these small glaciers are over 30 metres deep, they are quite short and are retreating at over seven metres per year. The loss of these glaciers will result in changes to the local environment.

FIGURE 4 The state of the world's continental glaciers, not including polar glaciers. If their colour on the map is blue they are losing ice; if it is dark blue, they are losing a lot.

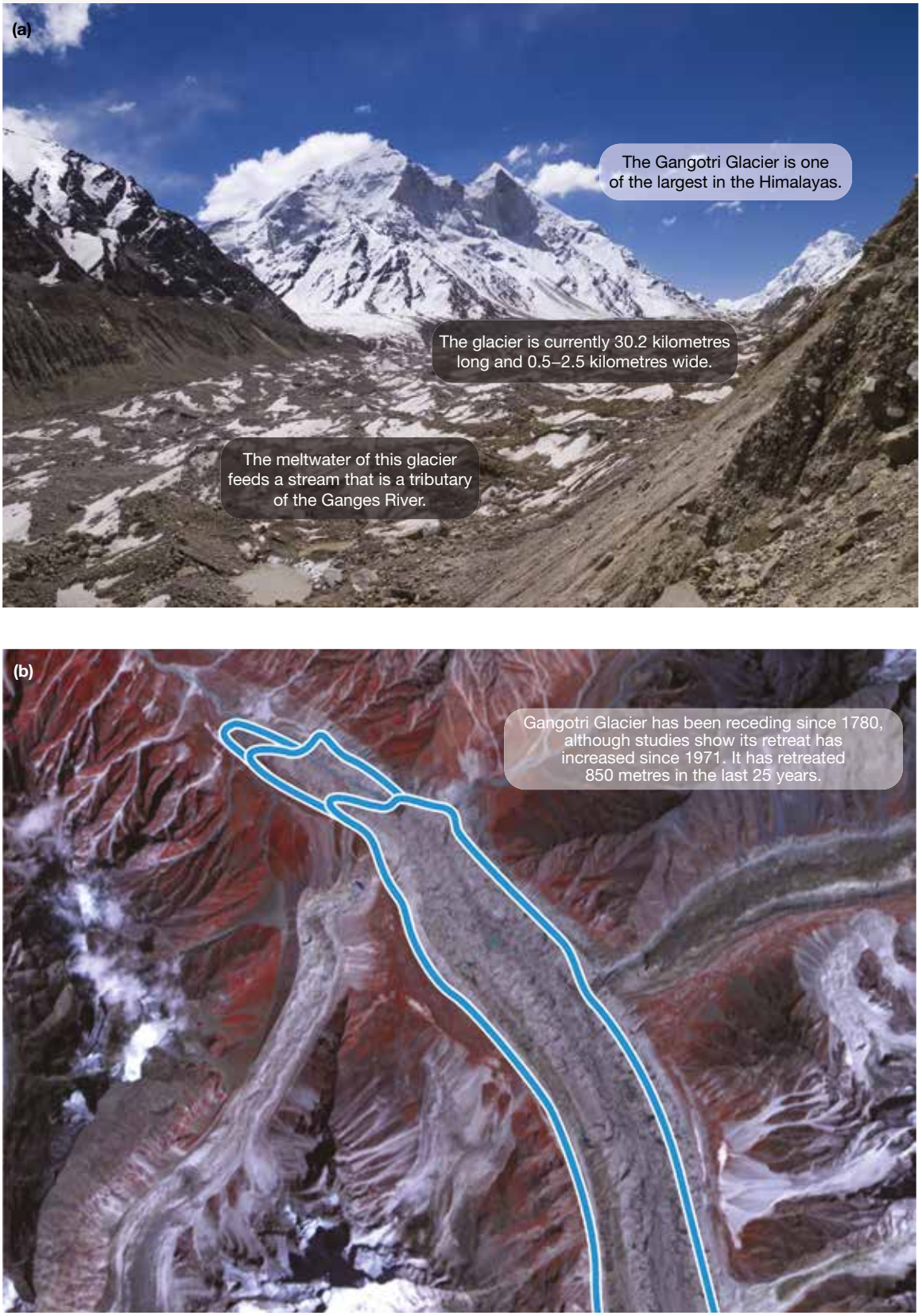


Source: © NASA/JPL-Caltech/University of Colorado

Melting glaciers can affect agriculture, availability of fresh water, hydroelectric power, transportation and tourism. Over the years, settlements, farming and tourism have extended towards the edges of glaciers. If glaciers melt rapidly, then **avalanches** and flash floods will increasingly threaten lives and services in high mountain landscapes.

A 2007 report by the Intergovernmental Panel on Climate Change (IPCC) predicted that continued melt of Himalayan glaciers could increase the likelihood of floods over the next three decades, followed by a reduction in water supply to South Asia's rivers.

FIGURE 5 Gangotri Glacier in the Himalayas in northern India



Source: © NASA image by Jesse Allen, Earth Observatory; based on data provided by the ASTER Science Team. Glacier retreat boundaries courtesy the Land Processes Distributed Active Archive Center.

11.13 Activities

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

Remember

1. What is the difference between *plucking*, *abrasion* and *freeze–thaw*?
2. Why do glaciers move?

Explain

3. Refer to figure 4.
   (a) Describe the ***places*** where glaciers are retreating.
   (b) Describe the ***places*** where glaciers are advancing.

Discover

4. Complete some internet research to discover how the polar glaciers of Greenland and Antarctica are ***changing***.
5. Use the **Columbia Glacier** weblink in the Resources tab, and watch the interactivity. Focus on the map on the left-hand side in particular. Describe the ***changes*** that occurred to the glacier over the seven-year period.

Predict

6. Check the location of the West Papuan glaciers in your atlas. What is surprising about the ***place*** these glaciers are found? *Hint:* Look at the latitude.
7. How might the local landscape ***change*** if the glaciers of West Papua melt? How will this ***environment change*** affect the local inhabitants?

Think

8. With reference to the text and images within this subtopic, sketch a diagram or find a suitable image online of a glacier with at least one tributary and annotate the following features: terminal, medial and lateral moraines, arête, cirque, high mountain peaks, glacial stream, U-shaped valley.

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Explore more with this weblink: Columbia Glacier

11.15 SkillBuilder: Reading contour lines on a map

11.15.1 Tell me

What are contour lines?

Contour lines drawn on the map join all places of the same elevation (height) above sea level. Contour maps are used to show the relief (shape) of the land and the heights of the landscape. Land heights are identified from aerial photography. Natural features, such as rivers, lakes and beaches, and human features, such as towns, roads and power lines, are added to the map to complete the landscape picture.

Why are contour lines useful?

It is not possible to see an entire area when in the environment, so maps with contour lines show the relief of the land and help people to identify features. They are also useful because they tell us the actual height above sea level of various locations on a map. Contour lines are used by many and varied people; for example, for:

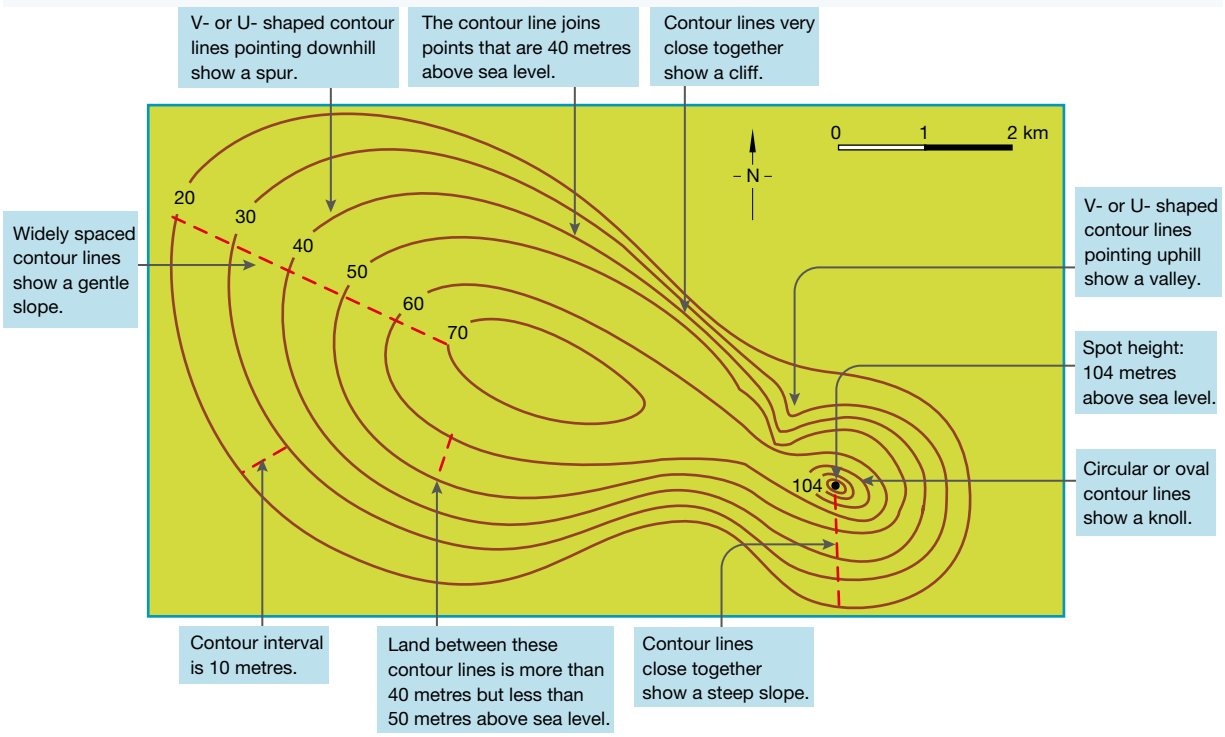
- organising a hike
- land-use planning of roads, airports, train lines, power-line routes
- identifying slopes for building sites
- planning decisions
- leisure activities; for example working out where the best rapids on a river might be or where to launch or land a hang-glider.

Symbols provided in a legend (or key) or labels on the map add information to complete the image of the environment.

Model

The contour lines (brown lines) on this simple topographic map (figure 1 below) join all places of the same height above sea level. The contour lines are drawn at 10-metre intervals. The highest point is identified by a spot height of 104 metres.

FIGURE 1 How contour lines show the shape of the land.



Reading contour lines on a map involves:

- identifying a contour line
- finding its number (metres above sea level)
- determining the contour interval
- checking spot heights.

11.15.2 Show me

How to read a contour line

Reading contour lines provides an understanding of the shape of the land. Contour lines convey an understanding of the landscape. Land features can be identified from the contour lines.

You will need:

- a contour (topographic) map.

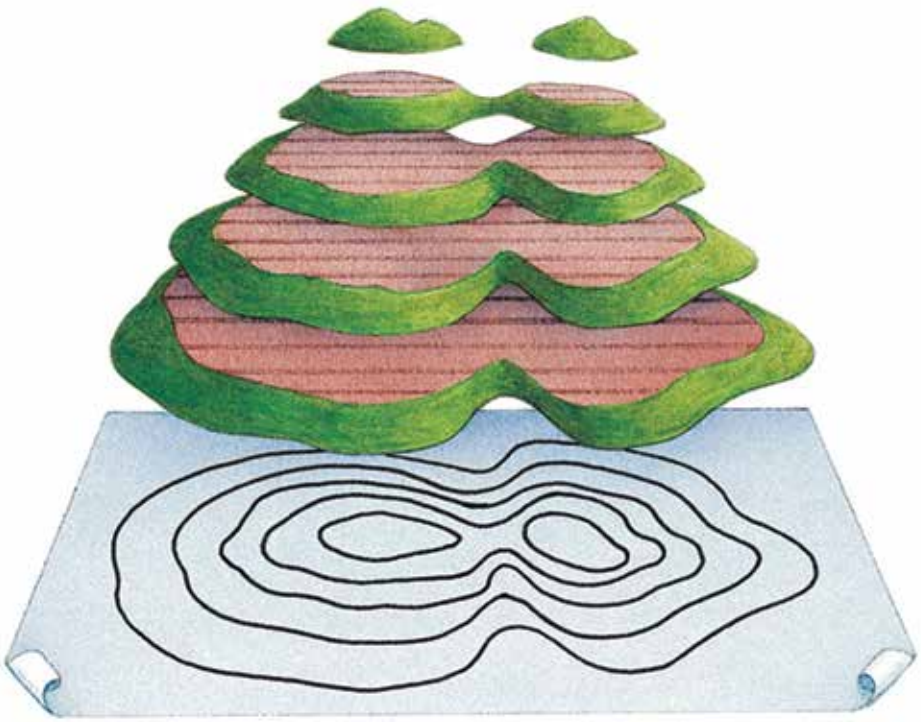
Procedure:

Using a topographic map requires an understanding of how to read the lines. Interpretations are made to provide an aerial perspective.

STEP 1

A contour line is a brown line on a topographic map, usually with a number written on it to indicate the height above sea level. Figure 2 below shows contour lines and the landform that the contours identify.

FIGURE 2 A topographic map represents a three-dimensional landscape on a flat surface.



Identify a contour line in figure 1 and follow the line to a number that states the height above sea level in metres.

STEP 2

Spot heights are dots that indicate the exact height at the highest point of a hill or the lowest point of a depression. For example, the hill in figure 1 is exactly 104 metres at its peak. That is, this spot is higher than the last contour line, but not at the height of the next contour line.

What height could the land be on the hilltops in figure 2?

STEP 3

The contour interval of a map is the difference in metres between each of the contour lines. This interval is consistent across a map.

If the contour lines are too close and the numbers can't easily be written, then it is left to the reader to use the contour interval to calculate heights. The contour interval is often written in the legend as a guide. Check your skill on each of the maps here. The contour interval on figure 1 is 10 metres and on figure 2 it is 20 metres.

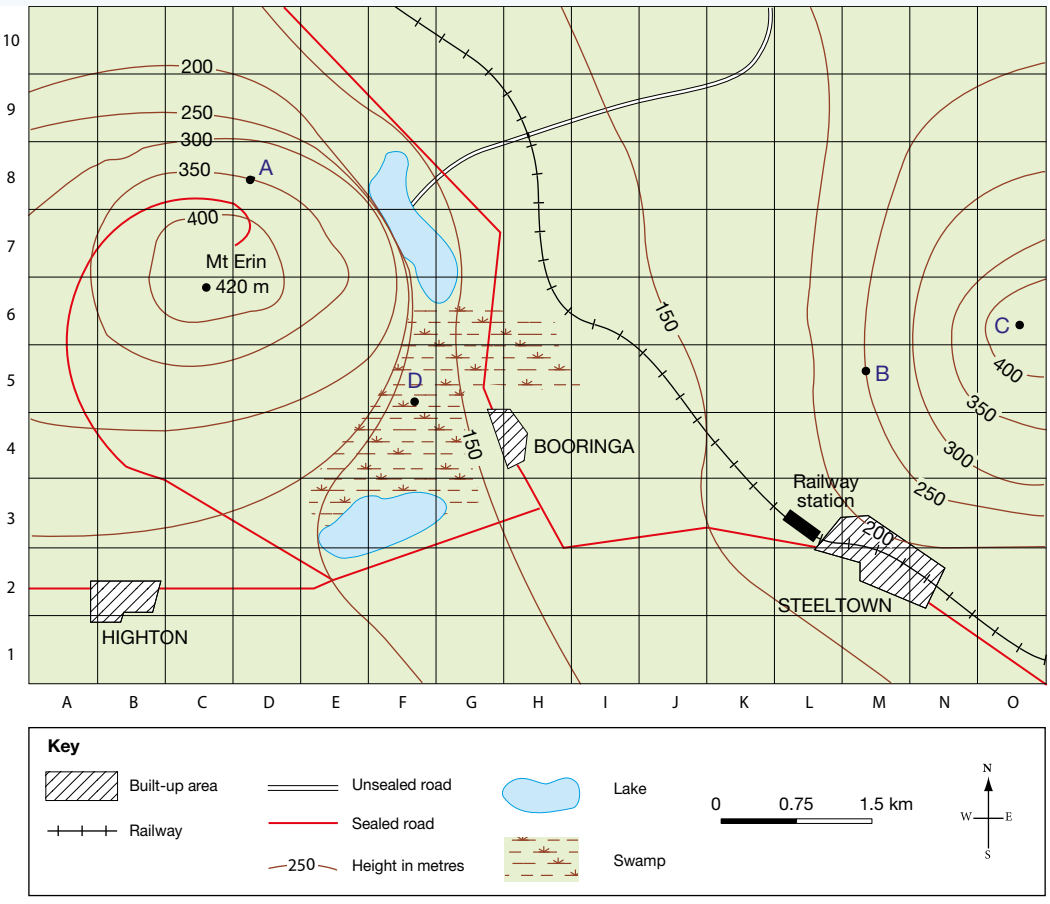
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Watch this eLesson: Reading contour lines on a map (eles-1651)

11.15.3 Let me do it

Developing my skills

FIGURE 3 A simple topographic map of Mount Erin and surrounding areas.



Source: MAPgraphics Pty Ltd, Brisbane

Questions

Use figure 3 above to answer these questions.

1. What contour heights does the road from Highton to Booringa cross?
2. Does the railway line follow fairly even land or does the train have to climb a steep slope?
3. What is the contour interval on this map?
4. What is the maximum height of Mount Erin at its peak?
5. How would we know that Mount Erin is a hill if it was not labelled so?

Checklist

I have:

- understood contour lines
- understood contour intervals
- understood spot heights.

Skills questions

1. Contour lines show the:
   (a) amount of rainfall
   (b) days of sunshine
   (c) height between hills
   (d) height of the land above sea level.
2. A contour interval is:
   (a) the width between the lines on the map
   (b) the difference in height between the lines on the map
   (c) a particular line on a topographic map
   (d) an exact spot height on a map.
3. Why are spot heights used on contour maps?
4. How do contour lines let you imagine the landscape?

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Try out this interactivity: Reading contour lines on a map (int-3147)

11.16 Review

11.16.1 Review

1. Name four types of water features that shape the land.
2. Place each of the following features into the correct column of the table below: arch, beach, blowhole, cave, cliff, headland, lagoon, sand dune, spit, stack.

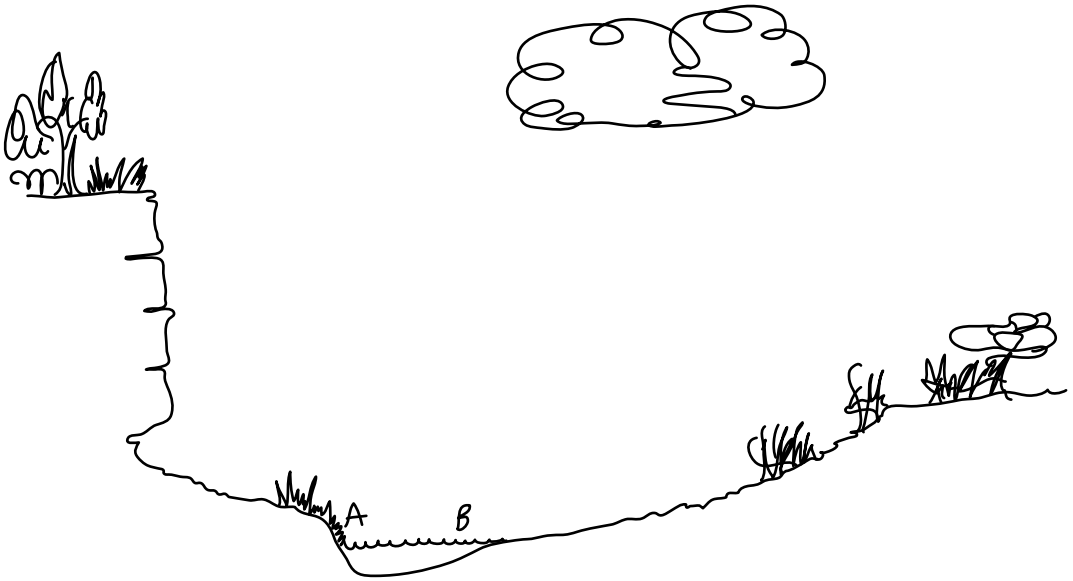
Features formed by erosion	Features formed by deposition

3. (a) Why did Aboriginal and Torres Strait Islander peoples tend to live near the coast?
   (b) How have coasts been used since 1788?
4. Describe two ways coasts are protected for use by people.
5. (a) What is the best way to avoid a rip current when swimming at the beach?
   (b) Identify two ways in which a rip current looks different from surrounding water.
6. (a) Refer to your fieldwork and explain the ***interconnection*** of physical processes and human activities.
   (b) Identify three ways in which you can record data while in the field.
7. (a) What information can be shown by drawing a long profile of a river?
   (b) What information can be shown by drawing a cross-section of a river?
8. Match these features to the upper, middle or lower course of a river: V-shaped valley, floodplain, estuary, waterfall, meander, delta.
9. Identify at least one economic, one ***environmental*** and one social reason for devising strategies to manage a river.
10. Name two ***places*** where glaciers are found.

11.16.2 Reflect

11. (a) What are the similarities between rivers and glaciers?
    (b) What are two differences between rivers and glaciers?
    (c) What physical processes are carried out by both rivers and glaciers?
    (d) Which of the physical processes you mentioned in (c) also occur at coastlines?
12. Refer to figure 1 on the next page, which shows a sketch of a cross-section of a river at a meander.
    (a) Which side is the outside of the bend?
    (b) Which side is the inside of the bend?
    (c) How do you know that the water is sometimes deeper than this?
    (d) Which of the three main processes of a river has happened more at A than at B?
    (e) Which of the three main processes of a river has happened more at B than at A?
    (f) What could happen here if a meander upstream was straightened?

FIGURE 1 Cross-section of stream at a meander



13. Fill in the table below to explain how a ***change*** at one ***place*** can have an effect on another ***place***.

	Example of change at one place	Effect of change on another place
River	A dam to hold back water	
Coast	Strong winds increase loss of sand by longshore drift	
Glacier		Higher stream flow from snout

14. Think about the positive and negative effects that both natural processes and human activities can have on a coastline or a river. Choose one and answer the following questions. You may wish to note your answers on a graphic organiser.
    (a) What natural processes are at work?
    (b) What are the positives of these processes?
    (c) What are the negatives of these processes?
    (d) How do people cause ***change***?
    (e) What are the positives of these ***changes***?
    (f) What are the negatives of these ***changes***?
    (g) Are natural processes and human activities compatible?

TOPIC 12
Desert landscapes

12.1 Overview

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

12.1.1 Introduction

Approximately one-third of the Earth's land surface is desert — arid land with little rainfall. These arid regions may be hot or cold. The actions of wind and, sometimes, water shape the rich variety of landscapes found there.

Starter questions

1. Have you ever visited a desert? Where was it? Why did you go?
2. Make a list of the geographical characteristics of desert areas. What is the most common feature of a desert?
3. Find a description of a desert online. Copy the text and use the **Wordle** weblink in the Resources tab to create a Wordle. What is the most common word in your Wordle? Why do you think this is the case?
4. Use the **Sahara** weblink in the Resources tab to watch a video of desert sandstorms.
   (a) Describe the sandstorm you see. Would it be difficult for people to cope with such an event?
   (b) Describe how some animals are adapted to cope with desert sandstorms.
   (c) How do the wind and sand shape the desert?

Arches in a desert landscape, Utah, United States



INQUIRY SEQUENCE

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Watch this eLesson: Desertscapes (eles-1625)

Explore more with these weblinks: Wordle, Sahara

12.2 What is a desert?

12.2.1 Defining a desert

A desert is a hot or cold region with little or no rainfall. Around one-third of the Earth's surface is desert and is home to about 300 million people.

Although they receive little rainfall, most deserts receive some form of precipitation. When it does rain, it is usually during a few heavy storms that last a short time.

TABLE 1 Types of deserts

Rainfall (mm/year)	Type of desert	Examples
< 25	Hyper-arid	Namib; Arabian
25–200	Arid	Mojave
200–500	Semi-arid	Parts of Sonoran Desert

12.2.2 Hot deserts

Most of the world's hot deserts are located between the Tropic of Cancer and the Tropic of Capricorn (see figure 3 on the next page). They have very hot summers and warm winters. Temperature extremes are common, because cloud cover is rare and humidity is very low; this means there is nothing to block the heat of the sun during the day, or prevent its loss at night. Temperatures can range between around 45 °C and –15 °C in a 24-hour period.

FIGURE 1 The Sahara, an example of a hot desert.



12.2.3 Cold deserts

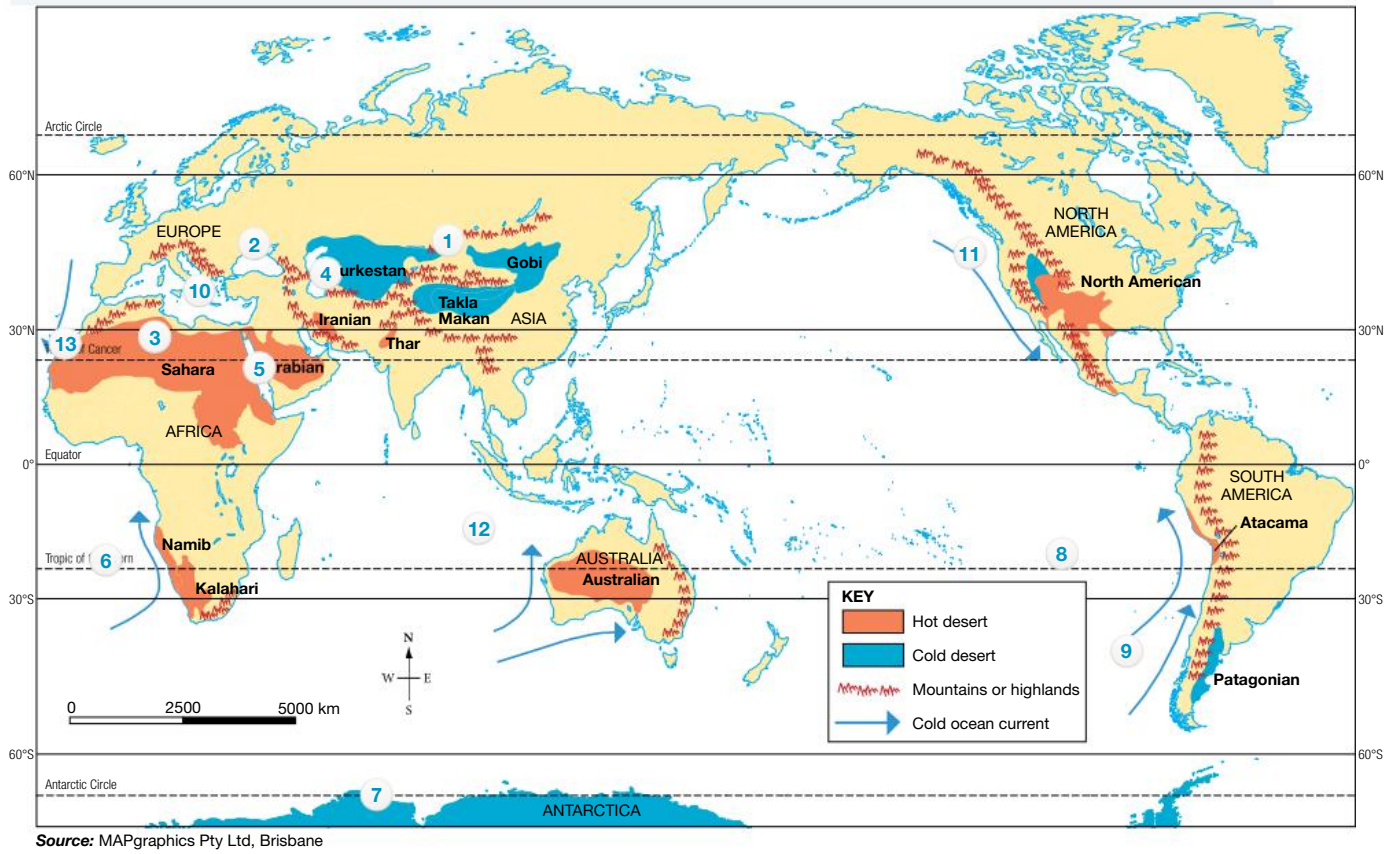
Cold deserts lie on high ground generally north of the Tropic of Cancer and south of the Tropic of Capricorn (see figure 3 on the next page). They include the polar deserts. Any precipitation falls as snow. Winters are very cold and often windy; summers are dry and cool to mild.

FIGURE 2 The Gobi, an example of a cold desert.



12.2.4 Deserts of the world

FIGURE 3 The distribution of the world's deserts.



Source: MAPgraphics Pty Ltd, Brisbane

1. **Gobi Desert:** Asia's biggest desert, the Gobi, is a cold desert. It sits some 900 metres above sea level and covers an area of some 1.2 million square kilometres. Its winters can be freezing.
2. **Turkestan Desert:** The cold Turkestan Desert covers parts of south-western Russia and the Middle East.
3. **Arabian Desert:** This hot desert is as big as the deserts of Australia. Towards its south is a place called Rub al-Khali (meaning 'empty quarter'), which has the largest area of unbroken sand dunes, or erg, in the world.
4. **Takla Makan Desert:** The Takla Makan Desert is a cold desert in western China. Its name means 'place of no return'. The explorer Marco Polo crossed it some 800 years ago.
5. **Thar Desert:** The Thar Desert is a hot desert covering north-western parts of India and Pakistan. Small villages of around 20 houses dot the landscape.
6. **Kalahari and Namib deserts:** The Namib Desert extends for 1200 kilometres down the coast of Angola, Namibia and South Africa. It seldom rains there, but an early-morning fog often streams across the desert from the ocean. The dew it leaves behind provides moisture for plants and animals. It joins the Kalahari Desert, which is about 1200 metres above sea level.
7. **Antarctic Desert:** The world's biggest and driest desert, the continent of Antarctica, is another cold desert. Only snow falls there, equal to about 50 millimetres of rain per year.
8. **Atacama Desert:** The Atacama Desert is the driest hot desert in the world. Its annual average rainfall is a tiny 0.1 millimetre.
9. **Patagonian Desert:** The summer temperature of this cold desert rarely rises above 12 °C. In winter, it is likely to be well below zero, with freezing winds and snowfalls.
10. **Iranian Desert:** Two large deserts extend over much of central Iran. The Dasht-i-Lut is covered with sand and rock, and the Dasht-i-Kavir, mainly in salt. Both have virtually no human populations.
11. **North American deserts:** The desert region in North America is made up of the Mojave, Sonoran and Chihuahuan deserts (all hot deserts) and the Great Basin (a cold desert). The Great Basin's deepest depression, Death Valley, is the lowest point in North America.
12. **Australian deserts:** After Antarctica, Australia is the driest continent in the world. Its deserts are generally flat lands, often vibrant in colour.
13. **Sahara Desert:** The largest hot desert in the world, the Sahara stretches some nine million square kilometres across northern Africa over 12 countries. Only a small part is sandy. It is the sunniest place in the world.

12.2 Activities

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

Remember

1. What climate conditions are needed for hot and cold deserts to form?
2. Where is the sunniest ***place*** in the world?
3. Name three deserts in the Asia–Pacific region.

Explain

4. Describe key differences between hot and cold deserts.

Discover

5. Look carefully at the map in figure 3, and read the text.
   (a) Which continent has the largest area of hot desert?
   (b) Which continent has the largest area of cold desert?
   (c) What is the largest hot desert in the world?
   (d) What is the largest hot desert in the Asia–Pacific region?
   (e) Which is the driest continent in the world?
   (f) Which continent contains the driest hot desert?
   (g) Which North American desert contains the lowest land on the continent?

Think

6. Use the information in this subtopic to design a quiz of 10 questions entitled 'Deserts of the world'. Test your friends and family.
7. Draw up and complete a table like the one below to show your understanding of the locations and features of desert ***environments***. Look for photos on the internet.

Name of desert	Mountain range	Continent	Ocean current	Photos

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Try out this interactivity: Great deserts of the world (int-3106)

12.3 SkillBuilder: Using latitude and longitude

online only

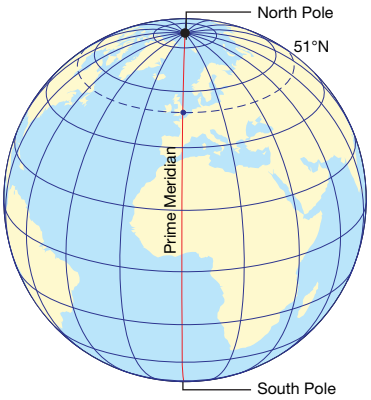
WHAT ARE LATITUDE AND LONGITUDE?

Latitude and longitude are imaginary grid lines encircling the Earth. The lines that run parallel to the equator are called **parallels of latitude** and are measured in degrees. Lines of longitude run from north to south from the North Pole to the South Pole. These are called **meridians of longitude** and are also measured in degrees. Lines of latitude and longitude are drawn on maps to help us locate places.

Go online to access:

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

FIGURE 1 Lines of latitude and longitude help us locate places on the Earth's surface.



learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Using latitude and longitude (eles-1652)

Try out this interactivity: Using latitude and longitude (int-3148)

12.4 What type of climate forms deserts?

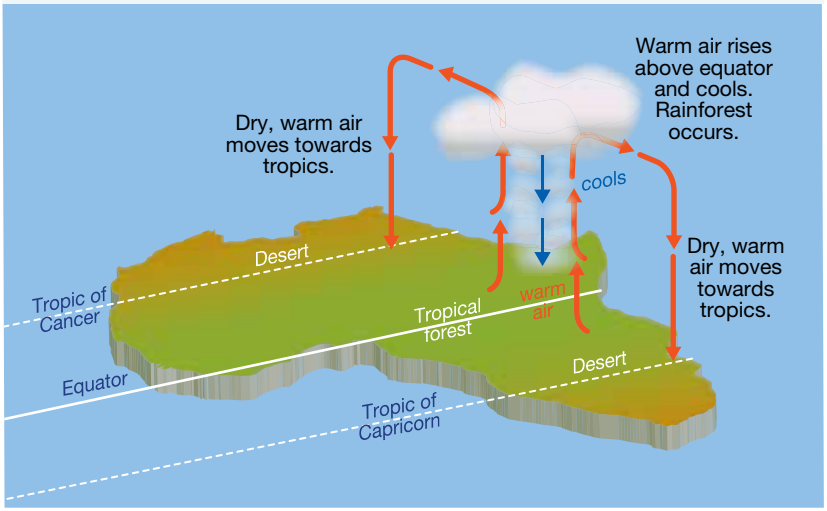
12.4.1 The subtropics

Deserts form in many different parts of the globe: the subtropics; continental interior areas at middle latitudes; on the leeward side of mountain ranges; along coastal areas; and in the polar regions. The only common factor is their low rainfall — but why do these areas experience low rainfall?

Most of the world's greatest deserts are found in the subtropics near the Tropics of Cancer and Capricorn.

Because of the way the Earth rotates around the sun, areas around the equator receive more direct sunlight than anywhere else on Earth. This means the air there is always very hot. Hot air can hold much more moisture than cold air, so the **humidity** in these areas is always very high. (If you have ever visited

FIGURE 1 The formation of subtropical deserts in Africa.



or live near a tropical rainforest or northern Australia, you will have experienced this hot humidity.) Hot air also rises. As the air heads upwards into the atmosphere above the equator, it drifts away, heading north and south.

The higher the air gets, the cooler it becomes. Cool air can't hold as much moisture, so it releases it as rain. Areas around the equator and to the immediate north and south of it (the tropics) receive frequent heavy downpours (see figure 1 on previous page).

FIGURE 2 The Sahara Desert of northern Africa is the world's largest and can experience temperatures as high as 57 °C.



With its moisture gone, the cool, dry air continues moving north and south away from the equator until it meets zones of high air pressure around the tropics. Here, it is forced downwards. The more the dry air descends, the warmer it gets. This means it can hold more moisture and it is likely to absorb any moisture that already exists in this environment. It is like using a sponge to wipe up some water on the kitchen bench; a dry sponge will absorb more of the spill than a wet sponge. This is how the subtropical deserts form.

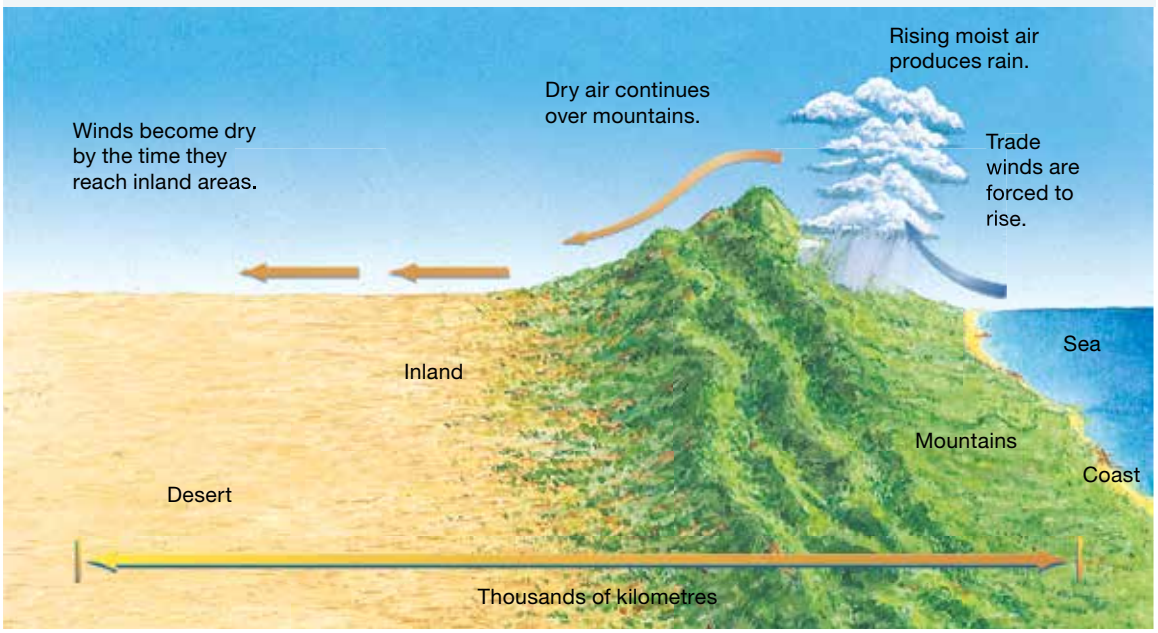
Temperatures in these deserts are usually high all year round. In summer the heat is extreme, with daytime temperatures often going above 38 °C and sometimes as high as 49 °C. At night — with no clouds to provide insulation — temperatures drop quickly to an average of 21 °C in summer and sometimes below freezing during winter.

12.4.2 Rain-shadow deserts

Rain shadows form on the leeward side of a mountain range (opposite the windward side that faces rain-bearing winds). Deserts commonly form in rain shadows.

- Moist air blowing in from the ocean is forced to rise up when it hits a range of mountains. This cools it down. As cool air cannot hold as much moisture, it releases it as precipitation (see figure 3).

FIGURE 3 The formation of rain-shadow deserts.



- By the time the air moves over the top of the range and down the other side, it is likely to have lost most, if not all, of its moisture. It will therefore be fairly dry.
- The more the air descends on the other side of the range, the more it warms up. Hence, it can hold more moisture. So, as well as not bringing any rain to the land, the air absorbs what little moisture the land contains.
- In time, as this pattern continues, the country in the rain shadow of the mountain range is likely to become arid.

An example of this is the Great Dividing Range in Australia; cool moist air produces winds on the eastern side of these mountains and desert to the west. The Mojave Desert in the south-western United States is located on the leeward side of the Sierra Nevada mountain range (figure 4).

FIGURE 4 The Mojave Desert, United States



12.4.3 Coastal deserts

Currents in the oceans are both warm and cold, and are always moving. Cold currents begin in polar and temperate waters (with moderate temperatures), and drift towards the equator. They flow in a clockwise pattern in the northern hemisphere, and in an anticlockwise pattern in the southern hemisphere. As they move, they cool the air above them (see figure 5).

If cold currents flow close to a coast, they can contribute to the creation of a desert. This occurs because cold ocean currents cause the air over the coast to become stable, which stops cloud formation. If the cool air the currents create blows in over warm land, the air warms up; it can then hold more moisture. It is therefore not likely to release any moisture it contains unless it is forced up by a mountain range. Large coastal deserts, including the Atacama Desert in Chile (figure 6) and the Namib Desert in Namibia (figure 7 on the next page), are formed in this way.

FIGURE 5 The formation of coastal deserts.

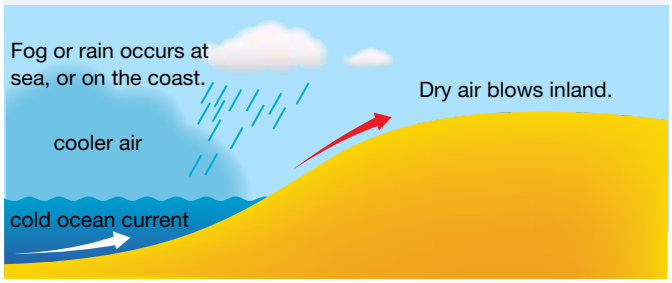


FIGURE 6 The Atacama Desert is a coastal desert in northern Chile in South America and is the driest desert in the world. It is located on the leeward side of the Chilean Coast Range. In some areas, only around one millimetre of rain falls every 5–20 years.



12.4.4 Inland deserts

Some deserts form because they are so far inland that they are beyond the range of any rainfall. By the time winds reach these dry centres, they have dumped any rain they were carrying or have become so warm they cannot release any moisture they still hold. The air that enters such areas is usually extremely dry and the skies are cloudless for most of the year. Summer daytime temperatures can rise as high as those of subtropical deserts. In winter, however, temperatures are much lower. Average daily temperatures below freezing are common during winter.

Examples of inland deserts are the central deserts of Australia (see figure 8 on the next page), the Thar Desert in north-west India and the vast Gobi and Takla Makan deserts of Central Asia.

FIGURE 7 The coastal Namib Desert



FIGURE 8 The Simpson Desert in central Australia



12.4.5 Polar deserts

Polar deserts are areas with a precipitation rate of less than 250 millimetres per year and an average temperature lower than 10 °C during the warmest month of the year. Polar deserts cover almost five million square kilometres of our planet and consist mostly of rock or gravel plains. Snow dunes may be present in areas where precipitation occurs. Temperatures in polar deserts often alternate between freezing and thawing, a process that can create patterned textures on the ground as much as five metres across.

FIGURE 9 Although covered in frozen water, Antarctica receives little rain and is therefore classified as a desert.



12.4.6 Desert climate

Temperature

One geographical characteristic of many deserts is the high temperature, which quickly evaporates any water that might be around. The Earth's highest recorded temperature — 56.7 °C — occurred at Greenland Ranch in Death Valley, California, United States on 10 July 1913.

During the summer of 1923–24, the semi-arid town of Marble Bar in Western Australia (average rainfall 361 mm per year) experienced temperatures of more than 37.8 °C for 160 days in a row, from 31 October 1923 to 7 April 1924. This set an Australian temperature record, and possibly a world record. During that summer the temperature at Marble Bar peaked at 47.5 °C on 18 January 1924.

Rainfall

Although low rainfall is a characteristic of deserts, rain does fall and violent storms can sometimes occur. A record 44 millimetres of rain once fell within three hours in the Sahara. Large Saharan storms may deliver up to one millimetre of rain per minute. Normally dry stream channels, called arroyos or wadis, can quickly fill after heavy rains, and flash floods make these channels dangerous.

Monthly data for rainfall and temperature can be used to create climographs for other desert locations such as Khormaksar in Yemen and Alice Springs in Australia (see table 1 on the next page).

FIGURE 10 Temperature and rainfall data can be displayed clearly in a climograph, such as this one for Yuma, Arizona.

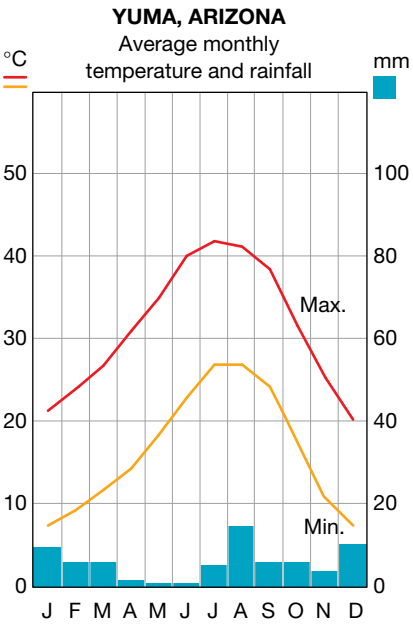


TABLE 1 Climate data for (a) Khormaksar, Yemen, and (b) Alice Springs, Australia

(a) Khormaksar, Yemen

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Average temperature (°C)	25.0	25.5	27.0	28.5	30.5	33.0	32.0	32.0	32.0	28.5	26.5	25.5	
Average rainfall (mm)	5.0	0.0	5.0	0.0	0.0	0.0	5.0	3.0	0.0	0.0	0.0	5.0	23.0

(b) Alice Springs, Australia

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Average temperature (°C)	28.5	27.7	24.8	20.0	15.4	12.4	11.5	14.3	18.3	22.8	25.8	27.7	
Average rainfall (mm)	40.5	41.5	34.7	16.6	17.0	16.7	12.1	10.0	9.0	20.0	25.3	37.2	280.6

12.4 Activities

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

Remember

1. Decide whether the following statements are true or false. Rewrite the false statements to make them true.
   (a) The cooler the air, the more moisture it can hold.
   (b) Rain shadows often contain dry areas of land.
   (c) Cold ocean currents cool the air above them.
   (d) Deserts do not form along coastlines.

Explain

2. Use figure 1 to explain why deserts form around areas near the tropics but not at the equator. Alternatively, form small groups and create a short drama performance to explain the process.
3. Use figure 3 and any other information in this subtopic to write a paragraph explaining why deserts tend to form in rain shadows. Alternatively, form small groups and create a short drama performance to explain the process.
4. Why do temperatures in deserts drop so much at night after being so high during the day?

Discover

5. Use the **Desert rain** weblink in the Resources tab to watch a video about desert rain, and then answer the following questions.
   (a) What is a flash flood?
   (b) What happens to water as it flows over sand? Think of what happens to water at the beach.
   (c) How do animals and plants respond to these rare water events?
   (d) Describe how the landscape quickly ***changes*** once there is water in the desert.

Think

6. Draw a diagram to explain how cold ocean currents influence the formation of a desert ***environment*** along the Western Australian coastline.
7. Use table 1 to draw climate graphs for Khormaksar, Yemen, and Alice Springs, Australia.

learnON RESOURCES — ONLINE ONLY

Explore more with this weblink: Desert rain

Try out this interactivity: How to make a desert (int-3107)

12.5 What are the processes that shape desert landforms?

12.5.1 Shaping the desert

Although most people imagine a sea of sand when they think of deserts, sand covers only about 20 per cent of the world's deserts. Sand is the end product of millions of years of erosion of other landforms such as rock and plateaus that, over time, are worn away by extremes of temperature, wind and water.

The landforms and patterns of a desert are created by a number of natural processes. The unprotected land surfaces are prone to erosion. After heavy rain, often a long distance from the desert flood plains, erosion of ancient river channels can be major. Extreme temperatures, along with strong winds and the rushing water that can follow a desert rainstorm, cause rocks to crack and break down into smaller fragments. This process is called weathering.

Erosional landforms

The process of erosion removes material such as weathered rock. Most erosion in deserts is caused by wind and, at times, running water. During heavy rainfall, water carves channels in the ground. Fast-flowing water can carry rocks and sand, which help to scour the sides of the channel. As vegetation is usually sparse or non-existent, there are few roots to hold the soil together. Eventually, deep gullies called wadis can form.

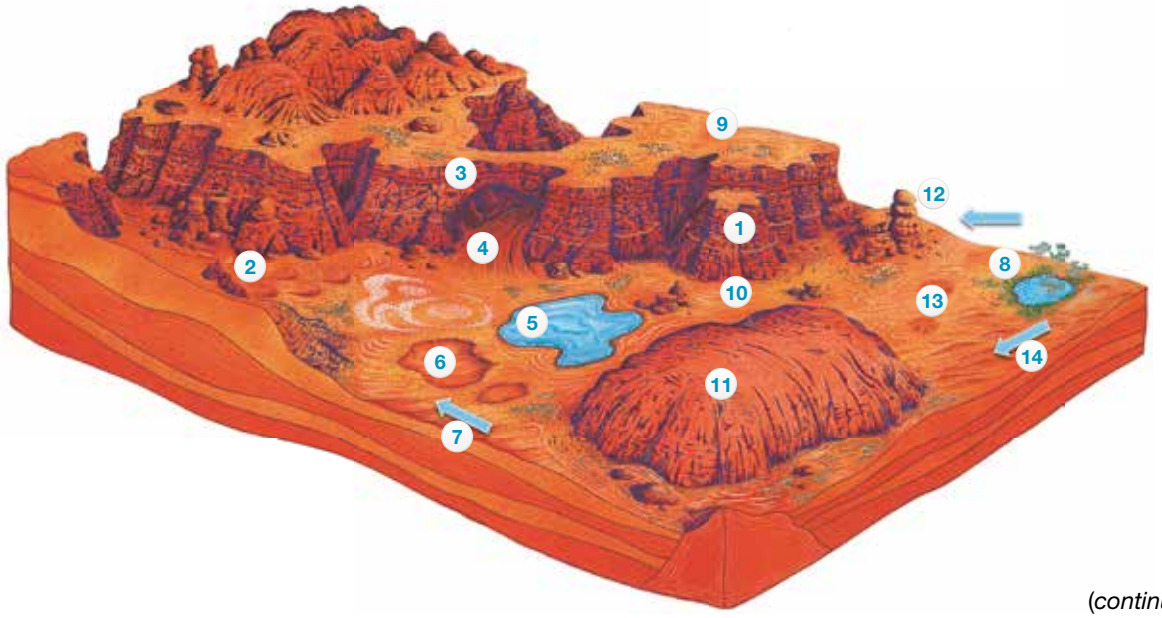
Erosion can also result from the action of wind and from chemical reactions. Some rock types, such as limestone, contain compounds that react with rainwater and then dissolve in it. Wind is a very important agent of transport and deposition, and can change the shape of land by abrasion — the wearing down of surfaces by the grinding and sandblasting action of windborne particles.

Depositional landforms

Materials carried along by rushing water and wind must eventually be put down. Over time these materials build up, forming different shapes and patterns in the desert. This process is called deposition.

Depositional landforms in deserts include alluvial fans, playas, saltpans and various types of sand dunes (see figure 1 below).

FIGURE 1 Desert landforms



(*continued*)

FIGURE 1 continued

1. A butte is the remaining solid core of what was once a mesa. It often is shaped like a castle or a tower.
2. Crescent-shaped barchan dunes are produced when sand cover is fairly light.
3. An arch, or window, is an opening in a rocky wall that has been carved out over millions of years by erosion.
4. An alluvial fan is the semicircular build-up of material that collects at the base of slopes and at the end of wadis after being deposited there by water and wind.
5. A playa lake may cover a wide area, but it is never deep. Most water in it evaporates, leaving a layer of salt on the surface. These salt-covered stretches are called saltpans.
6. Clay pans are low-lying sections of ground that may remain wet and muddy for some time.
7. The rippled surface on transverse dunes is the result of a gentle breeze blowing in the one direction.
8. An oasis is a fertile spot in a desert. It receives water from underground supplies.
9. A mesa is a plateau-like section of higher land with a flat top and steep sides. The flat surface was once the ground level, before weathering and erosion took their toll.
10. Sand dunes often start as small mounds of sand that collect around an object such as a rock. As they grow larger, they are moved and shaped by wind.
11. An inselberg is a solid rock formation that was once below ground level. As the softer land around it erodes, it becomes more and more prominent. Uluru is an inselberg.
12. A chimney rock is the pillar-like remains of a butte.
13. Star dunes are produced by wind gusts that swirl in from all directions.
14. Strong winds blowing in one direction form longitudinal dunes.

12.5.2 Sand dunes = depositional landforms

Different dune shapes are created by the action of the wind (see figure 2). These include crescent, linear, star, dome and parabolic. The most common are the crescent-shaped dunes that are formed when the wind blows in one direction (figure 3). They are usually wider than they are long and can move very quickly across desert landscapes.

Linear dunes are a series of dunes running parallel to each other. They can vary in length from a few metres to over 100 kilometres. It appears that winds blowing in opposite directions help create these dunes. The Simpson Desert in central Australia has linear dunes (figure 4).

FIGURE 2 The transport and deposition of sand creates and moves dunes.

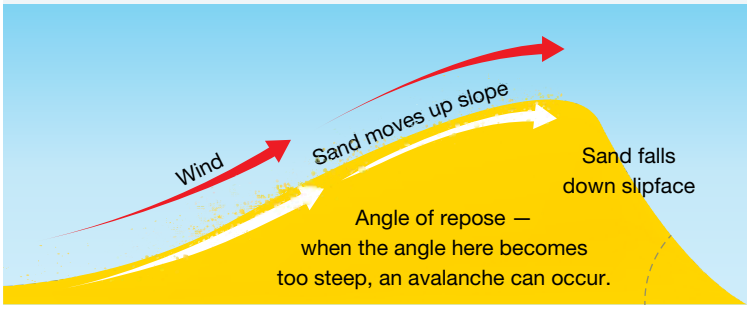


FIGURE 3 A series of crescent dunes.



FIGURE 4 Linear sand dunes in the Simpson Desert, Australia.



Star dunes have 'arms' that radiate from a high central pyramid-shaped mound (figure 5). They form in regions that have winds blowing in many different directions and can become very tall rather than wide — some are up to 500 metres high.

Dome dunes are made up of fine sand without a steep side. These rounded structures tend to be only one or two metres high and are very rare (figure 6).

Parabolic dunes have a U shape and do not get very high (figure 7). They often occur in coastal deserts. The longer section follows the 'head' of the dune (the opposite process to the formation of crescent dunes) because vegetation has anchored them in place. The arms can be long — in one case, measured at 12 kilometres.

FIGURE 5 Star dunes are found in many deserts including the Namib, the Grand Erg Oriental of the Sahara, and the south-east Badain Jaran Desert of China.

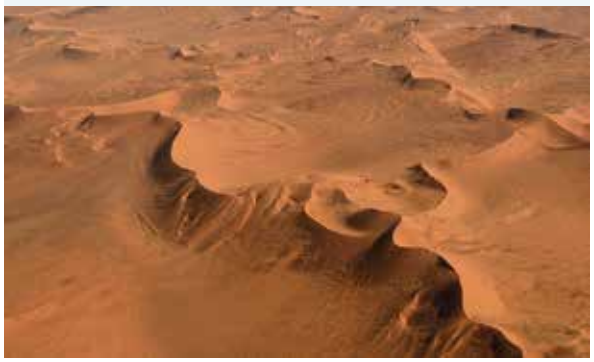
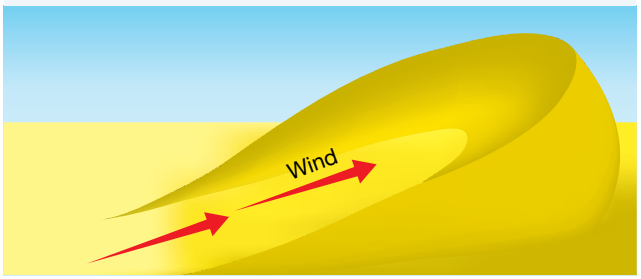


FIGURE 6 A dome dune in the Chihuahuan Desert, North America.



FIGURE 7 Formation of a parabolic dune



12.5.3 Playas and pans = another depositional landform

A desert basin may fill with water after heavy rains to form a shallow lake, but for the majority of the time the often salt-encrusted surface is hard and dry. Such expanses of land are known as playas, saltpans or hardpans. The flat terrains of pans and playas make them excellent race tracks and natural runways for aeroplanes and spacecraft. Ground-vehicle speed records are commonly established on Bonneville Speedway, a race track on the Great Salt Lake hardpan (figure 8). Space shuttles land on Rogers Lake playa at Edwards Air Force Base in California in the western United States.

FIGURE 8 A driver lying in a streamlined racing car, Bonneville Salt Flats, Utah, the United States.



12.5 Activities

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

Remember

1. List the agents of erosion and weathering in a desert. How does each process cause change in a desert?
2. Name two erosional and two depositional landforms in a desert.
3. Name the most common dune shapes that are formed in deserts.

Explain

4. Explain the difference between a mesa and a butte.
5. How does vegetation help to prevent erosion in a desert?
6. What wind conditions are needed to create a:
   (a) star dune
   (b) longitudinal dune
   (c) parallel dune?
7. Why do you think oases are such fertile places?
8. What do chimney rocks and arches have in common?

Discover

9. Locate all the desert ***places*** named in this subtopic. Use Google Maps to create your own map of these locations, and add some interesting facts and images of each location. Email a link to your completed map to your teacher.

Predict

10. Study the landforms labelled 1, 3 and 9 in figure 1. Sketch what each of these may look like in the future as erosion and weathering continue to occur.

Think

11. What do playa lakes and saltpans have in common?
12. Draw up a table like the one below.
    Continue to add the landforms shown in figure 1 to your table. Add examples of other desert landforms that you have found when researching this topic.

Name of landform	Picture of landform	Location	Type of erosion (wind or water)	Type of deposition (wind or water)
Butte				
Mesa				
Inselberg				

13. Work in small groups to create a model of a desert (using plasticine or playdoh, for example) that contains a number of desert forms and patterns. Use figure 1 as a guide. Show your completed model to the other groups, then provide and respond to constructive feedback.

12.6 What are the characteristics of Australia's deserts?

12.6.1 The location of Australia's deserts

Australia is the world's driest inhabited continent. Over 70 per cent of the country receives between 100 and 350 millimetres of rainfall annually, which makes most of Australia arid or semi-arid.

Australia's deserts are subtropical and are located mainly in central and western Australia, making up about 18 per cent of the country (see figure 1). They are hot deserts, which means they are areas of little rainfall and extreme temperatures — rainfall can be less than 250 millimetres per year and temperatures can rise to over 50 °C. The average humidity is between 10 and 20 per cent. The desert terrain is very diverse and can range from red sand dunes to the polished stones of the gibber plains – the term *gibber* comes from an Aboriginal language word for stone.

FIGURE 1 The location and distribution of Australia's deserts.



Source: Spatial Vision

Great Victoria Desert

The Great Victoria Desert, Australia's largest, covers 424 400 square kilometres. It is not a desert of dunes, but has some desert-adapted plants including marble gums, mulga and spinifex grass. Part of this desert has been named a Biosphere Reserve by UNESCO and is one of the largest arid zone biospheres in the world.

Great Sandy Desert

The Great Sandy Desert makes up 3.5 per cent of Australia. The red sands of this desert reach almost to the Western Australia coast, where they join with the white sand of Eighty Mile Beach south of Broome.

Simpson Desert

The Simpson Desert is in one of the driest areas of Australia, with rainfall of less than 125 millimetres per year. It is located near the geographical centre of Australia. Dunes (see figure 2) make up nearly three-quarters of the desert. Long parallel dunes (see figure 4 in subtopic 12.5) form in a north–north-west/south–south-east direction; some can be straight and unbroken for up to 300 kilometres and can be 40 metres high. The space between the dunes can vary from 100 metres to 1000 metres.

FIGURE 2 Sand dunes and vegetation in the Simpson Desert



Strzelecki Desert

This desert is located within three states — far northern South Australia, south-west Queensland and western New South Wales. The dunes support vegetation such as sandhill wattle, needlebush and hard spinifex.

Tanami Desert

Located to the east of the Great Sandy Desert, this desert is mostly characterised by red sand plains with hills and ranges.

Little Sandy Desert

The Little Sandy Desert is located in Western Australia and borders three other deserts. Its landforms are similar to those in the Great Sandy Desert. It includes a vast salt lake called Lake Disappointment.

Sturt Stony Desert

The Sturt Stony Desert, located in north-eastern South Australia, is a harsh gibber desert covered in closely spaced glazed stones (figure 3). These are left behind when the wind blows away the loose sand between the dense covering of pebbles. The desert also contains some dunes and hills that are resistant to weathering.

FIGURE 3 Gibber landscape in the Sturt Stony Desert in South Australia



Tirari Desert

This small desert covers almost 1600 square kilometres and is located in far northern South Australia, east of Lake Eyre. It contains many linear (parallel) dunes and salt lakes. Cooper Creek runs through the centre of the desert, as do many other **intermittent creeks**. Where there is enough water — usually in waterholes — river red gums and coolabah gums will grow. Tall, open shrubland also occurs in some areas.

Gibson Desert

The fifth largest in Australia, the Gibson Desert is located in Western Australia and borders three other deserts. It consists of sand plains and dunes plus some low, rocky ridges. Some small salt-water lakes are also present in the south-western part of the desert.

Pedirka Desert

The Pedirka Desert in South Australia is Australia's smallest desert, located north-east of Oodnadatta. The lines of parallel red dunes run north-east to south-west, and the space between the dunes can be up to one kilometre. Hamilton Creek is located in this desert and its banks are home to river red gums, coolabah, mulga and prickly wattle. Other vegetation includes satiny bluebush, weeping emubush and spiny saltbush. Common grasses include woollybutt, broad-leaf wanderrie, mulga grass and bandicoot grass.

FIGURE 4 Desert between Oodnadatta and William Creek, South Australia



12.6 Activities

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

Remember

1. Name the deserts bordered by:
   (a) the Gibson Desert
   (b) the Little Sandy Desert.
2. What is a gibber desert?
3. What percentage of Australia is arid or semi-arid?

Explain

4. Look at figure 1 showing the distribution of Australia's deserts. Where are they located in terms of the tropics?

Discover

5. Several plants are listed in the descriptions in this subtopic on Australia's deserts. Choose two different plant types (for example, a grass and a tree) and research how they are adapted to desert conditions.
6. Research the characteristics of the Biosphere Reserve declared by UNESCO that is located in the Great Victorian Desert.

Think

7. Use an atlas to find the locations of Brisbane, Geraldton and Exmouth. These ***places*** are located at the same latitude as many of Australia's deserts. Use the **BOM** weblink in the Resources tab to find the average temperature, rainfall and humidity of these ***places***.
   (a) How do these characteristics compare with the temperature, rainfall and humidity in Australia's deserts?
   (b) How can you account for the differences?

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Explore more with this weblink: BOM

12.7 SkillBuilder: Calculating distance using scale

online only

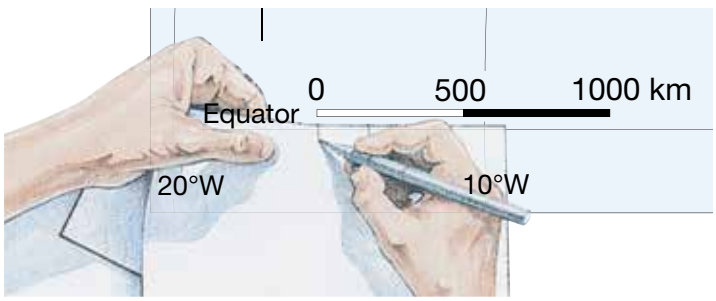
WHAT DOES IT MEAN TO CALCULATE DISTANCE USING SCALE?

Calculating distance using scale involves working out the actual distance from one place to another using a map. The scale on a map allows you to convert distance on a map or photograph to distance in the real world. A linear scale is the easiest to use.

Go online to access:

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

FIGURE 1 Calculating distance using a linear scale on a map



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Watch this eLesson: Calculating distance using scale (eles-1653)

Try out this interactivity: Calculating distance using scale (int-3149)

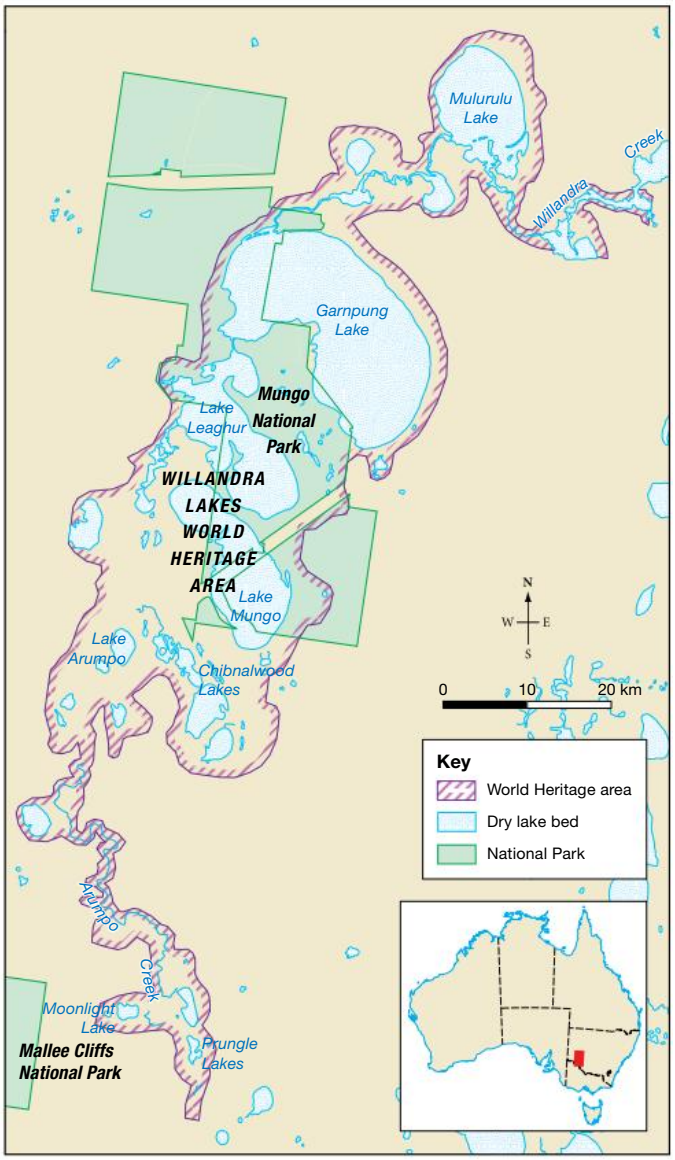
12.8 How did Lake Mungo become dry?

12.8.1 Where are Lake Mungo and the Willandra Lakes located?

Lake Mungo, in Mungo National Park, is just one of 13 ancient dry lake beds in a section of the Willandra Lakes Region World Heritage area in semi-arid New South Wales. There is no water there now, yet the lakes were once full of water and teeming with life, supporting Aboriginal peoples since the beginning of the Dreamings (more than 47 000 years by European estimates) — archaeological records show this continuous human presence. What happened to change this environment into the semi-arid landscape it is today?

The Willandra Lakes are located in far south-western New South Wales and the region is part of the Murray–Darling River Basin. Lake Mungo is 110 kilometres north-east of Mildura, Victoria. The lakes were originally fed by water from Willandra Creek (see figure 1), which was a branch of the Lachlan River. The average rainfall in this area is 325 millimetres per year, making it a semi-arid desert region.

FIGURE 1 Location of the Willandra Lakes, including Lake Mungo



Source: Spatial Vision

12.8.2 How has Lake Mungo changed over time?

40 000 years ago

During the last ice age, huge amounts of water filled the shallow lake. At its fullest, Lake Mungo was 6–8 metres deep and covered 130 square kilometres (more than twice the area of Sydney Harbour). The lakes were rich with life, including water birds, freshwater mussels, yabbies and fish such as golden perch and Murray cod. Giant kangaroos, giant wombats, large emus and the buffalo-sized Zygomaturus

— all now extinct — grazed around the water's edge. Remains of more than 55 species have been found in the area and identified — 40 of these are no longer found in the region, and 11 are extinct.

Aboriginal peoples lived here in large numbers — evidence for this has been found in more than 150 human fossils, including 'Mungo Lady' discovered in 1968 and 'Mungo Man' in 1974, both believed to be over 40 000 years old. The youngest fossil is 150 years old.

FIGURE 2 Traditional owners clean fossilised footprints at Lake Mungo.



30 000–19 000 years ago

A west wind blows across this landscape. During low-water years, red dust and clay were blown across the plains to the eastern side of the lake and they mixed with the sand dunes on the edge of the lake (formed when the lake was full). This began the formation of lunettes (crescent-shaped dunes) on the east side – called 'the Walls of China' in Lake Mungo. Vegetation covered the dunes, protecting them.

19 000 years ago

The lakes were full of deep, relatively fresh water for a period of 30 000 years — with cycles of wet and dry occurring — which came to an end 19 000 years ago when the climate became drier and warmer. Eventually, the water stopped flowing into the lake system and it dried out.

Present day

Today, the lake beds are flat plains covered by low saltbush and bluebush as well as grasses. Grazing cattle and sheep (now no longer allowed in the national park) and rabbits have caused erosion of the lunettes and sand dunes, exposing the human and animal fossils that have since been discovered.

FIGURE 3 The process of erosion while Lake Mungo was full.

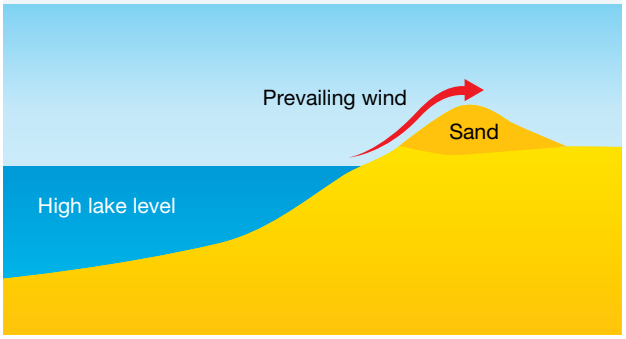


FIGURE 4 The process of erosion while Lake Mungo was drying out.

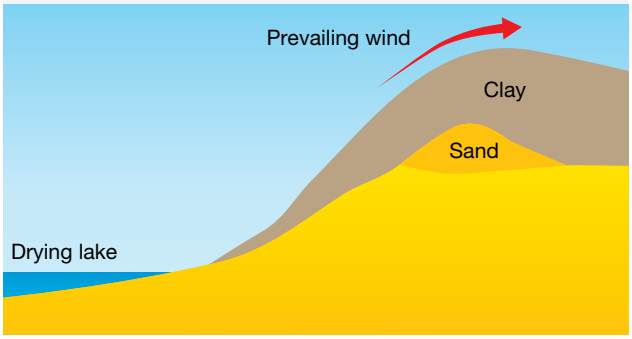


FIGURE 5 The 'Walls of China' at Lake Mungo. The dry lake bed is covered by low bushes and grasses.



12.8.3 World Heritage listing

The Willandra Lakes Region, which includes Lake Mungo, is listed as a World Heritage Area. This region is important because of its archaeology (human skeletons, tools, shell middens and animal bones make up the oldest evidence of burial places in the world) and geomorphology (ancient and undisturbed landforms and sediments).

12.8 Activities

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

Remember

1. What makes Lake Mungo and the Willandra Lakes region a semi-desert?
2. When did Lake Mungo dry up?
3. What is a lunette?

Explain

4. Describe how the lunettes formed over time.
5. Outline the evidence that shows that many Aboriginal peoples lived in this area.
6. What human activity caused the lunettes to erode? What did the erosion unearth?
7. Research what World Heritage listing means in terms of protecting this ***place***. Why is it important?

Discover

8. Work in small groups to create an identification brochure with pictures and facts about these three extinct animals that once lived at Lake Mungo.
   - *Genyornis newtoni* (giant emu)
   - *Protemnodon goliah* (giant short-faced kangaroo)
   - *Zygomaturus trilobus* (Zygomaturus)

Think

9. Use the **Timetoast** weblink in the Resources tab, the information in this subtopic and images you find through online research to create your own colourful digital timeline of these changes that occurred at Lake Mungo.

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Try out this interactivity: Evolving Lake Mungo (int-3108)

Explore more with this weblink: Timetoast

12.9 How do people use deserts?

Access this subtopic at **www.jacplus.com.au**

online only

12.10 Is Antarctica a desert?

12.10.1 Some facts about Antarctica

Like hot deserts, polar deserts are areas with annual precipitation of less than 250 millimetres, but they have a mean temperature during the warmest month of less than 10 °C. Polar deserts are found in both the Arctic and Antarctic regions of the world. Not only is Antarctica a desert — it is also the driest, coldest and windiest continent on Earth.

Australia is the driest inhabited continent on Earth. However, Antarctica is even drier. Much of Australia's interior receives less than 250 millimetres of precipitation per year. The interior of Antarctica receives less than 50 millimetres. The coastal areas receive the highest levels of precipitation, but this is still only about 200 millimetres.

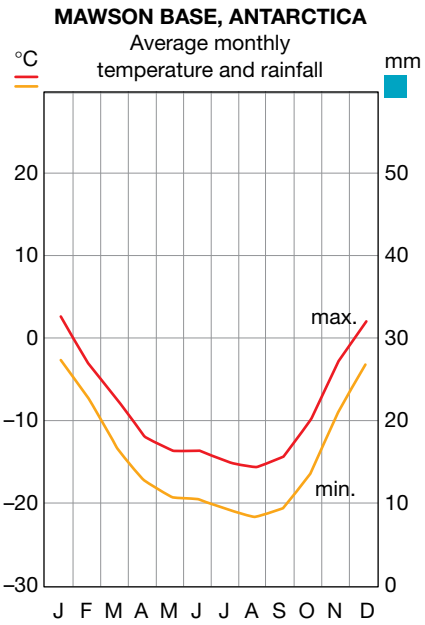
Most of Antarctica is too cold for rainfall; the majority of the precipitation falls as snow. Some valleys in Antarctica have received no rain for two million years. It also snows very little in Antarctica, particularly in the interior.

In places, the ice sheet in Antarctica is 4.8 kilometres deep (see figure 1). Most of the ice that covers the continent has been there for thousands of years. In winter, as the surrounding oceans freeze, the area of Antarctica is almost double that in summer.

How dry is dry?

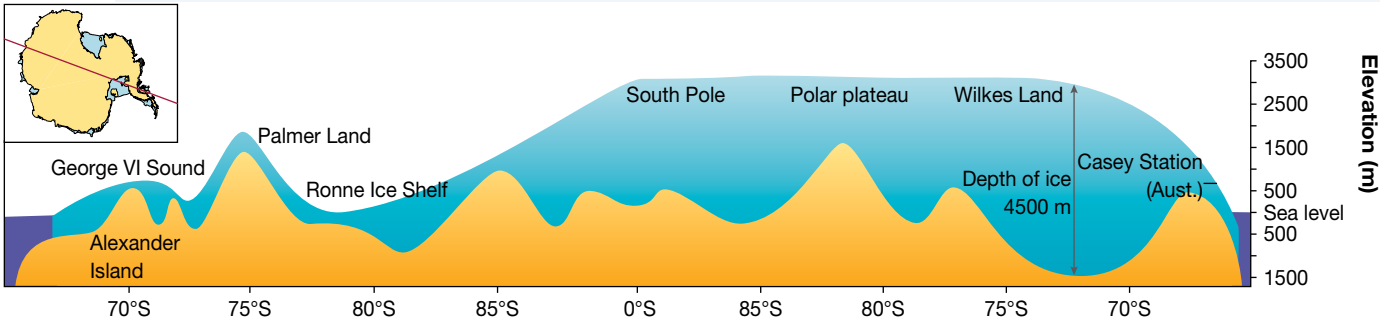
Covered in ice, Antarctica may seem like the wettest place in the world, but it's actually drier than the Sahara Desert. Despite this, Antarctica's ice holds 70 per cent of the world's fresh water supply.

FIGURE 2 A climograph for Mawson Base, Antarctica



Note: Precipitation = zero

FIGURE 1 This cross-section, which shows the mountains below the ice, passes through some of the thickest parts of the Antarctic ice sheet.



Most places in Antarctica receive no rain or snow at all. Very cold air does not have the capacity to hold enough water to create rain or snow. This means that Antarctica is the world's biggest desert. All drinking water in Antarctica is obtained by melting the ice. Unlike in hot deserts, there is little evaporation from Antarctica, so the relatively small amount of snow that does fall doesn't disappear. Instead it builds up over hundreds and thousands of years into enormously thick ice sheets.

How cold is cold?

On 29 July 1983, Russian scientists at Vostok Base, high on Antarctica's polar plateau, recorded a temperature of –89.2 °C, the lowest on record. During the coldest months (July to August), the average temperature at the South Pole is –60 °C. During the warmest months (December to January), it rises to –28 °C.

Why is Antarctica so cold?

There are three main reasons:

1. Antarctica's position on the globe means that the sun's rays strike the Earth's surface at a low angle, and therefore have a much larger area to heat than at other places on the planet.
2. Most of the sun's heat that does reach Antarctica is reflected back into space by the white ice that covers the continent. This also explains why you must always wear sunglasses or goggles in Antarctica.
3. Antarctica is surrounded by the cold waters of the Southern Ocean.

How windy is windy?

Australia's greatest polar explorer, Douglas Mawson, called Antarctica 'the home of the blizzard'. He should know. He lived in a wooden hut for two complete Antarctic winters, in the strongest winds ever recorded. Mawson's measurements revealed an average wind speed of over 70 kilometres per hour and gusts of over 300 kilometres per hour! The men in his expedition team always carried an ice axe with them to avoid being blown into the sea.

FIGURE 3 Sastrugi lie in the direction of the prevailing wind. They are as hard as rock.



Why is Antarctica so windy?

As the air over the polar plateau becomes colder, it becomes more dense. Finally gravity pulls it down off the plateau towards the Antarctic coast. This creates very strong winds, called **katabatic winds**, which can blow continually for weeks on end and carry small pellets of ice. These winds combined with the severe cold can be fatal; at –20 °C, exposed human flesh begins to freeze when the wind reaches only 14 kilometres per hour.

Katabatic winds also cause **blizzards**, which sweep up loose snow and blow it about ferociously. Such blizzards were the cause of death among many early Antarctic explorers.

The winds also shape the landscape, carving it into irregular shapes called **sastrugi** (see figure 3). These shapes range in height from 150 millimetres to two metres. Travelling across sastrugi is extremely difficult.

12.10 Activities

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

Remember

1. List three facts about Antarctica that you found the most surprising.
2. Why does Antarctica double in area every winter?
3. What is the coldest temperature ever recorded in Antarctica, and in which ***place*** did this occur?

Explain

4. Antarctica is sometimes described as the world's biggest desert. Why?
5. Describe and explain why Antarctica is so dry, cold and windy.
6. Examine the photograph in figure 3 and describe how this landscape has been formed. How does this ***environment*** pose a risk to people?

Discover

7. Use the **Antarctic weather** and **BOM** weblinks in the Resources tab to describe the weather conditions now at the South Pole. Compare these to the conditions where you live.
8. Use an atlas to measure the distance from Antarctica (coastline) to South America, Australia and South Africa.

Predict

9. What might happen to Antarctica if the ice shelves on top of the mountains were to melt? What ***changes*** might happen to sea levels around the world? Work with a partner to construct a concept map to record all your ideas.

Think

10. Use the information in table 1 below to draw a climograph of McMurdo Station. How does it compare to Mawson Base (see figure 2)? Find climate data for the ***place*** where you live and draw another climograph for that location. Compare this to the two Antarctic climographs. Outline the similarities and differences and provide reasons for these.

TABLE 1 Climate data for the American McMurdo station in Antarctica: latitude 77.88°S, longitude 166.73°E

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average daily temperature (°C)	–2.9	–9.5	–18.2	–20.7	–21.7	–23.0	–25.7	–26.1	–24.6	–18.9	–9.7	–3.4	Mean –16.9
Mean monthly rainfall (mm)	15	21.2	24.1	18.4	23.7	24.9	15.6	11.3	11.8	9.7	9.5	15.7	Total 202.5

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Explore more with these weblinks: Antarctic weather, BOM

12.11 How do people use Antarctica?

12.11.1 Introduction

Antarctica and the seas that surround it contain valuable resources. Antarctica is also the temporary home of more than 4000 people in summer and 1000 in winter. Most are scientists and support staff. These people work in more than 66 research stations representing 30 different nations.

FIGURE 1 Esperanza, a permanent, all-year round Argentinian research base, Graham Land, Antarctica.



12.11.2 Mining

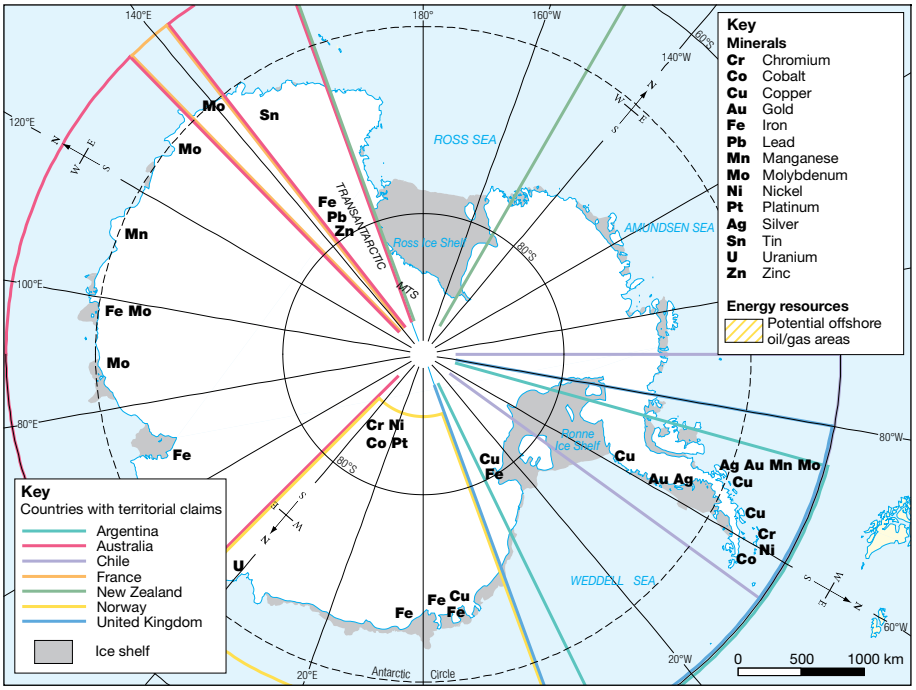
There are great difficulties in looking for mineral deposits in rocks that lie beneath thousands of metres of ice. Therefore, most exploration has taken place in the ice-free areas of Antarctica. Scientists now believe there are deposits of many valuable minerals in Antarctica, including coal, iron ore, copper, lead and uranium, and traces of minerals such as gold and zinc. There are also mineral beds lying under the continent's Transantarctic Mountains, and large areas that may contain deposits of oil and gas (see figure 2).

Despite the presence of these valuable minerals, there are no operating mines in Antarctica. Given the conditions — the extreme cold, the rough seas and the wind — mining operations would be very difficult and potentially dangerous to the environment. Mining (other than for scientific purposes) is banned under the Antarctic Treaty. This is to prevent the possibility of polluting the environment (for example, through an oil spill or by digging a quarry).

The Antarctic Treaty

By the mid-1950s, Australia, New Zealand, the United Kingdom, France and Argentina were actively exploring Antarctica. These countries declared territorial claims over parts of Antarctica while others were fishing, whaling and conducting scientific research and mineral exploration in the region.

FIGURE 2 Potential sources of minerals in Antarctica.



Source: © Geography Teachers' Association of Victoria, Inc.

People began to realise that this unique wilderness needed to be protected. In 1958, 12 countries agreed to preserve Antarctica. This led to an international agreement called the Antarctic Treaty, which came into force in 1961. The **treaty** covers the area south of 60 °S latitude. It has been signed by more than 52 countries who meet regularly to discuss issues affecting Antarctica. The treaty:

- prohibits military activity
- protects the Antarctic environment
- fosters scientific research
- recognises the need to protect Antarctica from uncontrolled destruction and interference by people.

12.11.3 Tourism

The number of tourists to Antarctica has increased significantly since the mid-1990s, with a peak of more than 45 000 in 2007–2008. However, more people will attend one game of AFL football in Melbourne than will visit Antarctica in one year. Given the scale (size) of Antarctica, tourist numbers are therefore still small.

Most tourists go to Antarctica on board cruise ships. There are opportunities for people to land on the ice. This often requires use of a Zodiac inflatable boat between ship and shore. There are no tourist facilities on Antarctica — people must return to the ships, for example, to sleep, eat and shower.

Sightseeing is the main activity for tourists. Other activities include kayaking, visiting research stations, walking and snowboarding. Other types of tourism include flights over the continent and flights that include landing on the ice.

Tourism can create problems, such as pollution from oil spills and disturbance to animal colonies. Therefore, the International Association of Antarctica Tour Operators has set up rules to control tourism. For example, no more than 100 passengers from a cruise ship may be landed at a location in Antarctica at any one time.

TABLE 1 Tourists to Antarctica

Year	Tourist numbers	Year	Tourist numbers
1996–97	7330	2006–07	29 823
1997–98	9604	2007–08	46 069
1998–99	10 013	2008–09	37 858
1999–2000	14 762	2009–10	36 975
2000–01	12 248	2010–11	33 824
2001–02	11 588	2011–12	26 509
2002–03	13 571	2012–13	34 354
2003–04	27 537	2013–14	37 405
2004–05	27 950	2014–15	36 702
2005–06	29 823		

Source: International Association of Antarctica Tour Operators

Bases on ice

Most of Antarctica's scientific bases are located on the coast so people and supplies can be brought in by boat or air (see figure 3). They are also situated on the two per cent of Antarctica not covered in ice, as bases built on ice tend to sink under their own weight. This is because the heat they generate can melt ice around and beneath them.

Some bases are inland. There is even a permanent scientific base at the South Pole: the American Amundsen–Scott Base. Australia operates three permanent bases in Antarctica — Casey, Mawson and Davis stations — plus one on Macquarie Island and five temporary summer bases.

In January 2008 an air link between Australia and Antarctica was officially opened. The Wilkins runway is a four-kilometre-long airstrip about 70 kilometres from Casey Station. Scientists can now get to Antarctica in a few hours from Australia rather than a few weeks on a ship. They can study the world's weather, climate, marine and land biology, glaciers, magnetics, geology and the ozone layer, as well as human physiology. Ice cores can provide a record of climate change over a long period of time.

FIGURE 3 Davis is the most southerly Australian Antarctic station.



12.11 Activities

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

Remember

1. List three ways in which the stations might have an impact on the Antarctic ***environment***.
2. Why is there no mining in Antarctica? What problems would there be in extracting and transporting minerals from Antarctica?

Explain

3. Suggest the ideal location for a scientific base in Antarctica.
4. Why don't tourists visit Antarctica during winter?

Discover

5. Working in groups of four, use the **Life in Antarctica** weblink in the Resources tab to investigate life at the Australian Antarctic stations. Choose one station.
   (a) What facilities are there at the station?
   (b) Describe the work activities that take place.
   (c) What do you think it is like to live there?
6. Use a spreadsheet program to draw a line graph using the tourism data in table 1. Describe how the numbers have ***changed*** over time and provide one possible explanation for the drop in numbers since 2008.

Predict

7. Use the **Antarctic article** and **Biosecurity fears** weblinks in the Resources tab to find out more about how foreign seeds are invading Antarctica. Write a list of rules for a company that would remove this risk.

Think

8. Do you think countries should be able to own pieces of Antarctica? Write a two-minute speech outlining the reasons for your point of view. Debate this topic as a class.
9. Would you like to visit Antarctica? Why? Discuss as a class, listening carefully to the opinions of others.

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Explore more with these weblinks: Life in Antarctica, Antarctic article, Biosecurity fears

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.
› **Antarctica: human features**

12.12 Review

online only

12.12.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

12.12.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

12.3 SkillBuilder: Using latitude and longitude

12.3.1 Tell me

What are latitude and longitude?

Latitude and longitude are imaginary grid lines encircling the Earth. They can be drawn over a map to help us locate a place.

The lines that run parallel to the equator are called **parallels of latitude**. Each line is measured in degrees north (N) and south (S) of the equator (0°). The equator divides the Earth into two parts—the northern hemisphere and the southern hemisphere. The latitude at the North Pole is 90°N, and the latitude at the South Pole is 90°S. All places have a latitude reading somewhere between 0° and 90°N, or 0° and 90°S.

Lines of longitude run from north to south from the North Pole to the South Pole. These are called **meridians of longitude** and are also measured in degrees. The Prime (or Greenwich) Meridian (0°) runs through Greenwich Observatory near London, England. Places are either east (E) or west (W) of this line. All places have a longitude reading somewhere between 0° and 180°E, or 0° and 180°W.

FIGURE 1 The parallels of latitude

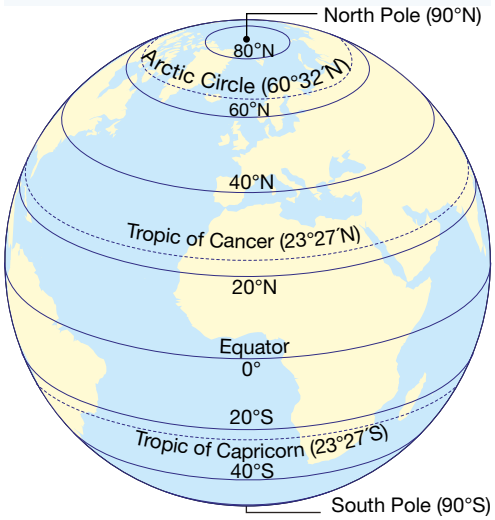
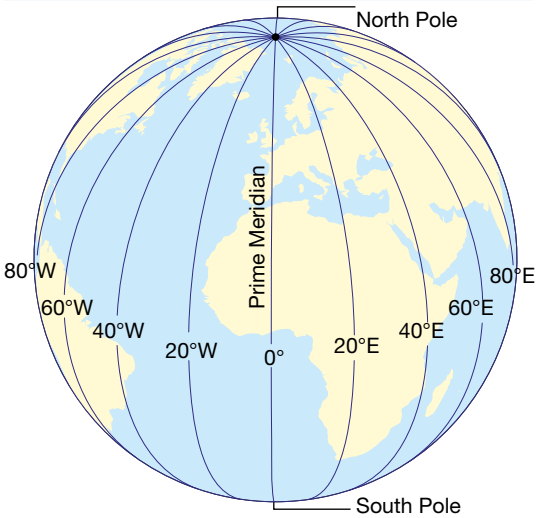


FIGURE 2 The meridians of longitude



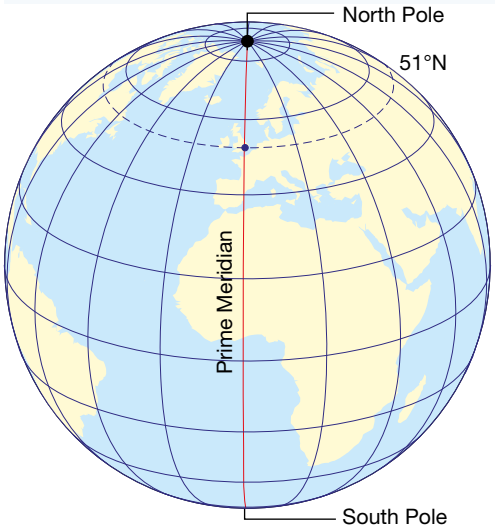
Why are latitude and longitude useful?

Latitude and longitude are used to give the precise location of a place in an atlas, on a globe, or on a map showing a large region. Lines of latitude and longitude form a grid pattern on a map and this makes identifying the location of a place easy. For example, Philadelphia in the United States can be found at 40°N 75°W. A gazetteer index lists latitude and longitude readings of all places featured in an atlas.

Latitude and longitude are useful for identifying exact locations when, for example:

- sailing on the open ocean
- flying across vast expanses
- gaining a GPS reading
- viewing Google Earth
- studying maps to plan a touring holiday.

FIGURE 3 Latitude and longitude lines form a grid pattern



Model

FIGURE 4 North and Central America



Source: MAPgraphics Pty Ltd, Brisbane

Philadelphia in the United States is located at 40°00′N 75°10′W. Further east, on the coast, is Boston at 42°20′N 71°05′W. Dallas in the central south of the country is at 32°47′N 96°48′W. On the west coast, Los Angeles is at 34°00′N 118°15′W and San Francisco is at 37°45′N 122°27′W.

Using latitude and longitude accurately involves:

- identifying the precise location of a place
- accurately reading parallels of latitude
- accurately reading meridians of longitude
- writing the reading correctly.

12.3.2 Show me

How to use latitude and longitude

You will need:

- a map with a latitude and longitude grid
- a ruler.

Procedure:

To give the latitude and longitude readings of a location, complete the following steps.

STEP 1

Determine the place for which you want to give a latitude and longitude reading.

STEP 2

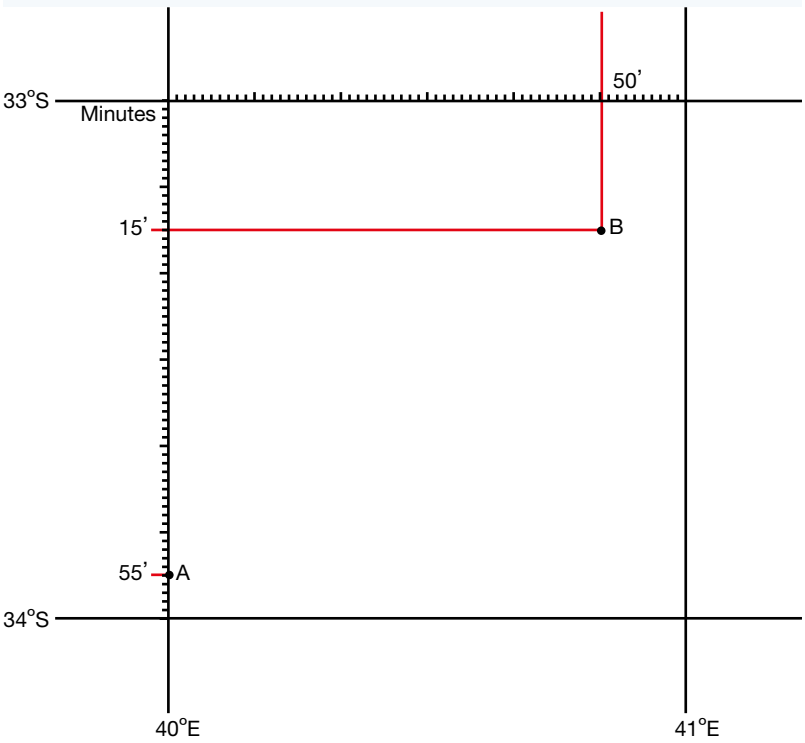
Begin with the parallels of latitude. Determine the degrees on the line closest to the location. For example, in figure 4 Philadelphia is at 40°N—it is exactly on the line of latitude and north of the equator. The equator (0°) is not shown in figure 4 but can be assumed to be off the bottom of the map, given the latitude readings on the right-hand side of the map. Not all parallels of latitude are drawn on a map and so you will often have to work out what the closest line of latitude is. In figure 4, Dallas is at 33°N.

You may have noticed in figure 4 that an additional parallel of latitude has been drawn and labelled the Tropic of Cancer. This line is at 23.5°N. A similar line is found at 23.5°S and is known as the Tropic of Capricorn. It passes through northern Australia just near Rockhampton. It is between these two lines that the sun moves and determines our seasons.

STEP 3

Each degree on the grid is made up of 60 minutes. It is likely that a place is not situated exactly on the degree line, so you will need to determine a minute reading as well. This becomes especially evident in smaller-scaled maps. Calculate the minutes for the place you are identifying. It is often a good idea to place a ruler on the map or use a finger to follow a line so that your eyes don't inadvertently cross to another grid square.

FIGURE 5 Showing minutes of a degree



STEP 4

Combine the readings to get a precise latitude for place. Place A in figure 5 is at 33°55′S. (The 'S' indicates that this place is south of the equator.)

STEP 5

Longitude is calculated in a similar manner. Find the north–south line

(meridian) closest to the place. Take the line reading and then the degrees reading. For example, in figure 4 Philadelphia is at 75°W. The 'W' indicates it is west of the Prime Meridian. The Prime Meridian is not shown on figure 4 but the numbering on the meridians at both the top of the map and the bottom of the map indicate that the Prime Meridian is off the map to the right. On a more detailed map, a minute reading could also be obtained.

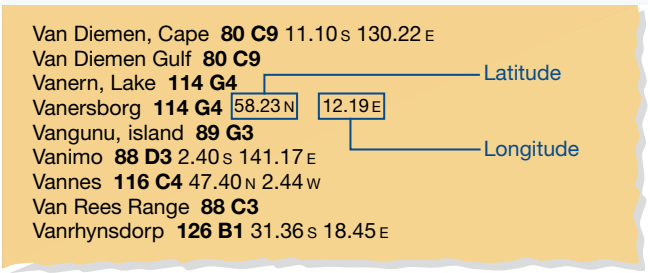
STEP 6

When combining the grid readings, latitude always comes first. A useful tip is to remember that 'latitude' comes before 'longitude' alphabetically. In figure 4, Philadelphia is at 40°N75°W. In figure 5, place B is at 33°15′S 40°50′E. Check that you can find these two places.

STEP 7

In the gazetteer index of an atlas, the reading for Philadelphia is listed as 40°00′N 75°10′W. Have a look in an atlas gazetteer index, usually in the back of the atlas, as the places are all identified by latitude and longitude. With a partner, test each other by naming and looking up locations on a map and practising giving their latitude and longitude.

FIGURE 6 A sample from the gazetteer index of an atlas



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Watch this eLesson: Using latitude and longitude (eles-1652)

12.3.3 Let me do it

Developing my skills

Using figure 1 in subtopic 12.6, give the latitude and longitude readings at the centre of the listed deserts to complete the table below.

Desert	Latitude and longitude reading
Gibson	
Tanami	
Simpson	
Great Sandy	

Questions

1. Which desert can be found at 22°S 133°E?
2. This South Australian desert can be found at 29°S 141°E. What is its name?
3. Give a latitude and longitude reading such that a person would find themselves at Davenport Range.
4. If you were to travel the full length of the Great Dividing Range, at what latitude and longitude would you begin and finish?
5. Which range extends furthest east — Hammersley, Carnarvon or Robinson? Give the latitude and longitude reading at its most easterly point.

Checklist

I have:

- identified the precise location of a place
- accurately read parallels of latitude
- accurately read meridians of longitude
- written the readings correctly.

Skills questions

1. Parallels of latitude are used to show:
   (a) all places at the same height above sea level
   (b) places on a grid in relation to the equator
   (c) places that have something in common
   (d) places on a grid in relation to 0° longitude.
2. The Prime Meridian is the line that:
   (a) is numbered 1
   (b) is at 180° longitude
   (c) runs through Greenwich, England
   (d) helps determine latitude.
3. Why do you need to use a ruler or run your finger along the line of the grid?
4. What is a good way to recall the order in which the readings should be given?

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Try out this interactivity: Using latitude and longitude (int-3148)

12.7 SkillBuilder: Calculating distance using scale

12.7.1 Tell me

What does it mean to calculate distance using scale?

Calculating distance using scale involves working out the actual distance from one place to another using a map. The scale on a map allows you to convert distance on a map or photograph to distance in the real world — what it represents on Earth's surface. A linear scale is the easiest to use. Sometimes the distance being measured between places is not straight.

Why is calculating distance by using scale useful?

Calculating distance by using scale provides a spatial understanding of an area. If you go to an unfamiliar place for a holiday and the tourist map information does not have a scale, it is very difficult for you to know how far it is between places on the map and therefore how long it might take to walk or drive between them. Maps and photographs often show large areas of the Earth on a page. Many people use maps or photographs to gather information and need to understand the distances between places. Examples of people who calculate distance by using scale include architects, town planners, engineers, pilots, farmers, tourists.

Model

The linear scale of this map is shown in the lower left corner. The shaded Bedouin lands are seen in the key/legend. The Sahara Desert, where the Bedouin people live, is approximately 5250 kilometres from west to east and on average 1900 kilometres from north to south.

A good calculation of distance using scale involves:

- accurately converting a ruler measured distance on a map to an actual distance by using a linear scale.

FIGURE 1 Desert areas inhabited by the Bedouin people.



Source: MAPgraphics Pty Ltd, Brisbane

12.7.2 Show me

How to calculate distance using scale

You will need:

- a map or photograph with a linear scale
- a piece of paper with a straight side for marking places
- a light grey pencil
- a piece of string
- a pencil.

Procedure:

To calculate the distance between places or around places, it is easiest if you have a map or photograph which has a linear scale as shown in figure 1.

STEP 1

Determine the two places between which you want to know the distance. If it is a straight line distance between the two places — the distance 'as the crow flies' — then your paper edge must be long enough to go between these points. If not, and the distance is winding, then you will need to learn to bend your paper (jump to Step 4) or use a piece of string (jump to Step 8).

STEP 2

Place the straight edge of the piece of paper between the two places. Mark the two extremities of the distance on the edge. Label the place names at each end if working from a map.

STEP 3

Place this marked edge of paper onto the linear scale drawn on the map. One end of the markings must be at 0. Read off the distance on the scale. If the distance is longer than the scale bar on the map, mark your paper edge where the scale bar ends and move this new mark to 0, repeating as often as required. If you have to do this then you will need to add the distances together to find the total distance between the named places. Don't forget to add the unit of measurement (for example, metres or kilometres).

STEP 4

If the distance is winding rather than straight — perhaps you are following a road through hills, or a river winding its way downstream, or a hiking track across a ridge — begin by placing the edge of the paper against the starting point, marking the edge with the place name.

FIGURE 2 Measuring straight distances with a scale.

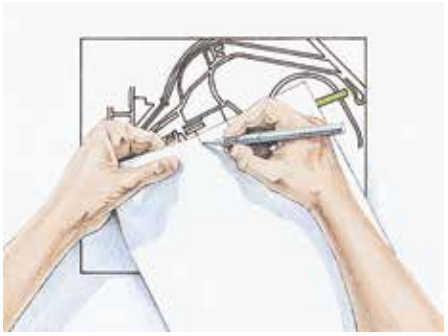
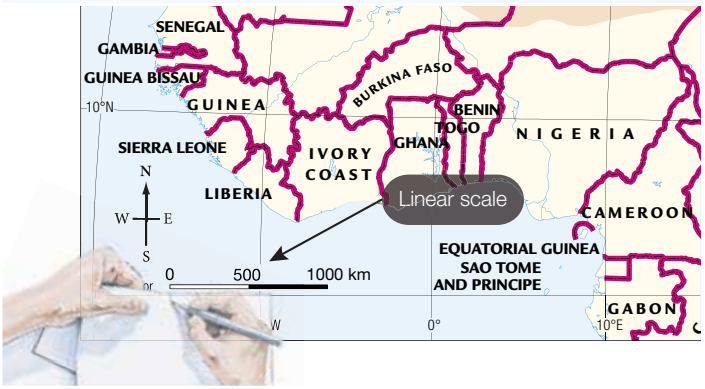


FIGURE 3 Converting the paper edge markings to a 'real' distance.



STEP 5

Move the paper carefully so the edge follows the curve on the map. Use your pencil to apply light pressure while you adjust the paper edge to the curve.

STEP 6

Mark and label the end point on your paper.

STEP 7

Place the paper along the linear scale and read off the distance between your two places as you did in Step 3. Don't forget to add the unit of measurement (for example, metres or kilometres).

STEP 8

The technique using a piece of string is risky — if you let go of the piece of string, you'll have to start again! Place one end of the string at your starting point, and bend the string around the winding distance.

Mark the total distance carefully and place the string against the linear scale to calculate the total distance between the two places. One end of the string must be at 0. Read off the distance on the scale. If the distance is longer than the scale bar on the map, mark the string or hold it carefully where the scale bar ends and move this new mark to 0, repeating as often as required. If you have to do this, you will need to add the distances together to find the total distance between the named places. Don't forget to add the unit of measurement (for example, metres or kilometres).

FIGURE 4 Measuring curved distances with a scale using a paper edge.

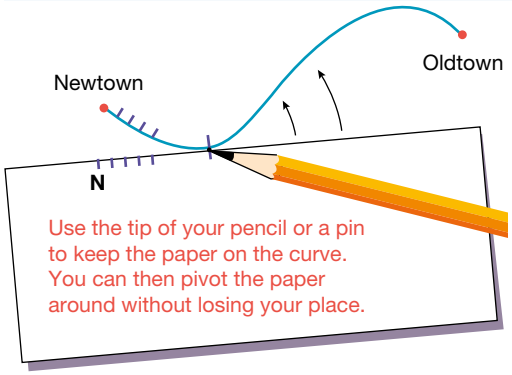
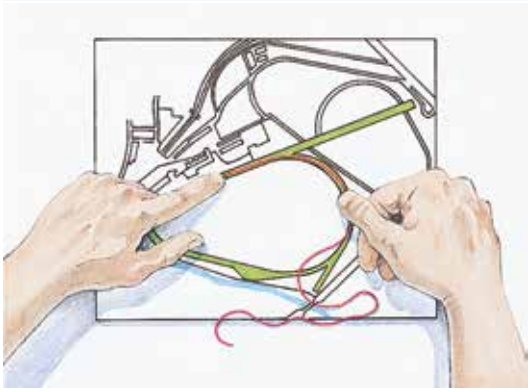


FIGURE 5 Measuring curved distances with a scale using a piece of string.



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12.7.3 Let me do it

Developing my skills

Using figure 1 in subtopic 12.6, complete the following.

Questions

1. How far is it from the west to the east of the Great Victoria Desert?
2. How far is it between the Central Desert and the Simpson Desert?
3. Calculate the distance around the Tanami Desert.
4. What is the distance around the area designated as 'arid zone'?
5. What length of 'arid zone' boundary is also on the coast of Australia?

Checklist

I have:

- accurately converted a distance measured with a ruler on a map to an actual distance by using a linear scale.

Skills questions

1. Calculating distance using ***scale*** is used to show:
   (a) the height of the land between places
   (b) the shape of the land features
   (c) how small areas can be drawn
   (d) distance in the real world.
2. To find the length of a river on a map:
   (a) find the distance between two places on the river
   (b) draw a line along the river and measure its distance
   (c) bend a page edge to fit the winding river, marking the distances
   (d) guess the distance.
3. What is meant by the expression 'as the crow flies' when applied to distances on a map?
4. Why is it safer to use a piece of paper to move around a curve than to use a piece of string?

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Try out this interactivity: Calculating distance using scale (int-3149)

12.9 How do people use deserts?

12.9.1 Traditional livelihoods

Although not many people live in deserts, these environments have been important to traditional communities for many years. People either adapt to living in deserts or transform deserts to suit their needs. People are also attracted to desert regions to mine resources.

There are many communities who live in deserts including Indigenous Australian peoples; the Bedouin people of the Middle East and Sahara; the Tuareg people of the Sahara in North Africa; the Topnaar people in the Namib Desert; the San people in South Africa; the Timbisha Shoshone of the Mojave Desert in the USA; and the communities from the Atacama Desert in South America.

Many of these communities are **nomadic**, moving with the seasons and obtaining all their needs from the land or herding animals and trading with people in settlements. It is important to understand that not all desert peoples are desert-dwellers. For example, many Indigenous Australian people do not live in deserts.

FIGURE 1 Two members of the San people in southern Africa.



12.9.2 Desert resources

Many of the changes in deserts have been brought about by developments in technology. These changes have resulted in water being extracted and used to grow crops, and minerals being mined and used in many ways.

Water in the desert

Drilling equipment and pumps have allowed deep bores to tap into groundwater in aquifers deep below the desert surface. This has transformed some deserts in northern Africa and the Middle East into a series of circular irrigation fields — some of these can be up to three kilometres in diameter. In Australia, groundwater from the Great Artesian Basin has enabled desert communities to exist and grazing to take place. Unfortunately, the groundwater in many areas is being pumped out far more quickly than it is being replaced and may be in danger of running out.

Desalination plants have also provided water to desert communities in many areas, especially the Middle East, including large cities such as Dubai.

FIGURE 2 (a) Satellite image of circular irrigation fields in Libya; (b) aerial photograph of a circular irrigation field



Mining in deserts

Many deserts contain valuable mineral deposits that were formed in the arid environment or have been exposed by erosion. Desert mining has created a lot of wealth for some people and companies, but usually not for the traditional desert people. Examples of mining resources include:

- iron and lead-zinc ore — mined in Australian deserts
- phosphorus (used to make fertilisers) — mined in the Sahara region
- borates (used to manufacture glass, ceramics, enamels and agricultural chemicals) — mined in the deserts of California, United States
- copper, iron ore and nitrates — mined in Chile's Atacama Desert
- precious metals such as gold, silver and platinum — mined in the deserts of Australia, the United States and central Asia
- uranium — mined in Australia and the United States
- diamonds — mined in the Kalahari and Namib deserts of south-western Africa
- oil — more than 65 per cent of the world's oil is found in the desert regions of the Middle East, mainly in Kuwait, Iraq, Iran and Saudi Arabia.

FIGURE 3 A uranium mine next to the Colorado River in the United States.



12.9.2 Activities

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

Remember

1. List the sources of water in a desert that can be used to grow crops and provide water for people.
2. How has technology enabled water to be used in deserts?

Explain

3. Do you think most desert people adapt to live in the desert ***environment***, or adapt the ***environment*** to live in the desert? Give two examples to support your reasoning.
4. Why is it important to use groundwater ***sustainably***?

Discover

5. Investigate one of the desert communities mentioned in this subtopic. Conduct research to identify where these communities generally live, and find examples of their traditional ways of life, including living conditions and shelter. Present your information in an interesting way, such as a Prezi, Keynote or PowerPoint presentation, and use images and maps where possible.
6. Study figure 2a.
   (a) Where is Libya located? Use an atlas or Google Earth and write a description.
   (b) Identify the small black circles in the image.

Predict

7. Make a sketch of figure 3. Label your sketch to include the river, the mine site and the buildings. How has mining ***changed*** this ***environment***? What issues could arise due to the location of this mine? Predict what might happen to this area when mining stops.

Think

8. Mining companies generally receive the wealth from mining. Why do you think that the traditional desert communities miss out? Should they receive some of the benefits of mining? How could the profits be distributed more evenly?

12.12 Review

12.12.1 Review

Deserts and desert climate

1. Describe where the following desert types are located and give two examples of each.
   - Hot deserts
   - Cold deserts
2. Outline three ways in which deserts can form.
3. Why is Antarctica a desert? How is it different from other deserts?
4. (a) Create a climograph of the following data for the Russian Vostok station in Antarctica.

TABLE 1 Climate data for the Russian Vostok station in Antarctica (latitude: 78.45°S; longitude: 106.80°E)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average daily temperature (°C)	–32.1	–44.3	–57.9	–64.7	–65.6	–65.2	–66.9	–67.6	–66.0	–57.1	–43.3	–32.1	Mean –55.1
Mean monthly rainfall (mm)	0.1	0.0	0.7	0.5	0.4	0.5	0.6	0.7	0.3	0.2	0.1	0.0	Total 4.5

   (b) Compare this desert climate with the climate of hot deserts in Yuma in the United States, Khormaksar in Yemen and Alice Springs in Australia. Outline the similarities and differences. Why is each of these locations a desert? Which would be defined as hyper-arid, arid and semi-arid?
5. Name three landforms that can be found in desert ***environments***. For each, describe how wind, erosion, weathering and deposition help create the landform.
6. List three ways in which people use deserts.
7. List some of the resources that are mined in deserts.
8. How has technology allowed deserts to bloom?

12.12.2 Reflect

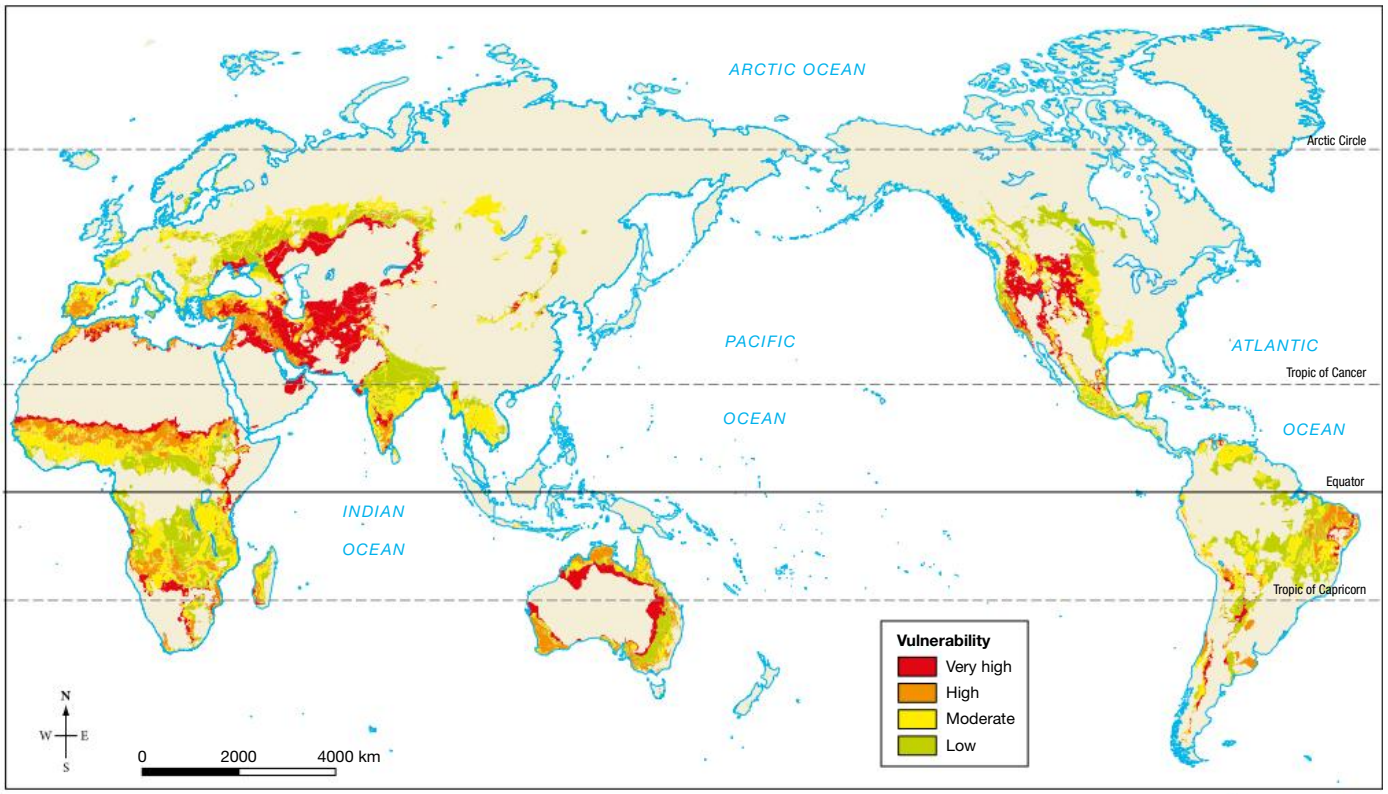
Expanding deserts

The world's deserts have been formed over long periods of time, and have grown and receded independently of people's use of the environment. But the transition zone between a desert and a more humid environment is very fragile and, if stressed, can become degraded.

Some human activities and natural causes in these transition zones can lead to desertification — the process by which useful agricultural land can change into desert. These activities include overgrazing by livestock, loss of trees and shrubs, poor farming methods, overpopulation and prolonged drought.

9. What is desertification?
10. Study the map in figure 1 on the next page. Using an atlas to help you, describe the regions that are most vulnerable to desertification.
11. Compare the map in figure 1 with figure 3 in subtopic 12.2 showing the current distribution of deserts. What do these maps have in common?
12. List the activities that can cause desertification.

FIGURE 1 Map showing which parts of the world are most susceptible to becoming a desert



Source: Spatial Vision

Desertification in Nouakchott, Mauritania

Nouakchott is the capital city of Mauritania, located in West Africa. In 1960, Nouakchott was many days' walk from the edge of the Sahara Desert, but now this desert surrounds the city. In 1960, the city's population was 20 000; today it is more than one million, placing pressure on the land and its resources.

The Mauritanian government has planted 250 000 palm trees to try to stop the movement of sand. There are also plans to surround villages with green belts — tree plantations to stop sand entering the villages. Straw fences also help, as does the teaching of better farming practices to reduce erosion and sand movement.

13. Locate Mauritania and Nouakchott in an atlas. Describe their location in relation to the Sahara Desert — draw a small sketch map to help you.
14. Study the topographic map in figure 2 on the next page.
    (a) List some of the desert features that can be identified.
    (b) There are no contour lines marked on this map — why do you think this is the case?
    (c) How many wells can you count on the map? How many are saline? What does this mean?
    (d) What evidence is there on the map that confirms desertification is a problem in this region?
    (e) What human feature provides another source of water to this area?

FIGURE 2 A topographic map of Nouakchott, Mauritania



Source: MAPgraphics Pty Ltd, Brisbane

TOPIC 13
Mountain landscapes

13.1 Overview

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

13.1.1 Introduction

Mountains occupy 24 per cent of the Earth's landscape, and are characterised by many different landforms. The forces that form and shape mountains come from deep within the Earth, and have been shaping landscapes for millions of years. The Earth is a very active planet — every day, many volcanoes are erupting somewhere on the planet, and even more tremors are occurring.

Starter questions

1. What is the highest mountain you have visited? What did you do there?
2. Have you ever seen a volcano? Where was it?
3. Is there a mountain or mountain range you would like to visit? Why?
4. Have you ever felt an earthquake or earth tremor? Where were you when it happened? How did you react?

Landscape of the Dolomites, Italy



INQUIRY SEQUENCE

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Watch this eLesson: Majestic mountains (eles-1626)

13.2 Where are the world's mountains?

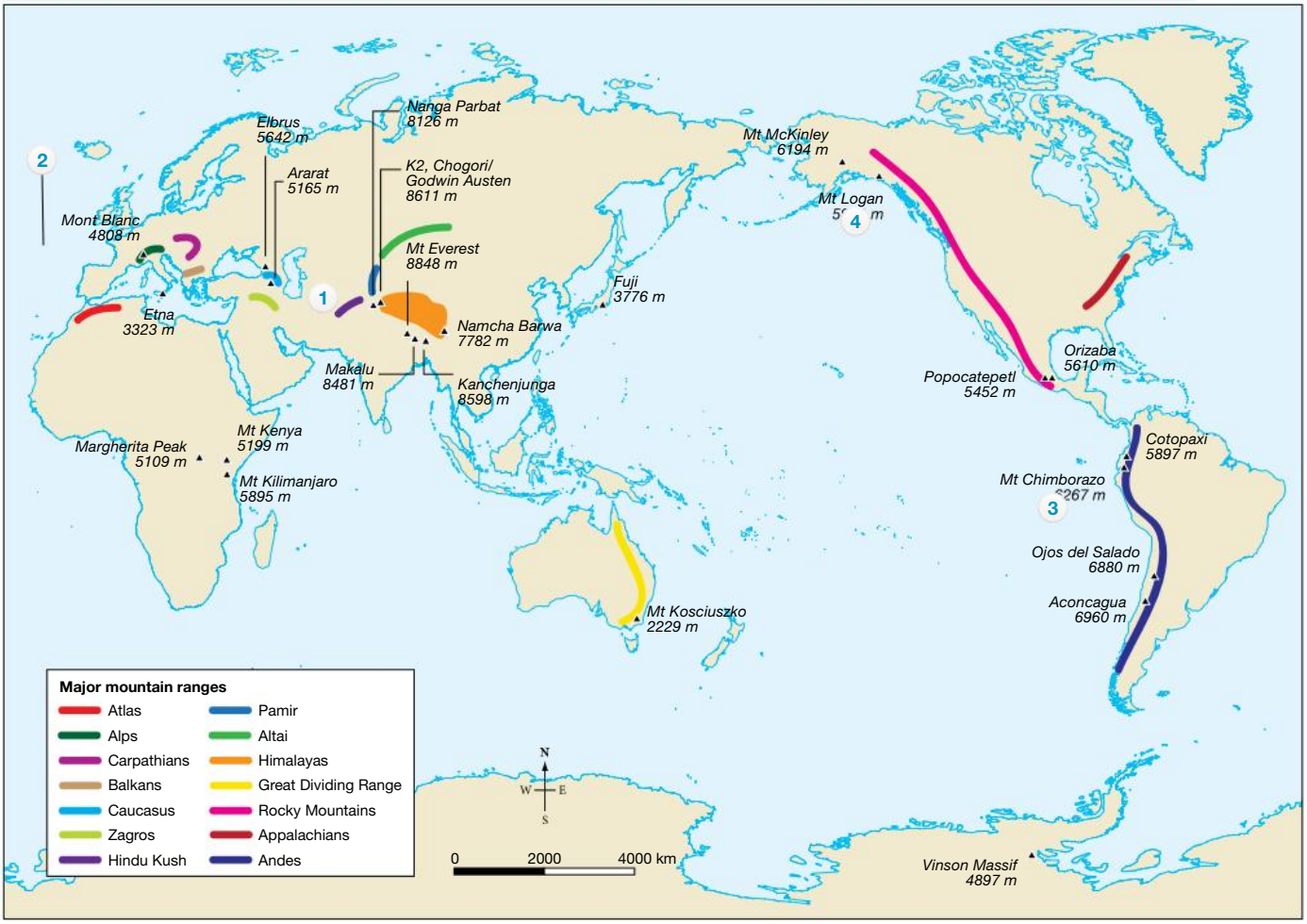
13.2.1 The world's mountains and ranges

A mountain is a landform that rises high above the surrounding land. Most mountains have certain characteristics in common, although not all mountains have all these features. Many have steep sides and form a peak at the top, called a summit. Some mountains located close together have steep valleys between them known as gorges.

Mountains make up a quarter of the world's landscape. They are found on every continent and in three-quarters of all the world's countries. Only 46 countries have no mountains or high plateaus, and most of these are small island nations.

Some of the highest mountains are found beneath the sea. Some islands are actually mountain peaks emerging out of the water. Even though the world's highest peak (from sea level) is Mount Everest in the Himalayas (8850 metres high), Mauna Loa in Hawaii is actually higher when measured from its base on the ocean floor. Long chains or groups of mountains located close together are called a mountain range.

FIGURE 1 The world's main mountains and mountain ranges



Source: Spatial Vision

1 The Himalayas

Located in Asia, the Himalayas are the highest mountain range in the world. They extend from Bhutan and southern China in the east, through northern India, Nepal and Pakistan, and to Afghanistan in the west. The Himalayas is one of the youngest mountain ranges in the world and the name translates as 'land of snow'. The fourteen highest mountains in the world — all over 8000 metres above sea level — are all in the Himalayas.

2 The Alps

The Alps, located in south central Europe, are one of the largest and highest mountain ranges in the world. They extend 1200 kilometres from Austria and Slovenia in the east, through Italy, Switzerland, Liechtenstein and Germany, to France in the west. The highest mountain in the Alps is Mont Blanc in France, which is 4808 metres high.

3 The Andes

The Andes are located in South America, extending north to south along the western coast of the continent. The Andes is the second highest mountain range in the world, with many mountains over 6000 metres. At 7200 kilometres long, it is also the longest mountain range in the world.

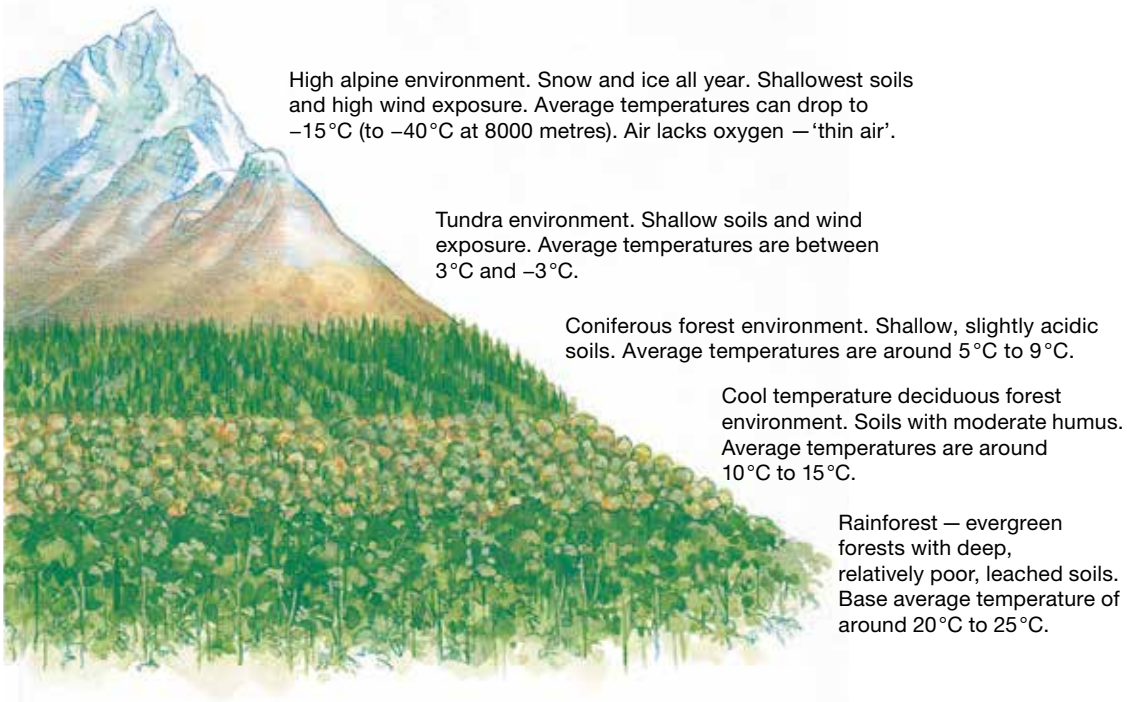
4 The Rocky Mountains

The Rocky Mountains in western North America extend north–south from Canada to New Mexico, a distance of around 4800 kilometres. The highest peak is Mount Elbert, in Colorado, which is 4401 metres above sea level. The other large mountain range in North America is the Appalachian Mountains, which extends 2400 kilometres from Alabama in the south to Canada in the north.

13.2.2 Mountain climate and weather

It is usually colder at the top of a mountain than at the bottom, because air gets colder with **altitude**. Air becomes thinner and is less able to hold heat. For every 1000 metres you climb, the temperature drops by 6 °C.

FIGURE 2 Ecosystems change with altitude on mountains.



13.2 Activities

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

Remember

1. What percentage of the Earth's surface is covered by mountains?
2. Name the:
   (a) highest mountain range in the world
   (b) longest mountain range in the world
   (c) highest mountain in Western Europe
   (d) second-highest mountain range in North America.
3. Refer to figure 2. How does vegetation ***change*** on a mountain?

Discover

4. Locate and name the highest mountain closest to where you live in your state or territory.
5. Name the mountain range located closest to where you live. Name two other mountain ranges in your state or territory. Where are they located in relation to your school or home?
6. Work in groups of 4 to 6 to investigate some of the following mountain ranges.
   - Antarctica — Antarctic Peninsula, Transantarctic Mountains
   - Africa — Atlas Mountains, Eastern African Highlands, Ethiopian Highlands
   - Asia — Hindu Kush, Himalayas, Taurus, Elburz, Japanese Mountains
   - Australia — MacDonnell Ranges, Great Dividing Range

- Europe — Pyrenees, Alps, Carpathians, Apennines, Urals, Balkan Mountains
- North America — Appalachians, Sierra Nevada, Rocky Mountains, Laurentians
- South America — Andes, Brazilian Highlands

Each student should choose a different range, and complete the following.
(a) Map the location of the range in its region.
(b) Describe the climate experienced throughout the range.
(c) Name and provide images of a selection of plants and animals found in the range.
Present your information in Google Maps.

Think

7. Imagine you are a mountaineer, climbing to the top of Mont Blanc.
   (a) Research the type of clothing you need to wear for such a climb.
   (b) When you begin your climb at 1500 metres, the weather is perfect; it is sunny and clear and the temperature is 8 °C. You climb 2200 metres before you set up camp. What is the elevation? What is the temperature at this elevation? The next day the weather holds, and you climb to the summit. How far did you climb to reach the top of the mountain? What is the temperature?
8. Refer to figure 1. Describe how the ***scale*** of the world's mountains varies across the continents.

13.3 How do people use mountains?

13.3.1 Mountain people and cultures

People have moved through and lived in mountain areas for centuries. But few people live in the world's highest mountain ranges, where it can be very cold and difficult to grow food and make a living. Thousands of people visit mountains, often in remote areas, for recreation and to see the spectacular scenery, plants and animals, historic and spiritual sites, and different cultures. Mountains are also vital for global water supply.

Around 12 per cent of the world's people live in mountain regions. About half of those live in the Andes, the Himalayas and the various African mountains.

Usually, population density is very low in these areas. One reason for this is that mountains are very difficult to cross, as they are often rugged and covered with forests and wild animals. They can also be hard to climb and may have ice, snow or glaciers that make travel dangerous.

As a result of these difficulties, mountains have long provided a safe place for **indigenous peoples** and **ethnic minorities**. People live as nomads, hunters, foragers, traders, small farmers, herders, loggers and miners.

FIGURE 1 The Longshen rice terraces in China show how a mountainside can be changed to grow food.



13.3.2 Mountain landscapes in the Dreamings

There are many Aboriginal and Torres Strait Islander Dreaming Stories that are linked to mountain landscapes. These teachings from the Dreamings help explain the formation and importance of each landscape and landform.

Indigenous Australian peoples are guided by Elders who know the local Dreaming Stories and customs. Dreaming Stories are passed on through the generations and explain the origin of the world around them.

The Three Sisters in the Blue Mountains

FIGURE 2 The Three Sisters in the Blue Mountains

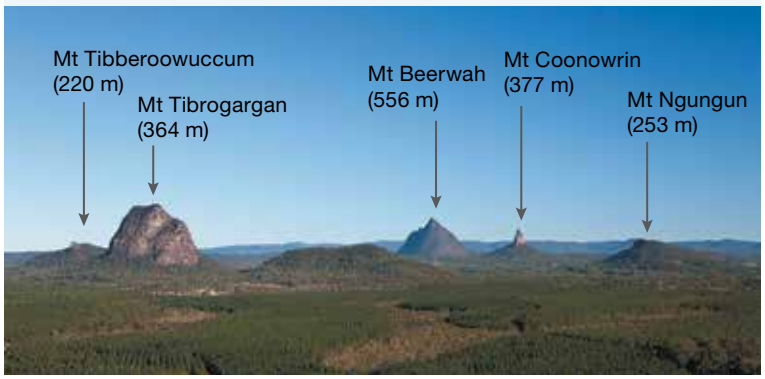


There is a story, thought to be an Indigenous Creation Story, about the formation of the Three Sisters in the Blue Mountains in New South Wales (see figure 2). It tells of three sisters, Meehni, Wimlah and Gunnedoo, who lived in the Jamison Valley as members of the Gundungurra nations. These young women had fallen in love with three brothers from the Dharruk nation, yet tribal law forbade them to marry. The brothers were not happy with this law and so decided to use force to capture the three sisters, which caused a major battle.

As the lives of the three sisters were seriously in danger, a clever man from the Kedoombar took it upon himself to turn the three sisters into stone to protect them from any harm. He intended to reverse the spell when the battle was over, but the clever man himself was killed. As only he could reverse the spell and bring the sisters back to life, they remain in their rock formation.

The Glasshouse Mountains

FIGURE 3 The Glasshouse Mountains



The Glasshouse Mountains in south-east Queensland are of great historical, cultural and geological significance (see figure 3). Their names — Beerwah, Tibrogargan, Coonowrin, Tunbubudla, Beerburrum, Ngungun, Tibberoowuccum and Coochin — reflect the culture of the Gubbi Gubbi people.

The story of these mountains goes something like this:

Tibrogargan was the father of all the nations. He and his wife, Beerwah, had many children, including Coonowrin, Tunbubudla, Miketeebumulgrai, Elimbah, Ngungun, Beerburrum and Coochin.

One day, Tibrogargan was looking out to sea when he saw the sea rising in a great swell. He became worried for Beerwah, who was pregnant. He quickly told his eldest child, Coonowrin, to take his mother to the mountains. 'I'll get the other children together and will meet you there.'

But when Tibrogargan checked to see if Coonowrin had done as he had asked, he was angered to see that he was running off alone, like a coward, and had not fetched his mother. This made Tibrogargan angry. He chased Coonowrin and hit him so hard on the head with his nulla nulla (war club) that he dislocated his neck. It has been crooked ever since.

When the flood receded, the family went back to their lands. But when the others saw Coonowrin, they teased him about his crooked neck and how he came by it, making him ashamed of his cowardice. He asked his father to forgive him, but the law would not allow this. Tibrogargan cried many tears for the shame Coonowrin had brought upon them, and his tears formed a stream that went all the way to the sea. Beerwah and all Coonowrin's brothers and sisters cried too.

Coonowrin tried to explain that he had left his mother to fend for herself because she was so big. He did not know his mother was pregnant. Tibrogargan swore he would never look at his son again, and to this day he looks at the sea and not at Coonowrin, whose head is bowed and whose tears flow into the sea. As for Beerwah — she is still pregnant.

13.3.3 Sacred and special places

Mountain landscapes often have special meaning to certain groups of people. This might be because the location includes sacred sites or religious symbols; it might also be because people want to be close to nature or to feel spiritually inspired or renewed.

Mountaineers who take great risks, climbing alone or in small groups, often find a special meaning in mountain environments. They may hold deep spiritual, **cultural** and aesthetic (relating to beauty) values and ideas, and these will often inspire such people to care for and protect mountain environments.

The following list gives examples of mountains that are connected to various beliefs and religions.

- Hindus and Buddhists have beliefs about Mount Kailash in the Himalayas.
- Hindus in Bali, Indonesia, have a special connection with Mount Gunung Agung.
- Tibetan Buddhists revere Chomolungma (Mount Everest).
- The landscape of Demojong in the Himalayas is sacred to Tibetan Buddhists.
- Nanda Devi in the Himalayas is a sacred site for both Sikh and Hindu communities, and is a UNESCO World Heritage site.
- Mount Fuji, in Japan, is a place of spiritual and cultural symbolism to Japanese people.
- Saint Katherine Protectorate in South Sinai, Egypt, is in an area holy to Jews, Christians and Muslims.
- Jabal La'lam is a mountain that is sacred to the people of northern Morocco.

For the indigenous groups of the north-eastern American plains, the Sioux, or Dakota as they are sometimes referred to, and the indigenous Scandinavian people, the Sami, nature was recognized as sacred. The sacred places were not man-made temples or churches, but particularly spectacular or prominent features of the natural landscape. For the Sami these sacred places tended to be large rocks (called sieidi), the sides of lakes, rocky crevasses or caverns or mountaintops. These sacred mountains were somewhat isolated and had a jutting tall peak. A sacred mountain named Haldi, which rests among a group of mountains near Alta, and an 814-metre-tall conical sacred hill named Tunnsjøguden in central Norway are examples. In general, the word saivu is applied to sacred mountains in the south while the terms bassi, ailigas and haldi are used for sacred mountains by northern Sami. Similarly, mountaintops were also of spiritual importance to Sioux groups who lived in their regions; for instance, the sacred mountain Harney Peak in modern-day South Dakota.

Source: www.utexas.edu/courses/sami/diehtu/siida/religion/paralellism.htm

13.3.4 Skills to survive

It can be hard to make a living in mountain regions. People living in small, isolated mountain communities have learned to use the land and resources sustainably. Many practise shifting cultivation, migrate with grazing herds, and have terraced fields.

Some of the world's oldest rice terraces (see figure 1 earlier) are over 2000 years old. Rice and vegetables could be grown quite densely on the terraces. This enabled people to survive in a region with very steep slopes and high altitude.

On very high ranges, below the snowline is a treeless zone of alpine pastures that can be used in summer to graze animals. Elsewhere, in the valleys and foothills, agriculture often occurs, with fruit orchards and even vineyards on some sunny slopes.

Mountains supply 60 to 80 per cent of the world's fresh water. This is due to orographic rainfall (caused by warm, moist air rising and cooling when passing over high ground, such as a mountain; as the air cools, the water vapour condenses and falls as rain). Where precipitation falls as snow, water is stored in snowfields and glaciers. When these melt, they provide water to people when they need it most.

13.3 Activities

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

Remember

1. List the geographical characteristics of mountains that limit the number of people who live there.
2. What type of work and recreation can people undertake in mountain regions? Present this information in words or in a diagram.

Explain

3. Think of a mountain you have visited or seen. Do you feel inspired by mountain environments? How can spiritual or religious beliefs linked to mountain landscapes help in protecting them?
4. How has the natural mountain ***environment*** in figure 1 been ***changed*** by people? Sketch the photo and make notes to show the ***changes***.
5. Imagine you work as a park ranger in the Blue Mountains or Glasshouse Mountains. How can the Dreamtime legends of the region help other people understand this ***environment***?
6. Describe how different groups of people value mountainous ***places***.

Discover

7. Use the internet to locate the Jamison Valley in the Blue Mountains. Describe its location.
8. Use the **Great Dividing Range legend** weblink and the **How the Hills Came to Be** weblink in the Resources tab to read two Dreamtime legends. How are each of these connected to mountain landscapes?
9. From this subtopic, choose one of the mountains linked to Hindu or Buddhist beliefs. Use the internet to find out details of this connection. Present your information as a print or electronic brochure.
10. Research where your water supply comes from. Which mountains, if any, are located near your water supply?

Think

11. Draw a consequence chart to show how and why mountains are important for water supply. Now add information to your chart about what might happen if this was reduced for some reason; for example, through climate ***change***.

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Explore more with these weblinks: Great Dividing Range legend, How the Hills Came to Be

13.4 What are the forces that form mountains?

13.4.1 Continental plates

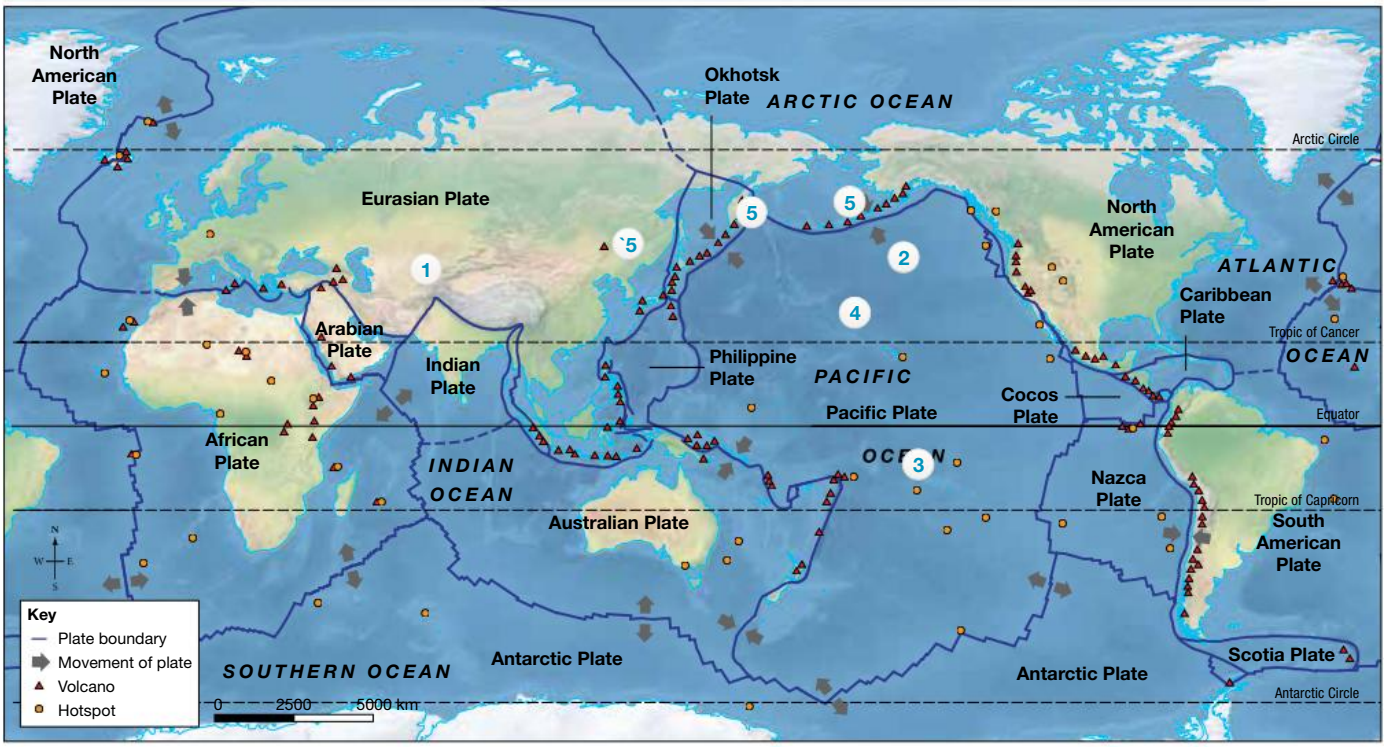
Mountains and mountain ranges have formed over billions of years from tectonic activity; that is, movement in the Earth's crust. The Earth's surface is always changing — sometimes very slowly and sometimes dramatically.

The Earth's crust is cracked, and is made up of many individual moving pieces called continental plates, which fit together like a jigsaw puzzle. These plates float on the semi-molten rocks, or magma, of the Earth's mantle. Enormous heat from the Earth's core, combined with the cooler surface temperature, creates **convection currents** in the magma. These currents can move the plates by up to 15 centimetres per year. Plates beneath the oceans move more quickly than plates beneath the continents.

13.4.2 Continental drift

Scientific evidence shows that, about 225 million years ago, all the continents were joined.

FIGURE 1 World map of plates, volcanoes and hotspots



Source: Spatial Vision

1 Convergent plates

When two continental plates of similar density collide, the pressure of the **converging plates** can push up land to form mountains. The Himalayas were formed by the collision of the Indian subcontinent and Asia. The European Alps were formed by the collision of Africa and Europe.

When an oceanic and a continental plate collide, they are different densities, and the thinner oceanic plate is subducted, meaning it is forced down into the mantle. Heat melts the plate and pressure forces the molten material back to the surface. This can produce volcanoes and mountain ranges. The Andes in South America were formed this way.

Subduction can also occur when two oceanic plates collide. This forms a line of volcanic islands in the ocean about 70–100 kilometres past the subduction line. The islands of Japan have been formed in this way. Deep oceanic trenches are also formed when this occurs. The Mariana Trench in the Pacific Ocean is

2519 kilometres long and 71 kilometres wide, and is the deepest point on Earth — 10.911 kilometres deep. If you could put Mount Everest on the ocean floor in the Mariana Trench, its summit would lie 1.6 kilometres below the ocean surface.

2 Lateral plate slippage

Convection currents can sometimes cause plates to slide, or slip, past one another, forming **fault** lines. The San Andreas Fault, in California in the western United States, is an example of this.

3 Divergent plates

In some areas, plates are moving apart, or diverging, from each other (for example, the Pacific Plate and Nazca Plate). As the **divergent plates** separate, magma can rise up into the opening, forming new land. Underwater volcanoes and islands are formed in this way.

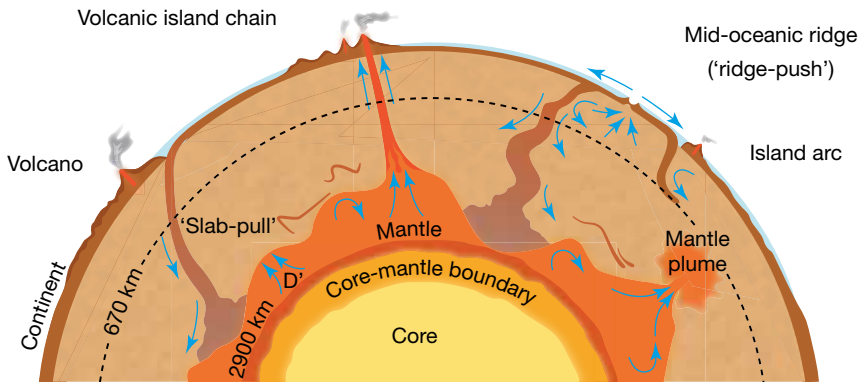
4 Hotspots

There are places where volcanic eruptions occur away from plate boundaries. This occurs when there is a weakness in the oceanic plate, allowing magma to be forced to the surface, forming a volcano. As the plate drifts over the hotspot, a line of volcanoes is formed.

5 The Pacific Ring of Fire

The most active region in the world is the Pacific Ring of Fire. It is located on the edges of the Pacific Ocean and is shaped like a horseshoe. The Ring of Fire is a result of the movement of tectonic plates. For example, the Nazca and Cocos plates are being subducted beneath the South American Plate, while the Pacific and Juan de Fuca plates are being subducted beneath the North American Plate. The Pacific Plate is being subducted under the North American Plate on its east and north sides, and under the Philippine and Australian plates on its west side. The Ring of Fire is an almost continuous line of volcanoes and earthquakes. Most of the world's earthquakes occur here, and 75 per cent of the world's volcanoes are located along the edge of the Pacific Plate.

FIGURE 2 The Earth's core is very hot, while its surface is quite cool. This causes hot material within the Earth to rise until it reaches the surface, where it moves sideways, cools, and then sinks.



13.4 Activities

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

Remember

1. Look at figure 2. How do convection currents help explain plate tectonics?

Explain

2. Refer to figure 1. Name three ***places*** where plates are converging. What mountain ranges, if any, are located in these ***places***?
3. Explain, in your own words, the meaning of subduction when referring to plate movements.
4. Name two locations where plates are moving apart. What is happening to the sea floor in these ***places***?
5. Describe the distribution of volcanoes shown in figure 1. What does this distribution have in common with the location of plate boundaries?

Discover

6. Use different coloured strips of plasticine to make models showing how a collision of continental and oceanic plates differs from a collision of two continental plates. Have a go at explaining this to a member of your family.

Predict

7. Draw a sketch to show what you think the world's continents will look like many years into the future based on the way continents move and ***change***. Justify your decisions.

Think

8. True or false?
   (a) The world's volcanoes are randomly scattered over the Earth's surface.
   (b) Most of the world's volcanoes are concentrated along the edges of certain continents.
   (c) Island chains are closely linked with the location of volcanoes.
   (d) There is a weak link between the distribution of volcanoes and the location of continental plates.
   Use these statements to write a summary paragraph, remembering to rewrite the false statements to make them true.

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Watch this eLesson: Drifting continents (eles-0129)

Try out this interactivity: Mountain builders (int-3109)

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
› Active Earth

13.5 How do different types of mountains form?

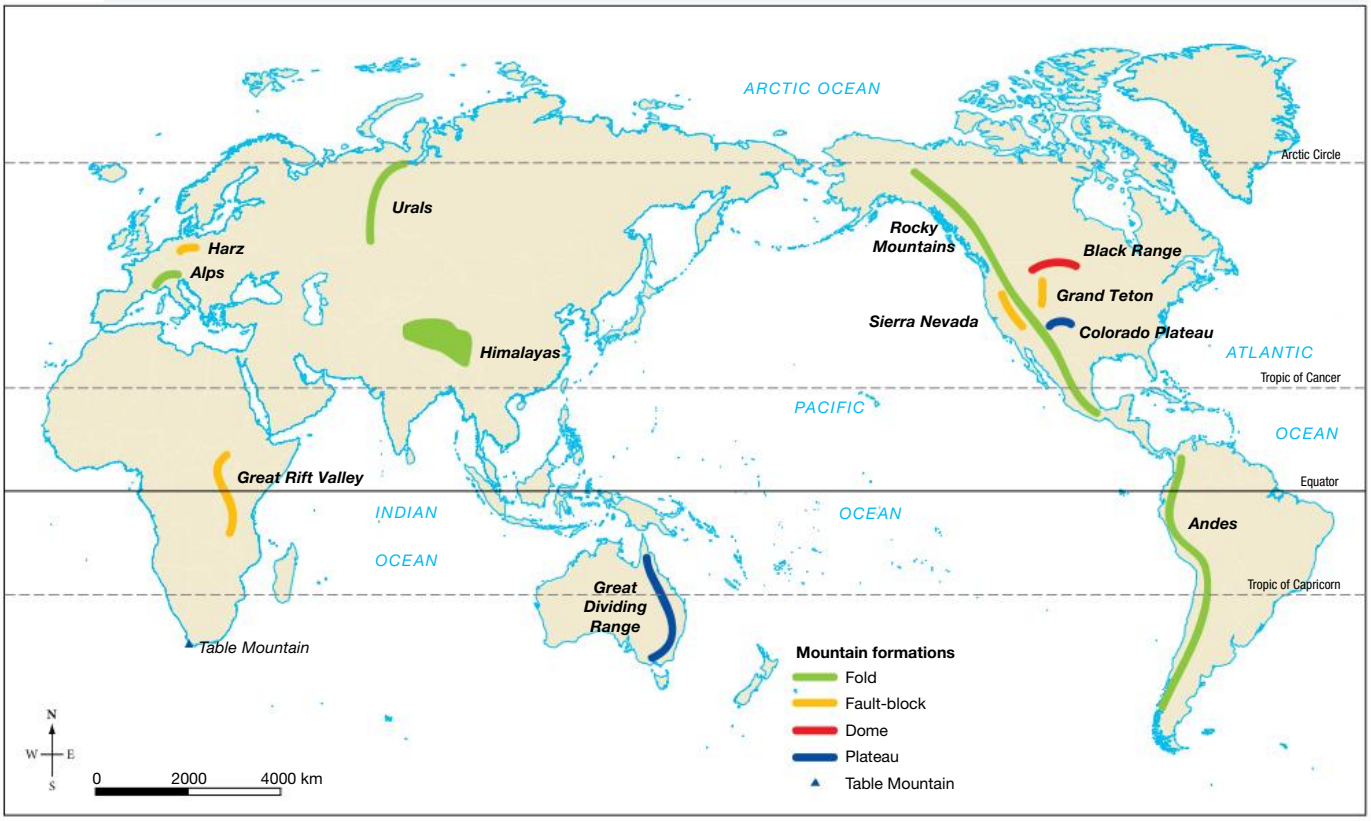
13.5.1 Types of mountains

The different movements and interactions of the **lithosphere** plates result in many different mountain landforms. Mountains can be classified into five different types, based on what they look like and how they were formed. These are fold, fault-block, dome, plateau and volcanic mountains. (Volcanic mountains are discussed in subtopic 13.8.)

13.5.2 Fold mountains

The most common type of mountain, and the world's largest mountain ranges, are fold mountains. The process of folding occurs when two continental plates collide, and rocks in the Earth's crust buckle, fold and lift up. The upturned folds are called anticlines, and the downturned folds are synclines (see figure 2 on the next page). These mountains usually have pointed peaks.

FIGURE 1 Selected world mountains



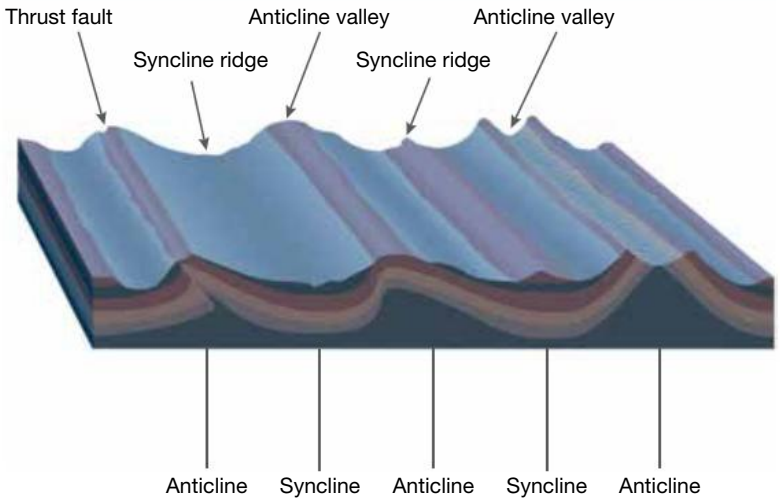
Source: Spatial Vision

Use the **Anticline and syncline** weblink in the Resources tab to see the formation of fold mountains.

Examples of fold mountains include:

- the Himalayas in Asia
- the Alps in Europe
- the Andes in South America
- the Rocky Mountains in North America
- the Urals in Russia.

FIGURE 2 The formation of fold mountains.



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Explore more with this weblink: Anticline and syncline

13.5.3 Fault-block mountains

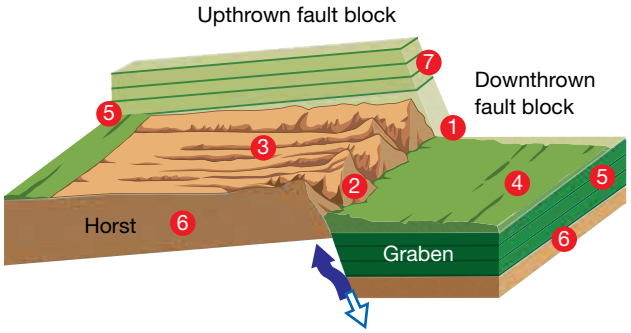
Fault-block mountains form when faults (or cracks) in the Earth's crust force some parts of rock up and other parts to collapse down. Instead of folding, the crust fractures (pulls apart) and breaks into blocks. The exposed parts then begin to erode and shape mountains and valleys (see figure 3 on the next page).

Fault-block mountains usually have a steep front side and then a sloping back. The Sierra Nevada and Grand Tetons in North America, the Great Rift Valley in Africa, and the Harz Mountains in Germany are examples of fault-block mountains. Another name for the uplifted blocks is *horst*, and the collapsed blocks are *graben*.

FIGURE 4 A cliff overlooking the Great Rift Valley in northern Tanzania, Africa. These are examples of fault-block mountains.



FIGURE 3 The formation of fault-block mountains.



1. Fault zone
2. Steep eastern face
3. Gentle western slope
4. Valley floors filled with sediments of cobbles, gravel and sand
5. Sedimentary rock layers
6. Bedrock
7. Sedimentary rock layers (5) now worn away.

13.5.4 Dome mountains

Dome mountains are named after their shape, and are formed when molten magma in the Earth's crust pushes its way towards the surface. The magma cools before it can erupt, and it then becomes very hard. The rock layers over the hardened magma are warped upwards to form the dome. Over time, these erode, leaving behind the hard granite rock underneath (see figure 5).

Ben Nevis in Scotland is an example of a dome mountain (see figure 6).

FIGURE 5 Very hot magma pushes towards the surface to form dome mountains.

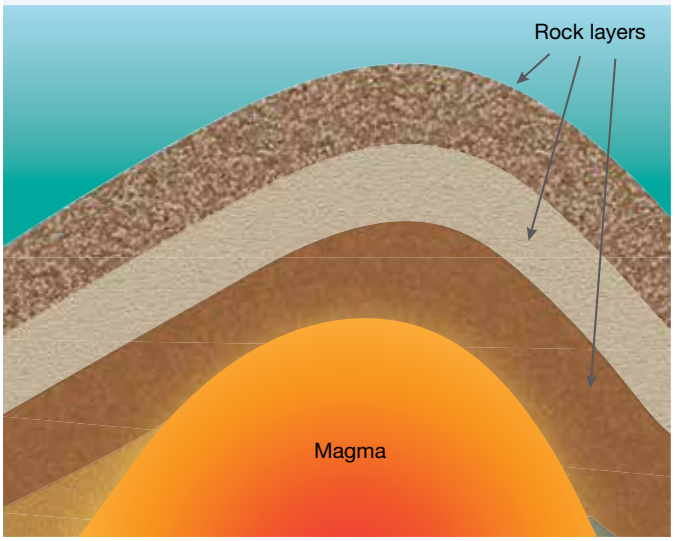


FIGURE 6 Ben Nevis in Scotland is a famous example of a dome mountain.



13.5.5 The Himalayas

CASE STUDY

How were the Himalayas formed?

Before the theory of tectonic plate movement, scientists were puzzled by findings of fossilised remains of ancient sea creatures near the Himalayan peaks. Surely these huge mountains could not once have been under water?

Since understanding plate movements, the mystery has been solved. About 220 million years ago, India was part of the ancient supercontinent we call **Pangaea**. When Pangaea broke apart, India began to move northwards at a rate of about 15 centimetres per year. About 200 million years ago, India was an island separated from the Asian continent by a huge ocean.

When the plate carrying India collided with Asia 40 to 50 million years ago, the oceanic crust (carrying fossilised sea creatures) slowly crumpled and was uplifted, forming the high mountains we know today. It also caused the uplift of the Tibetan Plateau to its current position. The Bay of Bengal was also formed at this time.

The Himalayas were therefore formed when India crashed into Asia and pushed up the tallest mountain range on the continents.

The Himalayas are known as young mountains, because they are still forming. The Indian and Australian plates are still moving northwards at about 45 millimetres each year, making this boundary very active. It is predicted that over the next 10 million years it will travel more than 180 kilometres into Tibet and that the Himalayan mountains will increase in height by about five millimetres each year. Old mountains are those that have stopped growing and are being worn down by the process of erosion.

FIGURE 7 The movement of the Indian landmass to its current location



Source: MAPgraphics Pty Ltd, Brisbane

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Try out this interactivity: Grand peaks (int-3110)

13.5.6 The Sierra Nevada Range, United States

CASE STUDY

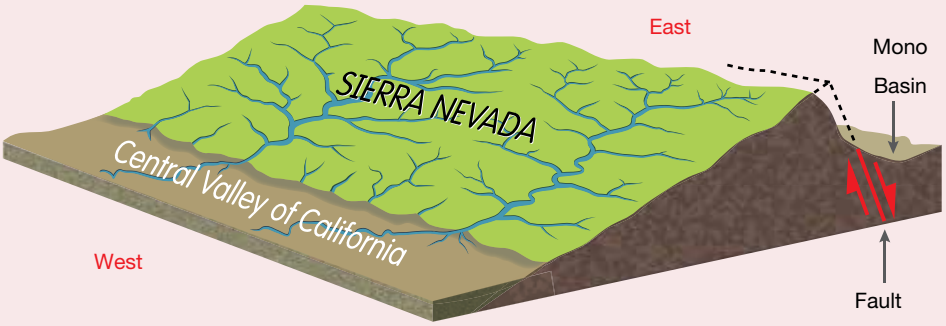
Formation of the Sierra Nevada Range

The Sierra Nevada Range began to rise about five million years ago. As the western part of the block tilted up, the eastern part dropped down. As a result there is a long, gentle slope towards the west and a steep slope to the east.

FIGURE 9 Yosemite Valley in the Sierra Nevada mountains



FIGURE 8 The Sierra Nevada Range was formed by fault-block tilting.



13.5.7 Plateau mountains

Plateaus are high areas of land that are large and flat. They have been pushed above sea level by tectonic forces or have been formed by layers of lava. Over billions of years, streams and rivers cause erosion, leaving mountains standing between valleys. Plateau mountains are sometimes known as erosion mountains.

Examples of plateau mountains include Table Mountain in South Africa (see figure 10), the Colorado Plateau (see figure 11) in the United States and parts of the Great Dividing Range in Australia.

FIGURE 10 The plateau of Table Mountain towers over the city of Cape Town in South Africa.



FIGURE 11 The Colorado Plateau in the United States was raised as a single block by tectonic forces. As it was uplifted, streams and rivers cut deep channels into the rock, forming the features of the Grand Canyon.



13.5 Activities

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

Remember

1. List one example of fold, fault, dome and plateau mountains. Where is each located?
2. State whether the following statements are true or false.
   (a) Fold mountains are the most common type of mountain in the world.
   (b) The Sierra Nevada Range was formed by the eastern part of a fault-block tilting up.

Explain

3. Use the **Fold mountains** weblink in the Resources tab to explain the formation of fold mountains.
4. Use the video to explain the formation of fault-block mountains.
5. How does the shape of each of the mountains shown in this subtopic provide clues as to how they were formed? How have the effects of erosion ***changed*** these mountains?
6. Use figures 5 and 6 to explain the formation of dome mountains.

Discover

7. Sketch figure 6 and annotate it to show where erosion has taken place.
   Label ***places*** that have hard and weak rocks.
8. Draw a sketch of figure 11, noting the plateau and areas of erosion and weathering.
9. Use an atlas to locate the Sierra Nevada Range. Describe where it is. Name two national parks in this mountain range. Choose one, and investigate some of its geographical characteristics. Present this as a PowerPoint, Keynote or Prezi presentation.

Predict

10. Refer to the case study in this subtopic which describes the formation of the Himalayas.
    (a) Provide an explanation for why scientists found ancient sea fossils on top of the Himalayas.
    (b) Describe how the Himalayas were formed. How long did it take for the plate carrying India to crash into Asia? Explain why these mountains are described as 'young' mountains.
    (c) Based on the movements occurring, predict what might happen to the Himalayas in the future.

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Explore more with this weblink: Fold mountains

13.6 How do earthquakes and tsunamis occur?

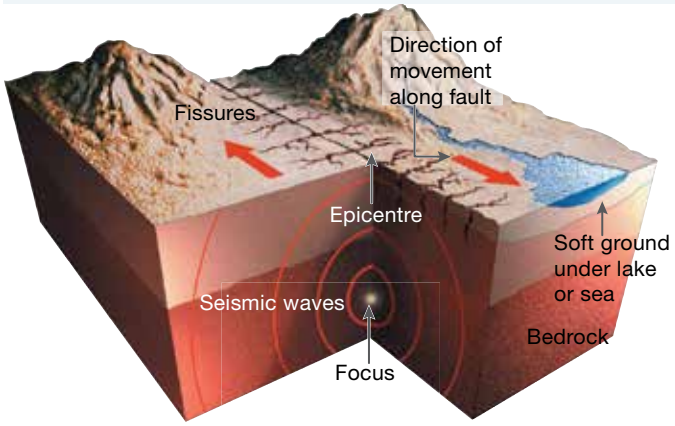
13.6.1 Earthquakes and tsunamis

Earthquakes and tsunamis are frightening events and they often strike with little or no warning. An earthquake can shake the ground so violently that buildings and other structures collapse, crushing people to death. If an earthquake occurs at sea, it may cause a tsunami, which produces waves of water that move to the coast and further inland, sometimes with devastating effects.

13.6.2 Earthquakes

Earthquakes occur every day somewhere on the planet, usually on or near the boundaries of tectonic plates. The map in figure 1 subtopic 13.4 shows a strong relationship between the location of plate boundaries and the occurrence of earthquakes. Weaknesses and cracks in the Earth's crust near these plate boundaries are called faults. An earthquake is usually a sudden movement of the layers of rock at these faults.

FIGURE 1 What happens in an earthquake?



The point where this earthquake movement begins is called the **focus** (see figure 1 at right). Earthquakes can occur near the surface or up to 700 kilometres below. The shallower the focus, the more powerful the earthquake will be. Energy travels quickly from the focus point in powerful **seismic waves**, radiating out like ripples in a pond. The seismic waves decrease in strength as they travel away from the epicentre. The strength of an earthquake is measured on the Richter scale.

The energy released at the focus can be immense, and it travels in seismic waves through the mantle and crust of the Earth. Primary waves, or P-waves, are the first waves to arrive, and are felt as a sudden jolt. Depending on the type of rock or water in which they are moving, these waves travel at speeds of up to 30 000 kilometres an hour.

Secondary waves, or S-waves, arrive a few seconds later and travel at about half the speed of P-waves. These waves cause more sustained up-and-down movement.

Surface waves radiate out from the epicentre and arrive after the main P-waves and S-waves. These move the ground either from side-to-side, like a snake moving, or in a circular movement.

Even very strong buildings can collapse with these stresses. The energy that travels in waves across the Earth's surface can destroy buildings many kilometres away from the epicentre.

Measuring earthquakes

Earthquakes are measured according to their magnitude (size) and intensity. Magnitude is measured on the Richter scale, which shows the amount of energy released by an earthquake. The scale is open-ended as there is no upper limit to the amount of energy an earthquake might release. An increase of one in the scale is 10 times greater than the previous level. For example, energy released at the magnitude of 7.0 is 10 times greater than the energy released at 6.0.

Earthquake intensity is measured on the Modified Mercalli scale, and indicates the amount of damage caused. Intensity depends on the nature of buildings, time of day and other factors.

13.6.3 Nepal earthquake, 2015

CASE STUDY

What caused the 2015 Nepal earthquake?

On 25 April 2015, a 7.8-magnitude earthquake struck Nepal at around midday. The epicentre of this earthquake was quite shallow — only 15 kilometres below the Earth's surface. It occurred approximately 80 kilometres to the north-west of Kathmandu, Nepal's capital.

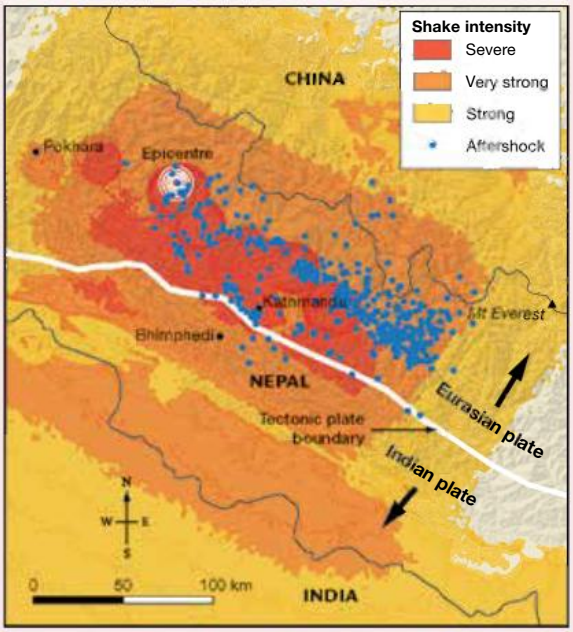
At this location, the Indian Plate to the south is subducting under the Eurasian Plate to the north (see figure 1 in subtopic 13.4). This is occurring at a rate of approximately 45 millimetres per year and is causing the uplift of the Himalayas (see the case study in section 13.5.5).

During the Nepal earthquake event, nearly 9000 people were killed and nearly 18 000 were injured (see the case study in subtopic 13.7).

Figure 3 below shows that the earthquake released a large amount of energy and caused large slips of up to four metres of the Earth's surface. There were severe aftershocks immediately after the main earthquake and the aftershocks continued for many weeks — up to 100 in total. The shaking from this earthquake was felt in China, India, Bhutan and much of western Bangladesh.

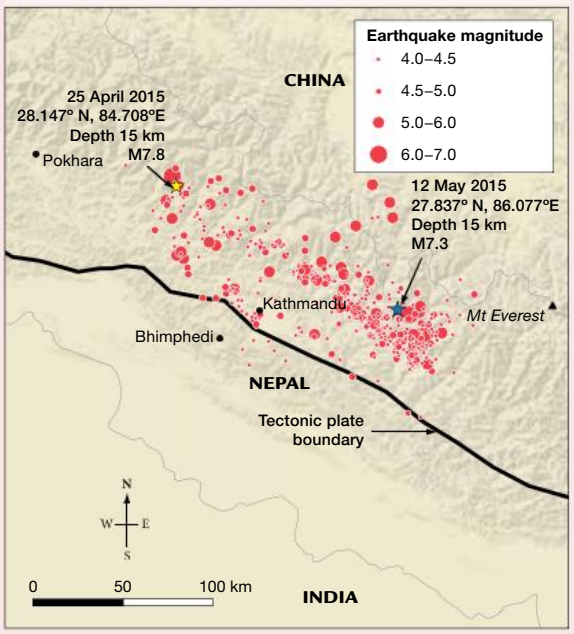
On 12 May 2015, a huge aftershock with a magnitude of 7.3 occurred near the Chinese border with Nepal (between Kathmandu and Mount Everest). More than 160 people died and more than 2500 were injured as a result of this aftershock.

FIGURE 2 The shake intensity and the tectonic plate boundary involved in the Nepal earthquake



Source: USGS

FIGURE 3 Magnitudes of earthquake and aftershocks in Nepal, 2015



Source: USGS

13.6.4 Christchurch earthquake, New Zealand, 2011

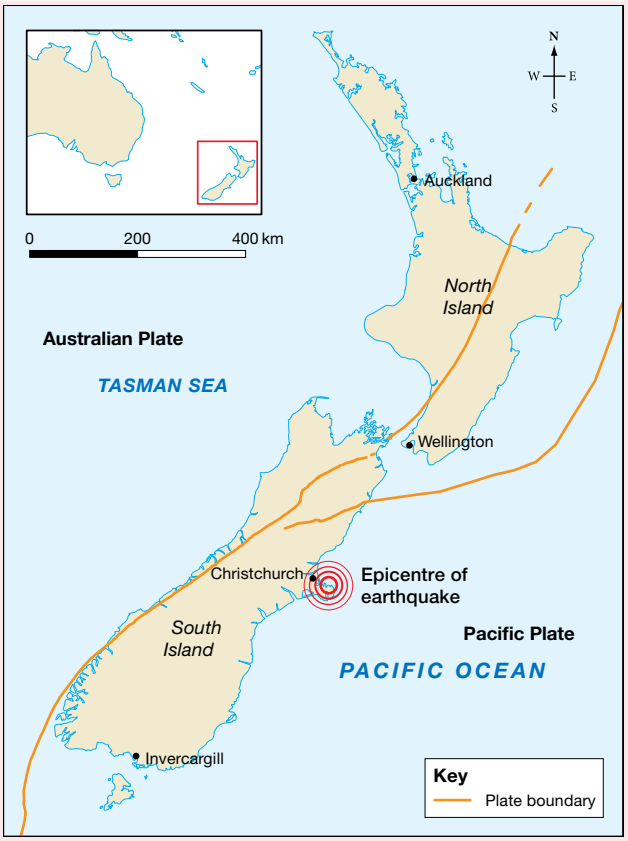
CASE STUDY

What caused the 2011 Christchurch earthquake?

A 6.3-magnitude earthquake struck Christchurch, New Zealand, on 22 February 2011. The city was badly damaged, 185 people were killed and several thousand were injured. The earthquake epicentre was 10 kilometres south-east of Christchurch's central business district, and was quite shallow — only five kilometres deep. The earthquake is considered to be an aftershock of an earthquake that occurred five months earlier in September 2010.

New Zealand is located between two huge moving plates — the Australian Plate and the Pacific Plate — and it experiences thousands of earthquakes every year. Most are very small, but some have caused a lot of damage. These movements continue to shape and form New Zealand and its dramatic mountain landscapes.

FIGURE 5 Location of the Christchurch earthquake in New Zealand



Source: Spatial Vision

FIGURE 4 Earthquake damage in Christchurch



13.6.5 Tsunamis

A tsunami is a large ocean wave that is caused by sudden motion on the ocean floor. The sudden motion could be caused by an earthquake, a volcanic eruption or an underwater landslide. About 90 per cent of tsunamis occur in the Pacific Ocean, and most are caused by earthquakes that are over 6.0 on the Richter scale (see figure 6).

A tsunami at sea will be almost undetectable to ships or boats. The reasons for this are that the waves travel extremely fast in the deep ocean (about 970 kilometres per hour — as fast as a large jet) and the wavelength is about 30 kilometres, yet the wave height is only one metre.

When tsunamis reach the continental slope, several things happen. The wave slows down and, as it does, the wave height increases and the wavelength decreases; in other words, the waves get higher and closer together. Sometimes, the sea may recede quickly, very far from shore, as though the tide has suddenly gone out. If this happens, the best course of action is to head to higher ground as quickly as possible.

A tsunami is not a single wave. There may be between five and 20 waves altogether. Sometimes the first waves are small and they become larger; at other times there is no apparent pattern. Tsunami waves will arrive at fixed periods between 10 minutes and two hours.

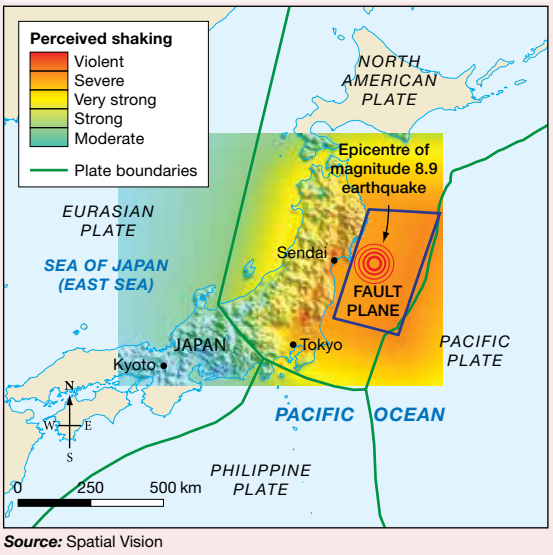
CASE STUDY

The Japanese tsunami, 2011

The region of Japan is seismically active because four plates meet there: the Eurasian, Philippine, Pacific and Okhotsk. Many landforms in this region are influenced by the collision of oceanic plates. Chains of volcanic islands called island arcs are formed, and an ocean trench is located parallel to the island arc (see figure 1 in subtopic 13.4).

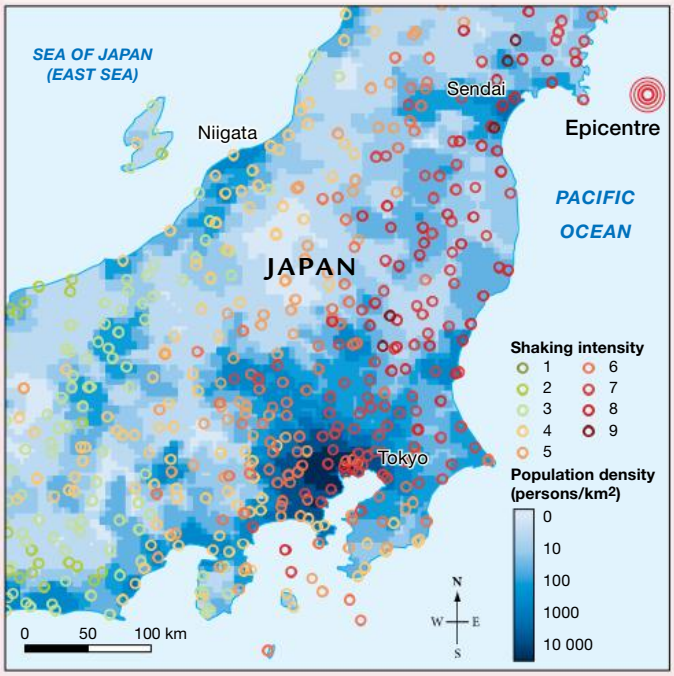
On 11 March 2011, an 8.9-magnitude earthquake struck near the coast of Japan. The earthquake was caused by movement between the Pacific Plate and the North American Plate. It occurred about 27 kilometres below the Earth's surface along the Japan Trench, where the Pacific Plate moves westwards at about eight centimetres each year. The sudden upward movement released an enormous amount of energy and caused huge displacement of the sea water, causing the tsunami. When the tsunami reached the Japanese coast, waves more than six metres high moved huge amounts of water inland. Strong aftershocks were felt for a number of days. Nearly 16 500 people were killed and 4800 were reported missing.

FIGURE 6 The location and magnitude of the earthquake that caused the Japanese tsunami



Source: Spatial Vision

FIGURE 7 This map shows the ground motion and shaking intensity from the earthquake across Japan.

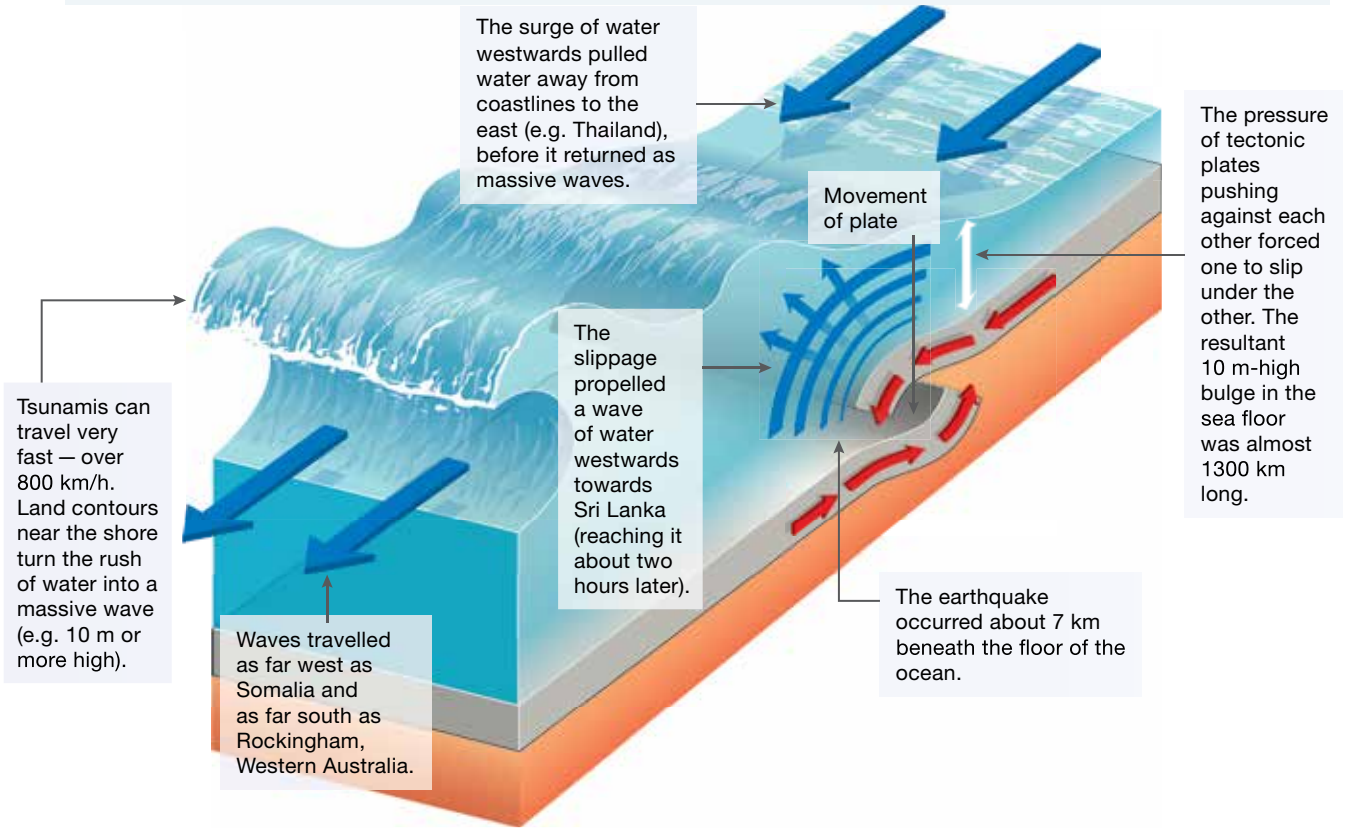


Source: Spatial Vision

FIGURE 8 The tsunami caused by the 8.9-magnitude earthquake in March 2011 swept over the coastline at Sukuiso and inland, carrying debris with it.



FIGURE 9 An earthquake and subsequent tsunami in the Indian Ocean in 2004 occurred along the boundary between tectonic plates.



13.6 Activities

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

Remember

1. What is the focus and epicentre of an earthquake?
2. How does an earthquake occur?
3. What does the Richter scale measure? How much more powerful is the magnitude of an earthquake at 7.0 than at 5.0?

Explain

4. Use the **P- and S-waves** weblink in the Resources tab to watch an animation of these waves. What is the difference between the waves? How fast do they travel? How is damage caused by the waves?
5. Study the **Tsunami animation** weblink in the Resources tab and figure 9. Use your own words to explain how a tsunami occurs.
6. Study figure 2.
   (a) In which direction is the Indian Plate moving? Is it moving under or over the Eurasian Plate?
   (b) Describe the location of the highest intensity shaking. How close was it to the epicentre? To the tectonic plate boundary?
7. Study figure 3. Are the following statements true or false? If they are false, rewrite them to make them true.
   (a) The earthquake and aftershocks were between 4.0 and 6.0 in magnitude.
   (b) The furthest earthquake and aftershocks were 100 km apart.
   (c) The earthquake on 12 May was the same intensity as the earthquake on 25 April.
   (d) Most of the aftershocks were felt to the east of the main earthquake on 25 April.

8. How does this earthquake event support the idea that the Himalayas are a young mountain range that is still forming?

Discover

9. Use an atlas or Google Earth to find the location of Lituya Bay. Draw a map to show the location. Use the **World's biggest tsunami** weblink in the Resources tab to listen to eyewitness accounts of the event. How does this help give you a sense of the ***scale*** of this event?
10. Study figure 6. Describe where the most violent shaking occurred as a result of the earthquake. How many plates meet in this region? What impact does this have?
11. Study figure 7.
    (a) Where in Japan was the greatest intensity felt?
    (b) What is the population density for Sendai, Tokyo and Niigata? How would this increase the impact of the earthquake?

Think

12. Study the photo of the Japanese tsunami in figure 8.
    (a) Imagine you are a radio news reporter. Describe what you see and what might be happening to people in the area.
    (b) Imagine you were a Sendai resident. Describe what you would have done to take care of yourself.
13. Why would most Australians not know what to do if an earthquake occurred?

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Try out this interactivity: Anatomy of a tsunami (int-3111)

Explore more with these weblinks: P- and S-waves, World's biggest tsunami

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.
- Haiti earthquake
- Banda Aceh tsunami

13.7 What are the impacts of earthquakes and tsunamis?

online only

Access this subtopic at **www.jacplus.com.au**

13.8 How are volcanic mountains formed?

13.8.1 How are volcanoes formed?

A volcano is a cone-shaped hill or mountain formed when molten magma in the Earth's mantle is forced through an opening or vent in the lithosphere. Almost all active volcanoes occur at or near plate boundaries. Some occur where two plates converge, and others occur where the plates are pulling apart, or diverging (see figure 1 on the next page). There is another group of volcanoes that are formed when plates move over hotspots.

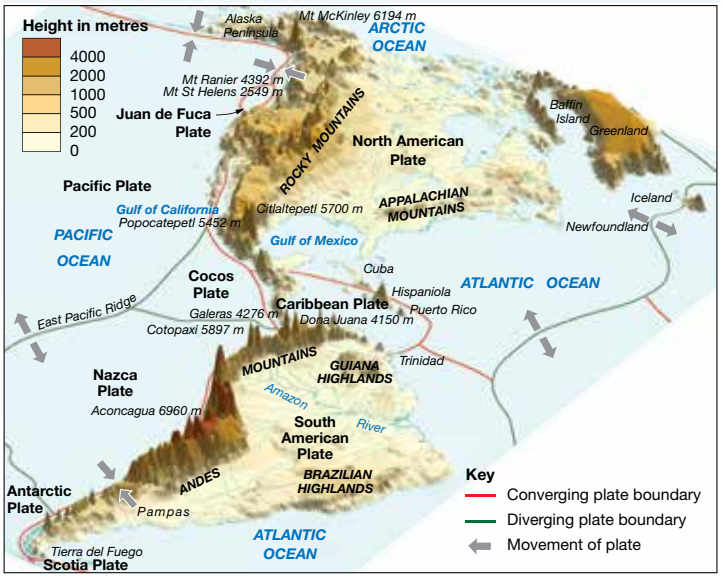
Subduction zones

Some volcanoes are formed when an oceanic plate is pulled underneath a continental plate (see subtopic 13.4). As the crust is forced down, it heats up and becomes magma. It can then rise to the Earth's surface through a magma chamber.

Volcanoes in rift zones

The longest mountain range in the world is underwater between the African and American continents, and is 56 000 kilometres long. It is called the Mid-Atlantic Ridge, and it is made up of many volcanic mountains. The volcanoes are formed where two plates move away from each other in **rift zones**. The molten lava rises to the surface in the space between the plates, and the largest volcanoes appear above the water as islands. Examples of rift islands are Iceland, the Azores, Ascension Island, Gough Island and Bouvet Island. The rifting, or spreading apart, can occur on land or on the seabed.

FIGURE 1 Landforms of North, Central and South America (not to scale)



Source: MAPgraphics Pty Ltd, Brisbane

The rifting of Iceland

The Mid-Atlantic Ridge passes through Iceland, where the island is splitting in two different areas (see figure 2). This can be seen where Iceland's volcanoes are located, at the point where the North American Plate is drifting to the west and the Eurasian Plate is drifting to the east (see figure 3). New crust is being formed in a rift below the sea, and eventually water from the Atlantic Ocean will fill the widening and deepening gaps between the separated parcels of land.

FIGURE 3 A chain of volcanoes in Iceland.



FIGURE 2 Rifting in Iceland



Source: MAPgraphics Pty Ltd, Brisbane

The Great Rift Valley, Africa

The Great Rift Valley is in Africa (figure 4 on the next page). It is about 5000 kilometres long, and stretches from Syria in the north to Mozambique in the south. The valley varies in width from 30 kilometres at its narrowest point to 100 kilometres at its widest. In some places it is a few hundred metres deep; in others it can be a few thousand metres deep.

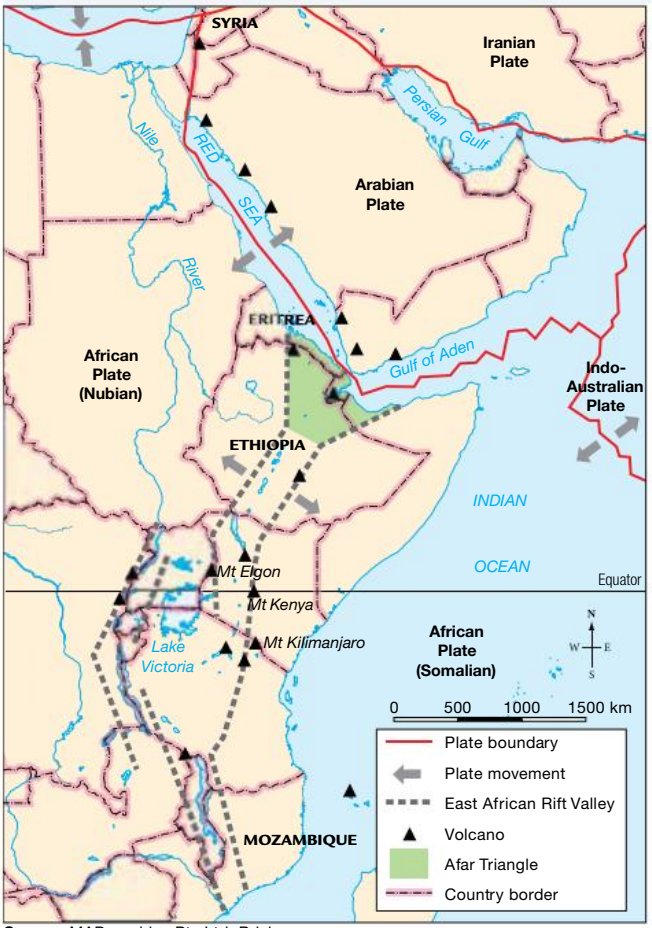
The Great Rift Valley was created through separation that began 35 million years ago, when the African and Arabian plates began pulling apart in the northern region. About 15 million years ago, East Africa began to separate from the rest of Africa along the East African Rift. The volcanic activity in this region has produced many volcanic mountains, such as Mount Kilimanjaro, Mount Kenya and Mount Elgon.

As these rifts continue to grow, new ocean waters will flow into the valleys, separating the landmasses.

13.8.2 Volcano hotspots

Although most volcanoes are formed on plate boundaries, some are located in the middle of plates, a long way from plate boundaries. These volcanoes have formed above a **hotspot** — a single plume of rising mantle. Volcanoes form as the plates slowly move over the hotspot and, over time, a chain of volcanoes can form. Hotspots are found in the ocean and on continents. Examples include the Hawaiian Islands and many of Australia's extinct volcanoes. In Hawaii, the location of the volcanoes gives a clue to the direction and speed of the plate movement.

FIGURE 4 The Great Rift Valley, Africa



Source: MAPgraphics Pty Ltd, Brisbane

13.8 Activities

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

Explain

1. Go to the **Hawaii's hotspot** weblink in the Resources tab and explain how hotspot volcanoes form.
2. Refer to figures 2 and 3. Explain why a chain of volcanoes, like the one in the photograph, forms in Iceland. What is happening to the plates?

Discover

3. Use an atlas to find the Cotopaxi volcano. In which country is it located? How high is it?
4. Use an atlas or Google Earth to locate the islands on the Mid-Atlantic Ridge. Give the latitude and longitude for three locations. Describe the ***interconnection*** between the location of the ridge and the location of islands and volcanoes.

Predict

5. Draw what you imagine Iceland will look like many thousands of years in the future after further rifting. Provide new names for each of the smaller islands. In which direction, and towards which continent, will each island drift? Describe key ***changes***.

6. Draw a series of sketches to show what you predict will happen to the African landmass as the Great Rift Valley continues to rift. Include a map of Africa showing the ***change*** in shape that might occur. You need to annotate your sketches to justify the predictions you have made.

Think

7. Refer to an atlas map of Africa and look at the shape of the island of Madagascar. Try to imagine fitting this island back into the mainland. Using plate tectonic terms, write a paragraph to describe how Madagascar's location has ***changed*** over time.
8. Describe the ***changes*** occurring in
   (a) the Great Rift Valley
   (b) Iceland
   that are causing volcanoes to form.
9. How is the ***scale*** of the ***changes*** happening in Iceland different from the ***scale*** of ***change*** happening in the Great Rift Valley?

learnON RESOURCES — ONLINE ONLY

Explore more with this weblink: Hawaii's hotspot

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.
› Hawaii's hot spot

13.9 How did Mount Taranaki form?

13.9.1 Introducing Mount Taranaki, New Zealand

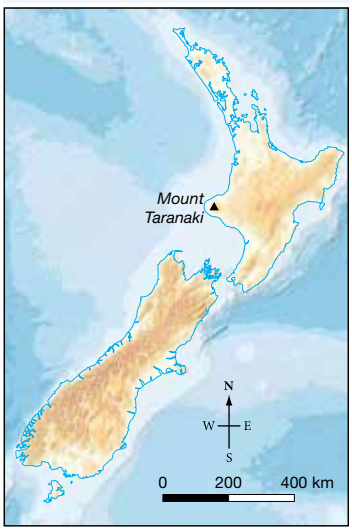
New Zealand's Mount Taranaki is named after the Māori terms *tara* meaning 'mountain peak' and *ngaki* meaning 'shining' (because the mountain is covered with snow in winter).

Mount Taranaki is 2518 metres high and is the largest volcano on New Zealand's mainland. It is located in the south-west of the North Island (see figure 1).

Mount Taranaki was formed 135 000 years ago by subduction of the Pacific Plate below the Australian Plate. It is a stratovolcano — a conical volcano consisting of layers of pumice, lava, ash and tephra. Mount Taranaki is symmetrical, looking the same on both sides of a central point. It is the only active volcano in a chain in this region. The other volcanoes were once very large but have been eroded over time.

The summit of Mount Taranaki is a lava dome in the middle of a crater that is filled with ice and snow. The mountain is considered likely to erupt again. There are significant potential hazards from lahars, avalanches and floods. A circular plain of volcanic material

FIGURE 1 Location of Mount Taranaki on the North Island of New Zealand



Source: Spatial Vision

surrounding the mountain was formed from lahars (see figure 1 in subtopic 13.11) and landslides. Some of these flows reached the coast in the past. The volcano's lower flanks are covered in forest, and are part of the national park. There is a clear line between the park boundary and surrounding farmland.

FIGURE 2 Mount Taranaki has a near-perfect conical shape.



FIGURE 3 Aerial photo of Mount Taranaki

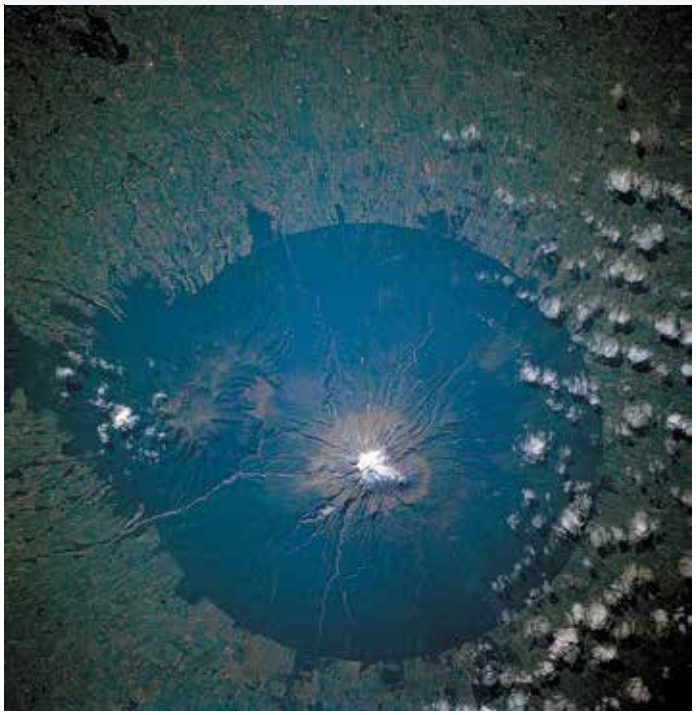
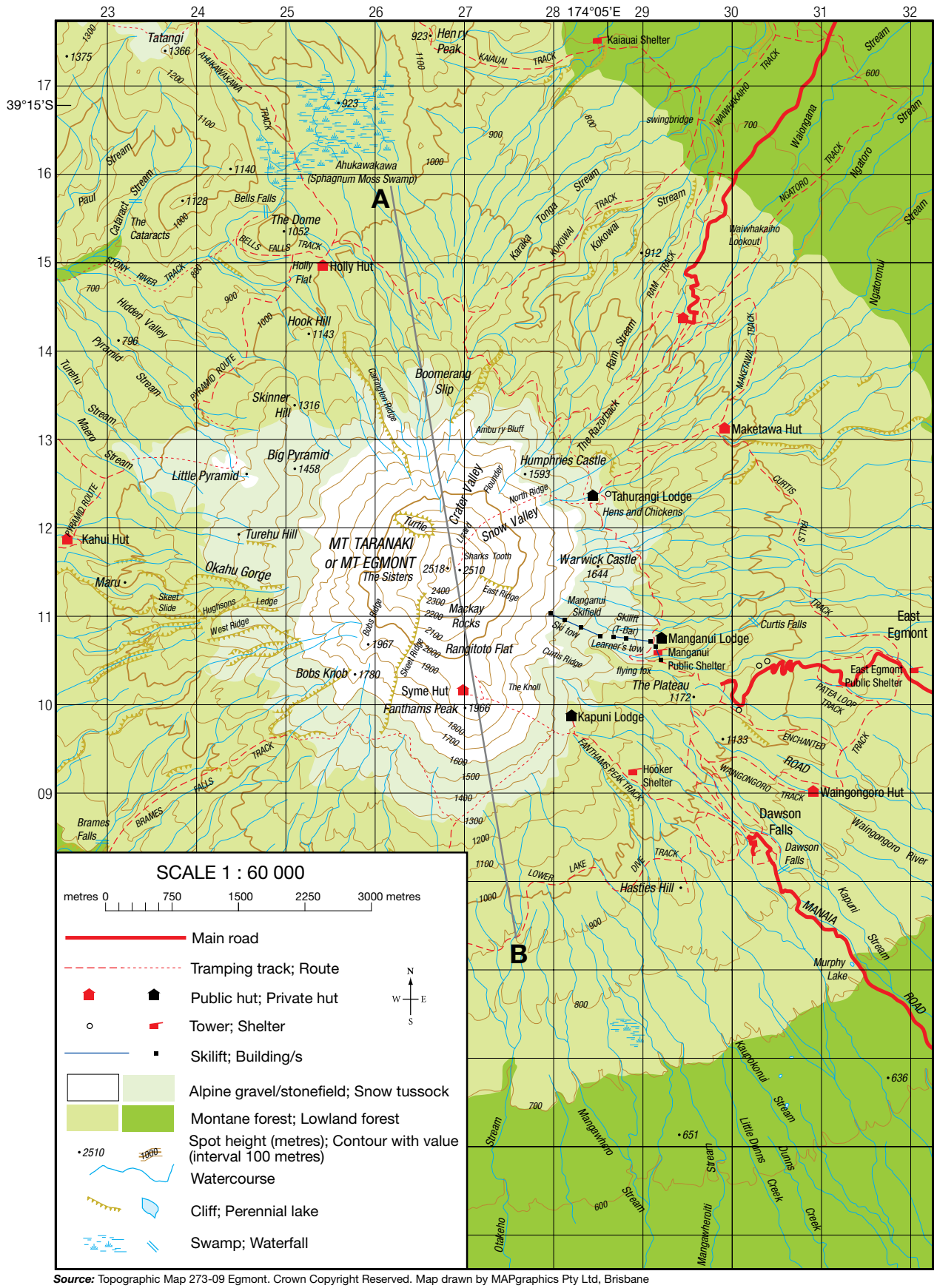


FIGURE 4 Topographic map of Mount Taranaki



Source: Topographic Map 273-09 Egmont. Crown Copyright Reserved. Map drawn by MAPgraphics Pty Ltd, Brisbane

13.9 Activities

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

Remember

1. Where is Mount Taranaki located?
2. What is a stratovolcano?
3. Refer to figure 4.
   (a) What is the grid reference for the spot height of Mount Taranaki?
   (b) Calculate the number of private huts and public huts.
   (c) Name the ski field.
   (d) How many ski tows and lifts are there at the ski field? Calculate the length of each.
   (e) Name and give the grid reference of a lodge in which skiers could stay.
   (f) Name the other two lodges on the map.
   (g) Bushwalking is a popular activity. How many huts are on the map?

Explain

4. Mount Taranaki receives between 3200 mm and 6400 mm of rainfall each year. How would this contribute to the shape of this landform?
5. Describe evidence from the aerial photo in figure 3 that the national park has protected forests around the volcano. (See the 'Interpreting an aerial photo' SkillBuilder in subtopic 13.12.)

Discover

6. Use the **Mt Taranaki Live** weblink in the Resources tab to view Mount Taranaki using the webcam.

Predict

7. Use figures 2, 3 and 4 to describe where you think lava would flow if Mount Taranaki erupted. Describe the potential ***changes*** to the human and natural ***environment***.

learnON RESOURCES — ONLINE ONLY

Explore more with this weblink: Mt Taranaki Live

13.10 SkillBuilder: Drawing simple cross-sections

online only

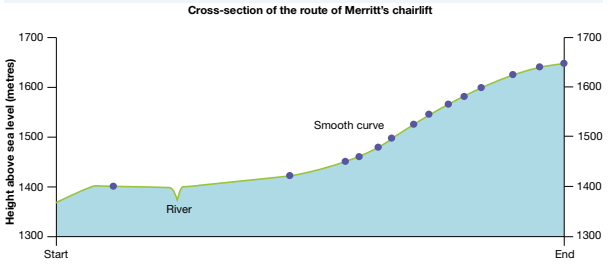
WHAT ARE CROSS-SECTIONS?

A cross-section is a side-on, or cut-away view of the land, as if it had been sliced through by a knife. Cross-sections provide us with an idea of the shape of the land. We can use contour lines on topographic maps to draw a cross-section between any two points.

Go online to access:

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

FIGURE 2 A completed cross-section of Merritt's chairlift route



learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Drawing simple cross-sections (eles-1655)

Try out this interactivity: Drawing simple cross-sections (int-3151)

13.11 What is the anatomy of a volcano?

13.11.1 Volcanic eruptions

Volcanic mountains are formed when magma pushes its way to the Earth's surface and then erupts as lava, ash, rocks and volcanic gases. These erupting materials build up around the vent through which they erupted.

A volcanic eruption can be slow or spectacular, and can result in a number of different displays (see figure 1 on the next page).

13.11.2 Volcanic shapes

Volcanoes come in a variety of shapes and sizes, forming different landforms (see figure 2). There are four main types and each depends on:

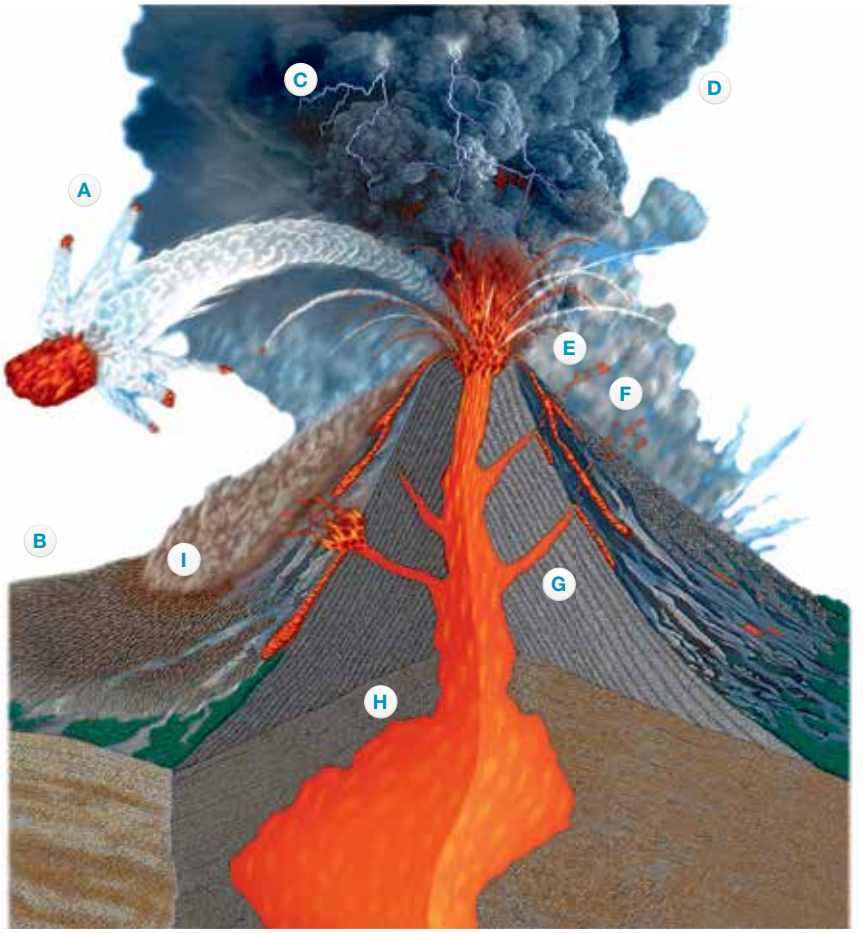
- the type of lava that erupts
- the amount and type of ash that erupts
- the combination of lava and ash.

Lava that is rich in silica (a mineral present in sand and quartz) is highly viscous and is thick and slow moving. If the lava is low in silica, it tends to be very runny and may flow for many kilometres before it cools and hardens to become rock. Volcanoes that erupt runny lava tend to have broad, flat sides (shield volcanoes). Those that erupt thick, treacle-like lava tend to have much steeper sides (dome volcanoes).

Heavy ash material, like volcanic bombs, settles close to the crater while lighter ash is carried further away. Volcanoes that are built up through falls of ash are steep-sided cinder cones.

The most common type of volcano is one built up of both ash and lava; this is called a composite volcano.

FIGURE 1 The anatomy of a volcano



A A fragment of lava greater than 64 millimetres in diameter is called a volcanic bomb. They are often solid pieces of lava from past eruptions that formed part of the cone.

B A pyroclastic flow is a superheated avalanche of rock, ash and lava that rushes down the mountain with devastating effects. The flow can travel at up to 240 kilometres per hour and reach temperatures of 800 °C. When Mount Pelée erupted in 1902, on the island of Martinique in the Caribbean, a pyroclastic flow covered the town of Saint-Pierre, killing all but two of the town's 30 000 inhabitants.

C Lightning is often generated by the friction of swirling ash particles.

D As rock is pulverised by the force of the eruption, it becomes very fine ash, and is carried by wind away from the crater as an ash cloud. Volcanic ash may blanket the ground to a depth of many metres. In the eruption of Mount Vesuvius in 79CE, volcanic ash completely covered two large towns: Pompeii and Herculaneum.

E A volcanic cone is made up of layers of ash and lava from previous eruptions. If the volcano has not erupted for thousands of years (i.e. is dormant), these layers will be eroded away.

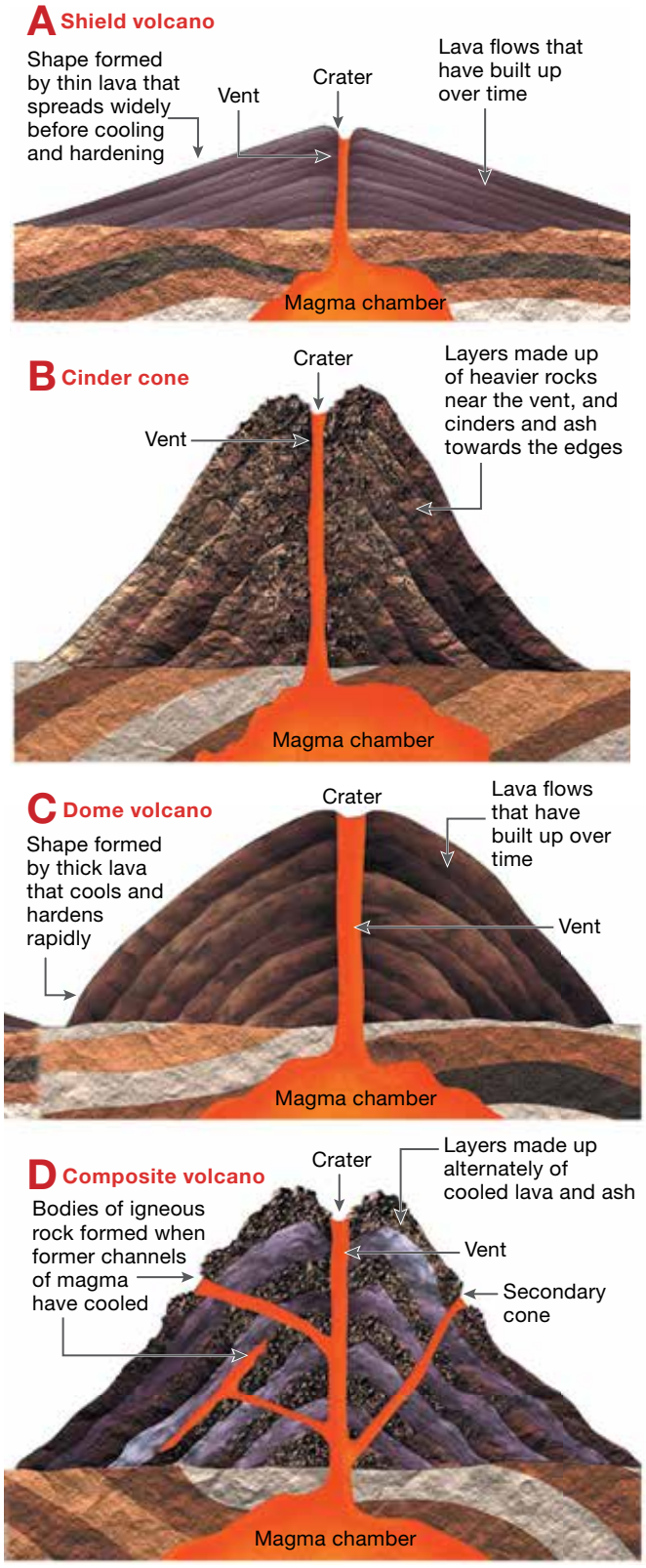
F Lava may be either runny or viscous, and can flow for many kilometres before it solidifies, thereby building up the Earth's surface.

G Pressure may force magma through a branch pipe or side vent. In the eruption of Mount St Helens in 1980, in the United States, the side of the mountain collapsed and the side vent became the main vent.

H Where two plates move apart, molten rock from the mantle flows upward into a magma chamber. More rock is melted and erupts violently upwards. Magma is generally within the temperature range of 700 °C to 1300 °C.

I When pyroclastic flows melt snow and ice, and mix with rocks and stones, a very wet mixture called a lahar can form. Lahars can flow quickly down the sides of volcanoes and cause much damage. One lahar that formed in 1985 on Nevado del Ruiz volcano in Colombia travelled at up to 50 kilometres per hour and was up to 40 metres high in some places. A wall of mud, water and debris travelled 73 kilometres to the town of Armero, devastating it. More than 23 000 people died that night and 5000 homes were destroyed.

FIGURE 2 Four volcanic landforms



13.11 Activities

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

Remember

1. What are the three main factors that determine the shape of a volcano?

Explain

2. Explain how the different shapes of volcano shown in figure 2 are the results of different materials being ejected.
3. (a) Refer to figure 1. Describe, in detail, the ***changes*** to the ***environment*** that volcanic eruptions can cause.
   (b) Which ***changes*** would impact on a small ***scale*** and which would impact on a larger ***scale***?

Think

4. Use the internet to find pictures of volcanic landforms and materials. These include crater lakes, geysers, calderas, fields of ash deposits, volcanic plugs, lava tubes, hummocks and pumice. You could also find pictures of the two types of lava: a'a and pahoehoe. Use your pictures to put together a field guide to volcanic landforms. Each page should contain a picture of the landform, a brief description and a place where it could be found — sometimes they are tourist attractions.

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

- Lahars

13.12 SkillBuilder: Interpreting an aerial photo

online only

WHAT ARE AERIAL PHOTOS?

Aerial photographs are those that are taken from above the Earth from an aircraft. **Oblique aerial photos** are those taken from an angle from an aircraft. **Vertical aerial photos** are taken from directly above; that is, looking straight down onto objects. Aerial photos can reveal details that are not recorded on maps. It is easy to see landforms with distinct shapes, different landscapes, land uses, specific places and spatial patterns of the environment.

Go online to access:

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

FIGURE 1 Cartographers use different types of photographs



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Watch this eLesson: Interpreting an aerial photo (eles-1654)

Try out this interactivity: Interpreting an aerial photo (int-3150)

13.13 How do volcanic eruptions affect people?

online only

Access this subtopic at **www.jacplus.com.au**

13.14 Review

online only

13.14.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

13.14.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

13.7 What are the impacts of earthquakes and tsunamis?

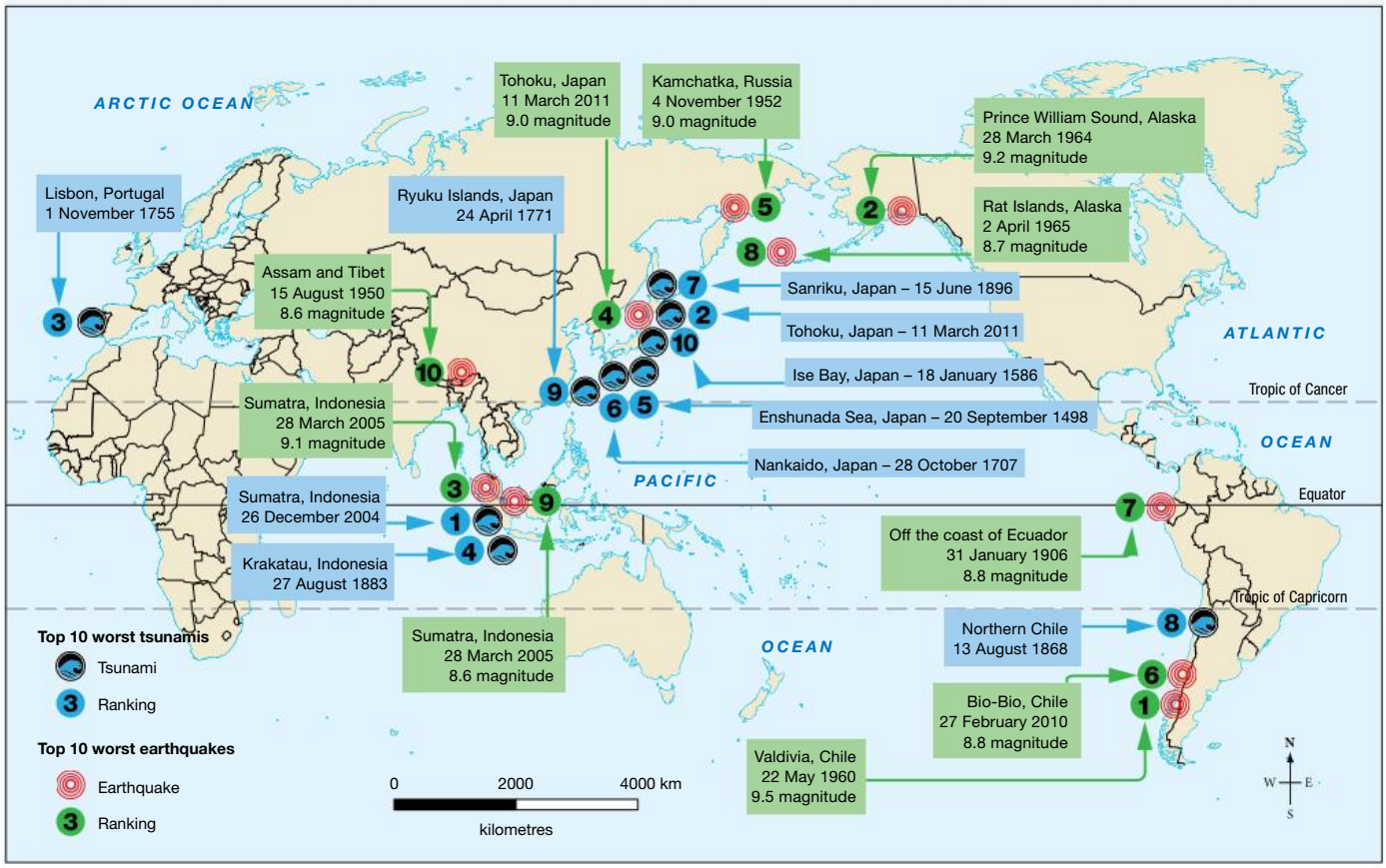
13.7.1 Introduction

Earthquakes and tsunamis can have an enormous impact. The degree of impact can be affected by several factors: the size of the quake; its location; the density of the population near the epicentre; and whether there are any densely populated areas nearby. Poverty also plays a role, because it can increase a country's or region's vulnerability to such disasters. Measuring the event by the impact can be difficult. Should it be measured by the number of people killed and made homeless (social impact); the cost of recovery (economic impact); or the effect on the surroundings (environmental impact)?

13.7.2 Impact on people

The data in the map in figure 1, and in tables 1 and 2, show some of the worst earthquake and tsunami disasters that have occurred. The amount of damage and death they cause does not always relate to the magnitude of the earthquake. Some smaller magnitude earthquakes can have a devastating impact. Likewise, to measure the impact of a tsunami, we have to look at its effect on people, not at the magnitude of the earthquake (or volcano) that caused it, and not at the size of the waves, which are difficult to measure.

FIGURE 1 Map of the 10 biggest earthquakes and tsunamis in recorded history.



Source: Spatial Vision

TABLE 1 Tsunamis shown in figure 1

No. on map, and cause	Description and impact
1 9.1 earthquake	Tsunami 50 m high, reaching 5 km inland near Meubolah. 230 000 people died. Estimated damages of US$10 billion.
2 9.0 earthquake	Tsunami waves of 10 m swept over the east coast of Japan. 19 000 people died. Caused nuclear emergency at Fukushima Daiichi nuclear power plant. $235 billion damages.
3 8.5 earthquake	Waves up to 30 m high struck towns along western Portugal and southern Spain. Earthquake and tsunami killed 60 000 in Portugal, Morocco and Spain.
4 Volcano	Tsunami linked to the explosion of the Krakatau volcano. Waves as high as 37 m demolished the towns of Anjer and Merak. Killed 40 000 people, with 2000 deaths caused by the volcanic eruptions rather than the tsunami.
5 8.3 earthquake	Homes were flooded and swept away; 31 000 people killed.
6 8.4 earthquake	Waves up to 25 m high struck the Pacific coasts of Kyushyu, Shikoku and Honshin. Nearly 30 000 buildings were damaged in the affected regions and about 30 000 people were killed.
7 7.6 earthquake (estimated)	Tsunami was reported to have reached a height of 38.2 m, causing damage to more than 11 000 homes and killing around 22 000 people. Reports were also found of a corresponding tsunami hitting the east coast of China, killing around 4000 people and doing extensive damage to local crops.
8 Two 8.5 earthquakes	Waves up to 21 m high affected the entire Pacific Rim for two or three days. Tsunami registered by six tide gauges as far away as Sydney, Australia. 25 000 deaths and estimated damages of US$300 million were caused along the Peru–Chile coast.
9 7.4 earthquake	Tsunami waves around 11–15 m high destroyed 3137 homes, killing nearly 12 000 people in total.
10 8.2 earthquake (estimated)	Waves of 6 m caused more than 8000 deaths and a large amount of damage to a number of towns.

TABLE 2 Earthquakes shown in figure 1

No. on map and magnitude of earthquake	Description and impact
1 9.5	Killed 1655 people, injured 3000 and displaced two million. Caused US$550 million damage. Two days later, Puyehue volcano erupted, sending ash and steam into the atmosphere for several weeks.
2 9.2	Resulting tsunami killed 128 people and caused US$311 million in damage.
3 9.1	Killed 227 900 people, displaced 1.7 million in South Asia and East Africa. On 28 December, a mud volcano began erupting near Baratang, Andamar Islands.
4 9.0	Earthquake caused tsunami that killed 19 000 people and injured 6000. Caused US$ tens of billions. Economic impacts huge, especially with the shutting down of a nuclear reactor.
5 9.0	Generated a tsunami that caused damage of US$1 million in Hawaiian Islands. Some waves over 9 m high at Kaena Point, Oahu. None killed.
6 8.8	Killed at least 521 people, with 56 missing and 12 000 injured. More than 800 000 people displaced, with a total of 1.8 m people affected across Chile, where damage was estimated at US$30 billion.
7 8.8	Earthquake caused tsunami that was reported to have killed between 500 and 1500 people in Ecuador and Colombia.
8 8.7	Generated a tsunami about 10 m high that caused damage on Shemya Island, plus US$10 000 in property damage from flooding on Amchitka Island. No deaths or injuries reported.
9 8.6	Killed 1313, with more than 400 people injured by the tsunami as far away as Sri Lanka.
10 8.6	This inland earthquake caused widespread damages to buildings as well as large landslides. 780 people were killed in eastern Tibet.

Less developed countries often do not have the resources to prepare adequately for an earthquake. Often, many people are housed in badly constructed buildings in densely populated areas on poor land. When a disaster strikes, poorer countries often do not have the resources to act quickly and get help for relief efforts. Developed countries have strict building codes and better infrastructure to withstand disasters. They have warning systems and better communication. Usually, help is quick to arrive, with army and police personnel sent in to help with rescue efforts.

Analysis of EM-DAT (The International Disaster Database) data also shows how income levels have an impact on disaster death tolls. On average, more than three times as many people died per disaster in low-income countries (332 deaths) than in high-income nations (105 deaths). A similar pattern is evident when low- and lower-middle-income countries are grouped together and compared to high- and upper-middle-income countries. Taken together, higher-income countries experienced 56% of disasters but lost 32% of lives, while lower-income countries experienced 44% of disasters but suffered 68% of deaths. This demonstrates that levels of economic development, rather than exposure to hazards per se, are major determinants of mortality.

CASE STUDY

Impact of the Nepal earthquake, 2015

Nearly 9000 people were killed during the 25 April and 12 May earthquakes in Nepal with more than 17 800 injured. Nearly 400 people are still missing. In addition, more than 500 000 houses were destroyed and nearly 270 000 were damaged. Nepal's historic Dharahara Tower collapsed, killing 180 people, and an avalanche at the Mount Everest Base Camp killed 21 people and injured 120. A huge avalanche also occurred in the Langtang Valley, where all the homes were destroyed and 250 people were reported missing. Hundreds of thousands of people were made homeless after buildings were destroyed or had become dangerous as a result of damage.

A further 78 people were killed and more than 500 injured in India, and in China 25 people were killed and more than 380 people injured along with 2500 homes destroyed and 24 700 damaged. The earthquake occurred during working hours so many people were outdoors. Had it occurred at night, with more people at home, the number of dead and injured would have been higher.

The economic costs are also huge — it is estimated that damage costs are between US$4–5 billion as a result of the earthquake and aftershocks. This is disastrous for a very poor country like Nepal.

For some time now, the region around Kathmandu has been known as one of the most dangerous places in the world, in terms of earthquake risk. Apart from earthquakes, other geophysical hazards that occur in Nepal include landslides, avalanches and flash flooding. In addition to its location, Nepal is extremely vulnerable because of its poverty. This means Nepal has poor building standards (many of the buildings were quickly reduced to rubble and dust) and inadequate public health and community systems to support its people in times of crisis. Without this support, clean water, safe food and effective disposal of sewerage cannot be guaranteed. There is also no adequate hospital and first aid response when disasters strike.

FIGURE 2a and b Before and after images of Dunbar Square





FIGURE 3 Compared to some richer countries, such as Japan and the United States, very few buildings in Nepal are earthquake-proof.



Impact on the environment

The impact of an earthquake or tsunami on a human environment can be catastrophic. It can damage and destroy entire settlements. **Landslides** can be triggered by earthquakes, permanently changing the landscape.

Liquefaction

Liquefaction occurs when soil suddenly loses strength and, mixed with groundwater, behaves like a liquid. This usually occurs as a result of ground shaking during a large earthquake. The types of soils that can liquefy include loose sands and silts that are below the water table, so all the space between the grains is filled with water. Dry soils above the water table will not liquefy.

Once a soil liquefies, it cannot support the weight of the dry soil, roads, concrete floors and buildings above it. The liquefied soil comes to the surface through cracks, and widens them.

FIGURE 4 This landslide was caused by an earthquake in June 2008 in Honshu, Japan.



FIGURE 5 Cars swallowed by liquefied soil on a road in Christchurch, New Zealand, 2011.



13.7 Activities

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

Remember

1. List the factors that combine to cause an earthquake or tsunami to turn into a disaster.
2. List the different impacts that earthquakes and tsunamis can have.

Explain

3. Study figure 1 in this subtopic and figure 1 in subtopic 13.4.
   (a) Describe the ***interconnection*** between the distribution of earthquakes and tsunamis and the distribution of tectonic plates.
   (b) Why might Japan experience so many destructive earthquakes and tsunamis?
4. Geophysicists and other experts have warned for decades that Nepal was vulnerable to a deadly earthquake. Why was Nepal not better prepared for this event?
5. How does poverty in Nepal increase vulnerability to disasters?
6. What is the relationship between income and disaster risk? Why is the risk of earthquakes and tsunamis higher in poor countries?
7. What is liquefaction? Why does it occur? Use the **Liquefaction** weblink in the Resources tab to view a video of liquefaction occurring in Tokyo, Japan.

Discover

8. Use the **Sendai tsunami** weblink in the Resources tab to look at satellite images showing areas before and after the 2011 Japanese tsunami. Choose two locations to draw sketches of before and after, and annotate your sketches to record the changes that have taken place.
9. Conduct some research to see how Japan has recovered from the 2011 tsunami and then how Nepal has recovered from the 2015 earthquake. How can you account for any differences in the recovery process?

Predict

10. Use the **Earthquake-vulnerable cities** weblink in the Resources tab to read more about cities that are most at risk from earthquakes. Use an atlas to locate these cities. Where are they located in relation to plate boundaries and, in particular, to the Pacific Ring of Fire?

Think

11. 'The strongest earthquakes result in the worst disasters.' Work in pairs or groups of three to agree, partially agree, or disagree with this statement. Use the data on these pages and particular examples in your response.
12. Earthquake engineers often say earthquakes don't kill people, collapsing buildings do. Discuss this statement in relation to poor and rich countries. What role should people in rich countries play in helping those in poor countries at risk of these events?

learnON RESOURCES — ONLINE ONLY

Explore more with these weblinks: Liquefaction, Sendai tsunami, Earthquake-vulnerable cities

13.10 SkillBuilder: Drawing simple cross-sections

13.10.1 Tell me

What are cross-sections?

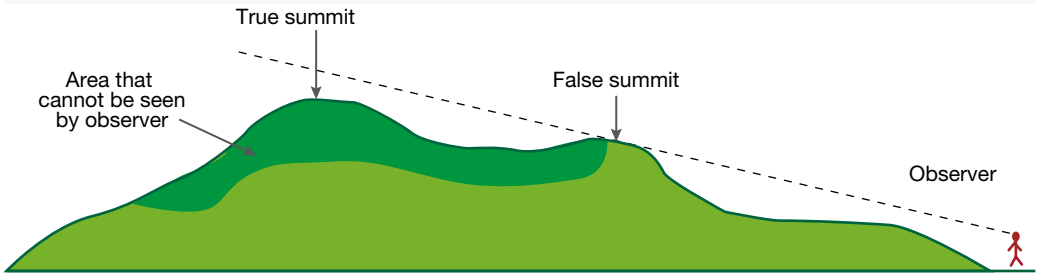
A cross-section is a side-on, or cut-away view of the land, as if it had been sliced through by a knife. It is like taking a vertical slice of the landscape and looking at it side-on. Cross-sections provide us with an idea of the shape of the land. We can use contour lines on topographic maps to draw a cross-section between any two points. Cross-sections also indicate heights at a range of points.

Why are cross-sections useful?

Cross-sections help us visualise the shape of the land between any two points. They are useful as sometimes it is difficult to visualise what topography (shape of the land) is like when looking at a topographic map. Also, they help us determine if a landform will block the view of other landforms, for example, if a high hill obscures the view of the valley beyond and the lower range of hills. Cross-sections are also useful for:

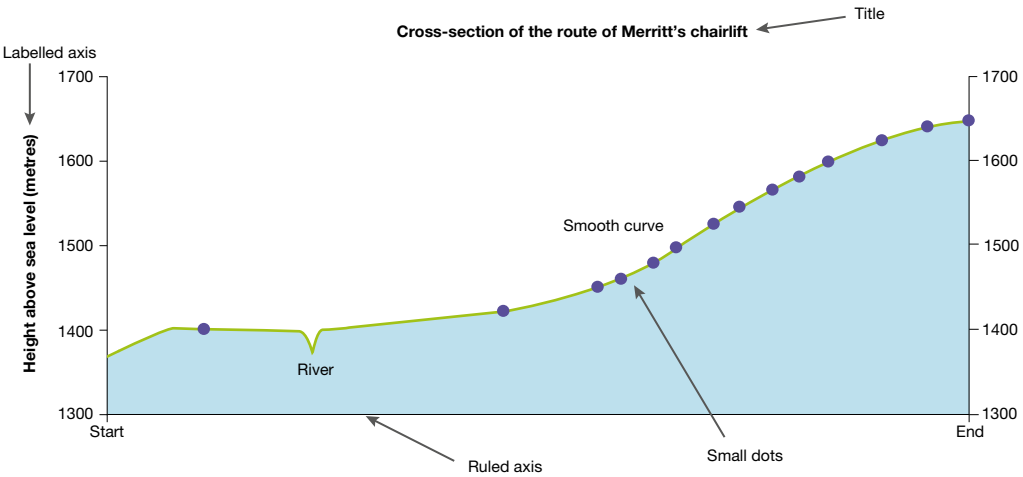
- showing the changing shape of the land
- planning a walk or hike in a mountainous area
- planning constructions, such as houses, on sloping blocks.

FIGURE 1 Working with cross-sections



Model

FIGURE 2 A completed cross-section of Merritt's chairlift route



A good cross-section has:
- been drawn in pencil
- ruled axes
- labelled axes
- used small dots
- created a smooth curve
- labelled features, if necessary
- a title.

13.10.2 Show me

How to complete a cross-section

You will need:

- a topographic map of the region being considered
- a piece of paper with a straight side for marking the contours
- another sheet of paper, or graph paper, to draw the cross-section on
- a light grey pencil
- a ruler
- an eraser.

Procedure:

To complete a cross-section you must have a topographic map of the place and decide between which two points you would like to look at a cut-away view of the land.

STEP 1

Determine the two points between which you want to create a cross-section. Your paper edge must be long enough to go between these points.

STEP 2

Place the straight edge of a piece of paper between the two points. Mark the two extremities of your cross-section on the edge. Label these ‘start’ and ‘end’ or use place names/grid references from the map.

STEP 3

Mark where each contour line touches the edge and write beside the mark on the paper page the height of the contour line (see figure 4). It may be necessary to lift the page edge or follow the contour line to find a number. Hold your page firmly and lift the edges to prevent moving your page off the line of the cross-section. When you have completed all the contour markings you can lift the page away from the map.

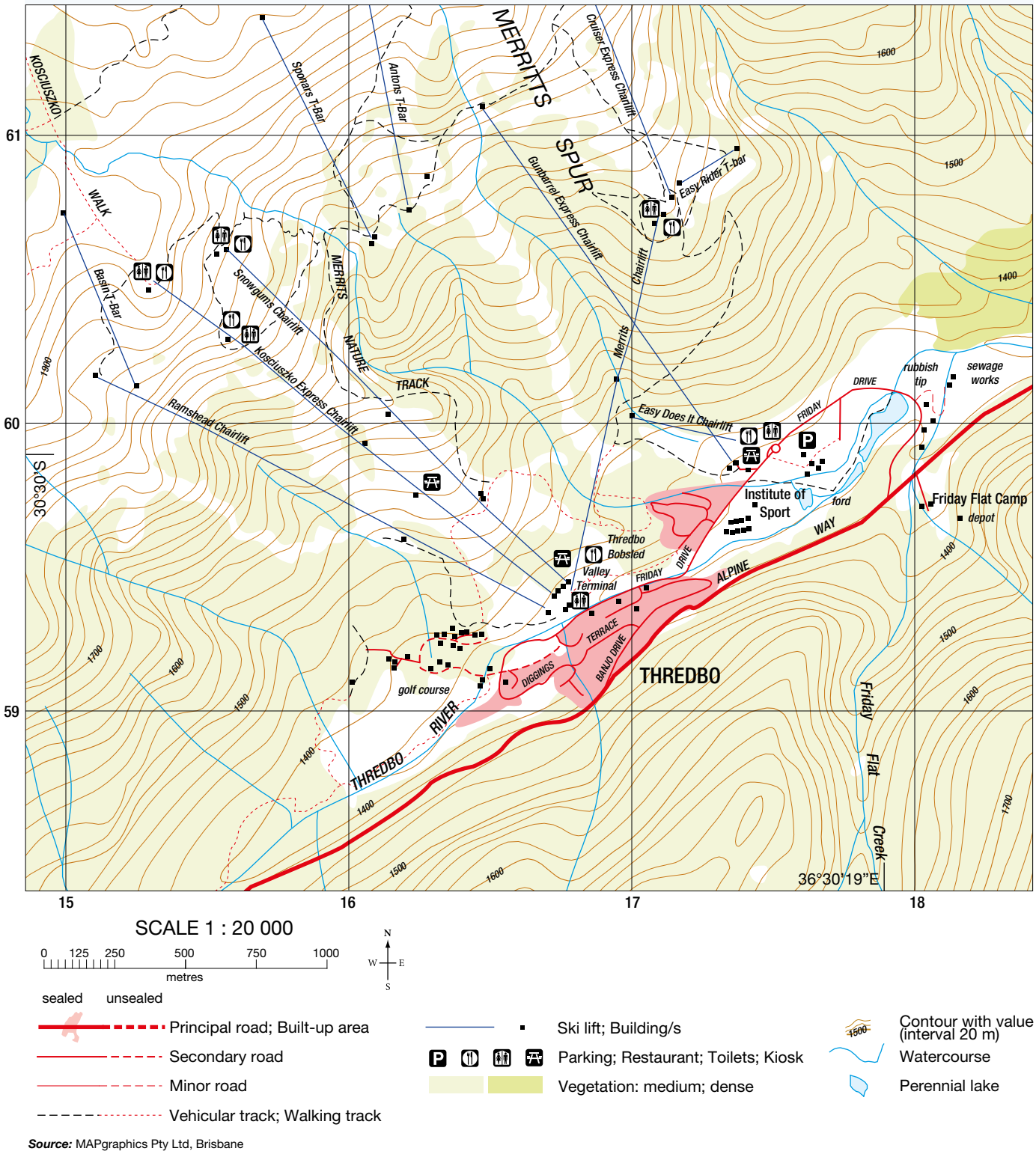
STEP 4

On the other sheet of paper, use your ruler to draw an axis onto which to transfer your markings. The horizontal (base) line should be as long as your cross-section from ‘start’ to ‘end’. The vertical scale needs to give a realistic impression of the slopes and landforms. For this exercise, use one centimetre to represent 100 metres.

STEP 5

Place the marked edge of the paper along the base axis. At each contour marking, find the appropriate height according to the vertical scale and put a small dot directly above the contour marked on the edge of the paper.

FIGURE 3 Topographic map of Thredbo



SCALE 1 : 20 000

0 125 250 500 750 1000
metres

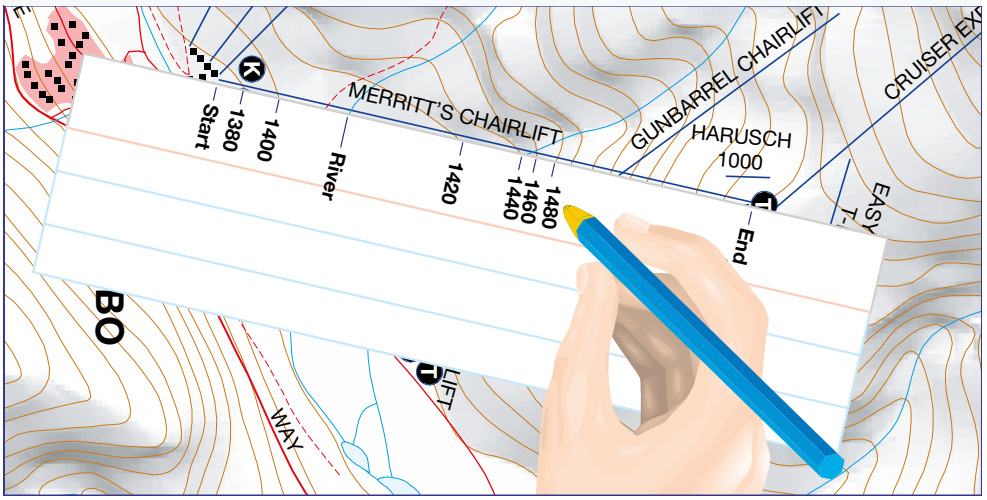
N W E S

sealed unsealed

- Principal road; Built-up area
- Secondary road
- Minor road
- Vehicular track; Walking track
- Ski lift; Building/s
- Parking; Restaurant; Toilets; Kiosk
- Vegetation: medium; dense
- Contour with value (interval 20 m)
- Watercourse
- Perennial lake

Source: MAPgraphics Pty Ltd, Brisbane

FIGURE 4 Marking up the paper edge where each contour touches the page



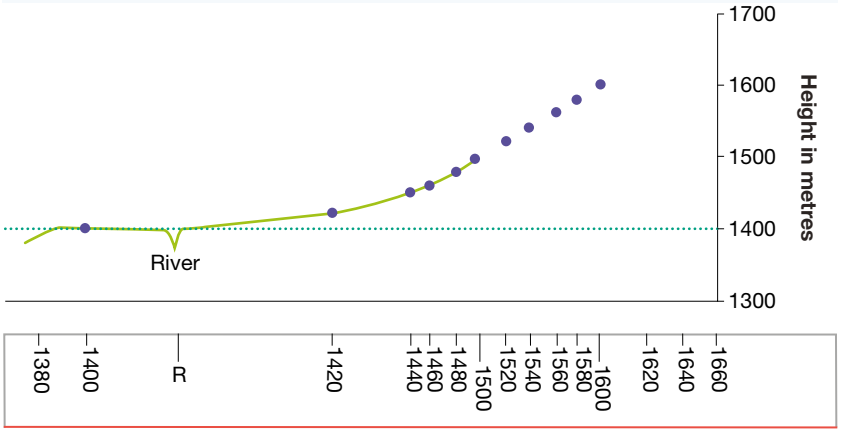
STEP 6

Join the dots with a smooth line to show the slope of the land. Notice that a notch has been used to show where a river is located on the cross-section and the river has been labelled. Other features can be marked similarly when preparing the cross-section, if required.

STEP 7

Complete the cross-section with the geographic conventions of a title and labelling of the axis. Shade the area below the line of your cross-section.

FIGURE 5 Drawing the curve of the cross-section



learnon RESOURCES – ONLINE ONLY

Watch this eLesson: Drawing simple cross-sections (eles-1655)

13.10.3 Let me do it

Developing my skills

Using the topographic map of Mt Taranaki in figure 4 in subtopic 13.9, complete a cross- section along the line A–B.

Questions

1. On your cross-section, which side of Mount Taranaki would be the easiest to walk up? Why?
2. How high is Mount Taranaki at its peak?
3. How many watercourses are shown on the cross-section?
4. Describe the vegetation cover of Mount Taranaki along the cross-section.
5. What type of land feature is Mount Taranaki?

Checklist

I have:

- used small dots
- created a smooth curve
- used pencil
- ruled the axis
- included a title
- labelled the axis.

Skills questions

1. Cross-sections are used to show:
   (a) the width of a road
   (b) the shape of the land between two places
   (c) the contours of an area
   (d) how hard it is to walk in an area.
2. A cross-section includes information about:
   (a) wind
   (b) soils
   (c) slope
   (d) rainfall.
3. Why should you use small dots rather than thick pencil marks for each height on the graph?
4. Why might it be important to carefully choose the vertical scale?

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Try out this interactivity: Drawing simple cross-sections (int-3151)

13.12 SkillBuilder: Interpreting an aerial photo

13.12.1 Tell me

What are aerial photos?

Aerial photographs are those that are taken from above the Earth from an aircraft. Aerial photos, either oblique or vertical, record how a place looks at a particular moment in time. Greater detail of a place can be captured than in a photo taken from ground level. Some aerial photos are also satellite compilations; that is, created by a number of images transmitted from the satellite.

Vertical aerial photos are taken from directly above; that is, looking straight down on objects. Specially equipped aircraft take these photos. These photos are often referred to as a 'bird's eye' view. This is the view from which maps are drawn. When you look at one of these photos there is a similarity to a plan drawing of the place. For example, Katherine Gorge in figure 2 is so deep and narrow that it appears as a thin line 'snaking' through the rock formation.

Oblique aerial photos are those taken from an angle from an aircraft. These photos show better the height and shape of objects, but some of the objects in the background can be hidden. Those objects in the foreground appear larger than those in the background. For example, in the oblique aerial photograph in figure 3 showing rock formations in Purnululu National Park in the Kimberley region of Western Australia, the sandstone domes appear larger in the foreground than in the background.

FIGURE 1 Cartographers use different types of photographs.

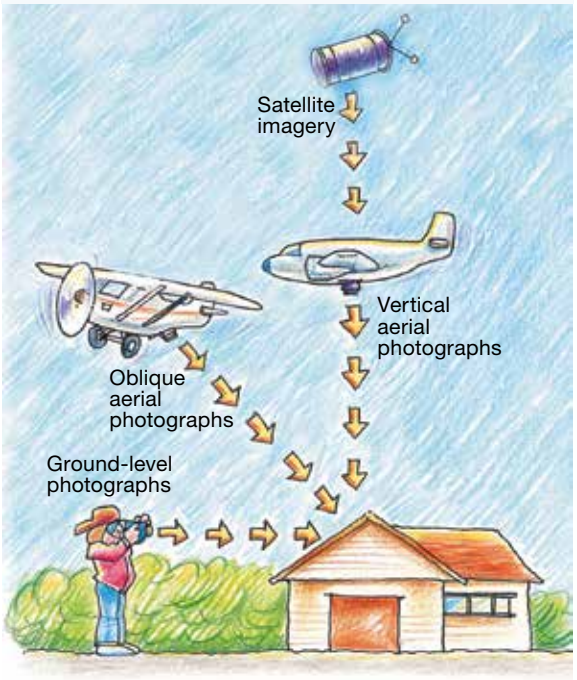
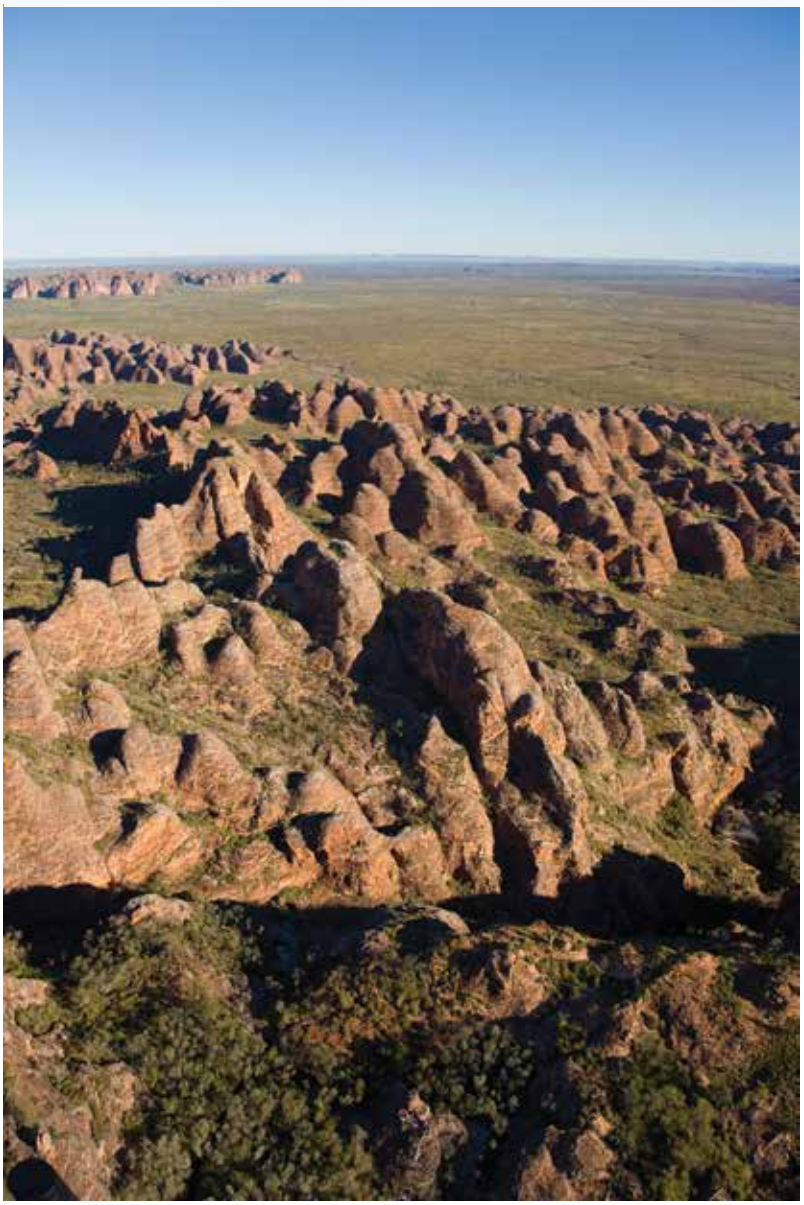


FIGURE 2 Vertical aerial photograph of Katherine Gorge



FIGURE 3 Oblique aerial photo of rock formations in Purnululu National Park



Why are aerial photos useful?

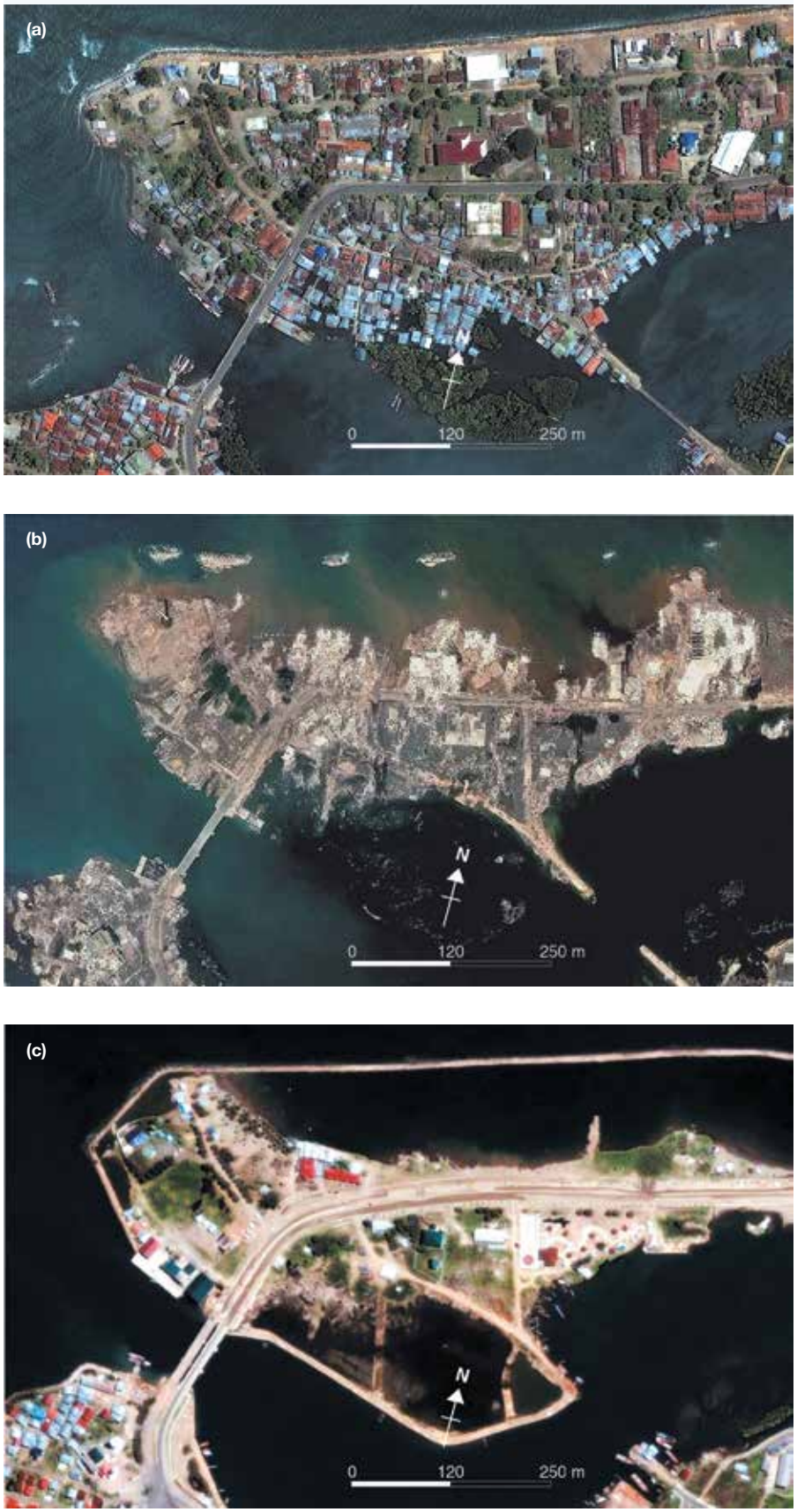
Aerial photos can reveal details that are not recorded on maps. It is easy to see landforms with distinct shapes, different landscapes, land uses, specific places and spatial patterns of the environment. Aerial photos from different time periods can show how a place has changed over time (see figure 4).

Interpretation of aerial photos provides a rich source of data for understanding the environment.

We can obtain much information about a place by carefully analysing and interpreting an aerial photograph. We also need to be able to describe aerial photographs to others. Some groups that use aerial photos are:

- urban developers
- firefighters
- search and rescue organisations
- transport authorities
- agronomists (people who manage land and crops).

FIGURE 4 Satellite images of Banda Aceh, Indonesia (a) before, (b) two days after and (c) four years after the tsunami on 28 December 2004



Model

FIGURE 5 Vertical aerial photograph



The small Australian country town shown in figure 5 above is predominantly of a rectangular shape with a grid road system. A major road becomes a divided road as it passes through the town centre. Beside this road is found the main shopping strip. The houses are on quite large blocks of land and most gardens have trees. Backyard swimming pools are scarce. The local bowling club can be found in the south-east of town. There appears to be some expansion of the town toward the west. This aerial photograph was taken either in summer when the land is dry or the town is in a low rainfall environment.

Interpreting aerial photographs involves:

- identifying key features by recognising elements such as shapes, colours, patterns and textures
- describing the main aspects in detail.

13.12.2 Show me

How to interpret a vertical aerial photo

You will need:

- a vertical aerial photo.

Procedure:

To identify features on an aerial image, such as that in figure 5, you need to apply the elements of interpreting an aerial photo — shapes, size, tone, patterns and texture.

STEP 1

Firstly, let's consider 'shape' and 'size'. Objects from a vertical viewpoint have obvious shapes. Buildings appear as blocks (you are looking at the roof only). Small blocks are houses; larger blocks are factories if a number are grouped together; single, larger blocks are generally public buildings such as schools, halls and shopping centres. Oval or round shapes are sporting grounds/tracks. Can you imagine a golf course from above? Its size is large; its shape indicates green grass and rows of trees dividing the fairways. Look around the aerial photo in figure 5 and identify the trees in the median strip of the major road.

STEP 2

'Texture' and 'tone' are gained from the objects themselves in the course of the photography. Texture indicates whether the object has a degree of smoothness or whether it is rough. A mown oval will appear as a 'smooth green'; a forest will appear as 'lumpy and various greens' according to the size and species of trees in the forest; farmland sown to different crops and with some land ploughed will appear as a mosaic of colours.

Tone is the reflection of light from objects to the camera.

- Water glistens when clear, but appears brown when in flood.
- The deeper the water, the darker the colour.
- Sealed highways reflect light in comparison to the dirt of rural tracks.
- Sandy beaches glow a cream colour compared to the dark colour of bare soil.

Figure 5 shows a range of different sized and surfaced roads.

STEP 3

'Pattern' is what a geographer delights in observing, as they try to understand the world around them. This involves discovering key patterns in the aerial photograph. Towns generally have a series of roads on a grid pattern. Rivers, as a natural feature, wind their way through an environment. Irrigation channels and railway lines built by man appear as straight lines. Figure 5 shows how readily the boundary can be identified in this rural environment.

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Watch this eLesson: Interpreting an aerial photo (eles-1654)

13.12.3 Let me do it

Developing my skills

Use the vertical aerial image of Villarrica volcano, Chile (figure 6). Use the steps to identify key shapes, sizes, patterns and textures. Expand the size of this aerial photo and, using the Paint program (or similar software), label the following features:

- the central vent
- snow covered area
- mud and/or lava flows
- lakes
- barren land
- forested areas
- a coastal settlement.

Check your work with your teacher.

FIGURE 6 Villarrica volcano, Chile



Questions

1. Why do you think the mountain peak is covered in snow?
2. What is the source of the water in the lakes?
3. Suggest why some of the land is bare in the aerial photo.
4. How do you know that small areas of land near the base of the volcano are used for agriculture?
5. By its shape, what type of volcano is Mount Villarrica?

Checklist

I have:

- interpreted shapes, sizes, tones, patterns and textures on a vertical aerial photograph
- written a detailed description of the vertical aerial photograph.

Skills questions

1. Vertical aerial photos see the landscape:
   (a) from ground level
   (b) at an angle
   (c) from over the hill
   (d) from directly above.
2. Aerial photos show details such as:
   (a) soil fertility
   (b) landforms
   (c) rainfall levels
   (d) number of people in a house.
3. Why do buildings such as houses usually appear as squares in aerial photos?
4. How is it possible to identify different types of forests, different types of crops growing and different depths of water in aerial photos?

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Try out this interactivity: Interpreting an aerial photo (int-3150)

13.13 How do volcanic eruptions affect people?

13.13.1 The worst volcanic eruptions

Volcanic eruptions both create and destroy landscapes. Most volcanic eruptions do not strike randomly but occur in specific areas, such as along plate boundaries. In some places there are high concentrations of people living near volcanoes.

Most of the world's active above-sea volcanoes are located near convergent plate boundaries where subduction is occurring, particularly around the Pacific basin. This is also the location of settlements across many countries. Over many years, volcanic eruptions have caused deaths and great damage.

How can the worst volcanoes be measured? Should it be based on the number of people killed or the cost of the damage and destruction? Or should it be the size of the explosion?

TABLE 1 The worst volcanoes based on number of deaths

Volcano	Location	Date	Number of deaths
Mt Tambora	Indonesia	5–10 April 1815	92 000
Mt Pelee	West Indies	25 April–8 May 1902	40 000
Mt Krakatoa	Indonesia	26–28 August 1883	36 000
Nevado del Ruiz	Colombia	13 November 1985	23 000
Mt Unzen	Japan	1792	12 000–15 000
Mt Vesuvius	Italy	24 April AD 79	10 000+
Laki Volcanic System	Iceland	8 June 1783–February 1784	9350
Mt Vesuvius	Italy	December 1631	6000
Mt Kelut	Indonesia	19 May 1919	5110
Mt Galunggung	Indonesia	1882	4011

TABLE 2 The worst volcanoes based on economic impact

Volcano	Location	Date	Estimated loss
Sidoarjo mud volcano (Lusi)	Indonesia	May 2006, ongoing	US$3 billion
Mt Eyjafjallajökull	Iceland	April 2010	$1.7 billion
Mt Unzen	Kyushu, Japan	June 1991	$1.5 billion
Mt St Helens	USA	May 1980	$860 million
Mt Pinatubo	Philippines	June–September 1991	$860 million
Soufrière Hills	Montserrat	Since 1995	$330 million
Tavuvur and Vulcan	Papua New Guinea	September 1994	$300 million
Navado del Ruiz	Colombia	November 1985	$230 million
Eldfell	Iceland	January–February 1973	$200 million
Gamalama	Indonesia	September 1983	$150 million

13.13.2 Why do people live near volcanoes?

Geoscience Australia (a national organisation that provides geographic information to government) estimates that 180 million people in the Asia–Pacific region live within 50 kilometres of a dangerous volcano. There is also a strong relationship between the location of volcanoes and resources such as fertile soils, ore deposits and geothermal energy.

Fertile soils

Some of the most fertile soils on Earth have come from volcanic deposits of ash that is rich in nutrients, and from the physical breakdown of volcanic rocks over thousands to millions of years.

Fertile volcanic soils have been very important for rice growing in Japan and large areas of the Indonesian archipelago, especially on the islands of Java and Bali. There is also prime agriculture located in regions of rich soil; for example, around Naples, southern Italy, which generally has poor soils.

Another region of fertile volcanic soil is the agricultural area of the North Island of New Zealand. **Volcanic loam** in this area helps produce crops and pasture. Other regions include the western plains of the United States and the Hawaiian Islands. There is a small percentage of rich basalt soils in Australia, including the volcanic plains in Victoria, the north coast of New South Wales, the Scenic Rim of south-east Queensland, parts of Tasmania, and the Atherton Tablelands in north Queensland.

FIGURE 1 Agriculture and settlement near Mayon Volcano in the Philippines



Geothermal energy

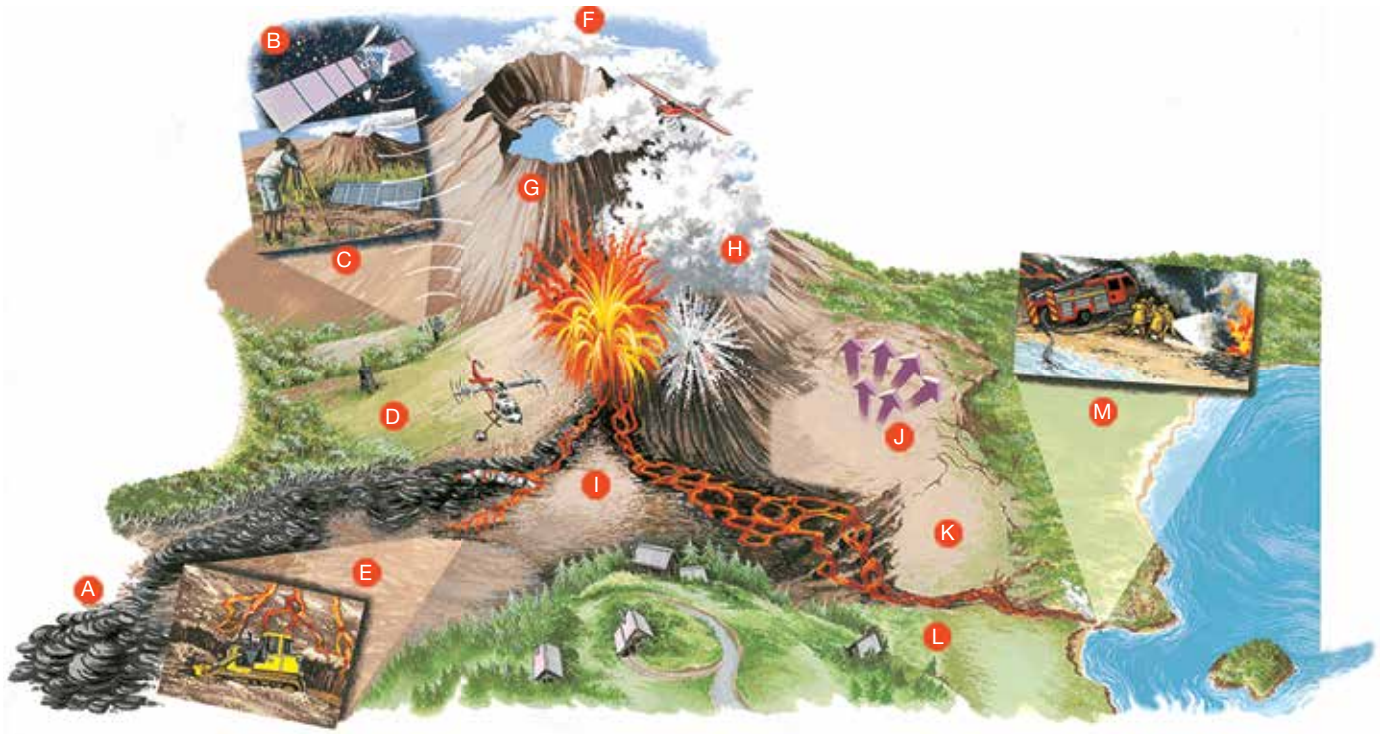
Geothermal energy can be used in locations where there are active or dormant volcanoes still producing heat deep under the Earth's surface. High-temperature hot springs and geysers produce steam, which can be used to drive turbines and generate electricity. At lower temperatures, the hot water can be used for home heating or to develop hot or warm springs at resort spas. Over one quarter of Iceland's electricity is generated from geothermal heat, and it provides heating for more than 85 per cent of its homes. The other main countries that make use of geothermal heat are the United States (in California), Italy, New Zealand and Japan.

13.13.3 How to prepare for volcanic eruption

Can volcanic eruptions be predicted? What are the warning signs? How can the risk of death, injury and damage be reduced?

With about 500 million people living close to active volcanoes, it is important to watch for changes and try to predict an eruption, hopefully giving nearby residents time to evacuate.

FIGURE 2 Predicting volcanic eruptions



A Geologists study records of past eruptions by examining flow patterns of mud, lava and ash. From these patterns they can draw danger maps that pinpoint dangerous areas.

B Satellites monitor changes in gas emissions and in the shape of the volcano. Specialised equipment can also measure heat increases.

C Seismographs can detect the small earthquakes caused by rising magma. These are linked by transmitters to computers so that scientists can quickly detect changes.

D Sound-measuring equipment was used to accurately predict an eruption in Mexico in 2000.

E In 1983, an attempt was made to divert a lava flow away from the towns of Rocco and Rogalna on Mount Eina. A channel was dug and barriers erected. The lava slowed and solidified before reaching the towns.

F Samples of gas can be collected and analysed. An increase in the amount of sulfur dioxide [SO_2] may indicate that magma is moving upwards.

G A rise in the temperature of a crater lake often precedes an eruption.

H It has been suggested that explosives could be used to breach crater walls, sending lava away from towns. This was first tried in Hawaii in 1935.

I Helicopters have been used to drop concrete blocks in front of flowing lava.

J As magma rises and collects in the magma chambers, the cone may bulge outwards, warning of possible eruptions. Sensitive tiltmeters on the ground and on satellites can detect this bulging.

K Any bulging can also cause tiny cracks to appear.

L Buildings in areas prone to ash eruptions should have steeply sloping roofs so ash does not accumulate.

M In 1973, sea water was sprayed onto lava that was threatening a town in Iceland. The lava cooled quickly and solidified.

13.13 Activities

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

Remember

1. Make a list of the advantages and disadvantages of living near a volcano.

Explain

2. Is geothermal energy a renewable energy? Explain. How is this energy related to volcanic activity?

Discover

3. Refer to an atlas map showing world population density, settlements and the location of volcanoes. Write two statements that describe the relationship between population density, settlements and volcano locations. How does this relate to people's risk?

Predict

4. Watch the video about **Mount Vesuvius** and look at the information on this volcano in *my World Atlas*.
   (a) Where is Mount Vesuvius located? Which towns were destroyed by the volcano in AD 79?
   (b) How many people live in this volcano's immediate region?
   (c) Will all the monitors provide enough warning of an eruption for the people of Naples? Explain.
   (d) What do the scientists in this video predict for a future eruption?
   (e) What is the red zone? How large do the scientists think it should be?

Think

5. Use the **Timetoast** weblink in your Resources tab to create a timeline of the worst volcanic eruptions, based on the information in the tables. Include images from the internet.
6. Draw a table like the one below, summarising the measures required for living with volcanoes.

Predicting eruptions	Preparing for eruptions	Lessening the effects of eruptions

   (a) Use it to help you classify the information in figure 2.
   (b) Which of these measures do you think are most effective? Give three reasons for your answer.

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Explore more with this weblink: Timetoast

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.
Mount Vesuvius

13.14 Review

13.14.1 Review

Mountains and plate tectonics

1. Write your own definition and explanation of continental drift and plate tectonics. Use your own sketched and labelled diagrams to help with your explanation.
2. What is the relationship between the location of mountains and mountain ranges and plate tectonics? Choose three examples from different ***places*** for your explanation.
3. How did the Himalayas form?
4. Describe the general location and distribution of the world's earthquakes and volcanoes. What is the relationship between this distribution and the location of plate boundaries?
5. Explain the terms *subduction*, *convergent plate*, *divergent plate* and *focus*. How is each involved in mountain building?
6. How can a hotspot create a chain of islands? What other tectonic activity can result in a chain of islands?

People and earthquakes

7. The earthquakes in table 1 below are not the largest that have ever occurred, but they have resulted in enormous loss of life and damage.

TABLE 1 Eight earthquakes that have been especially destructive

Place	Date	Magnitude	Number of deaths	Cost
Ercis, Turkey	October 2011	7.2	More than 600	Not known
Christchurch, New Zealand	February 2011	6.3	181	$US20 billion
Pakistan, India, Afghanistan	October 2005	7.6	80 300	More than $US5 billion
Sichuan, China	May 2008	7.9	84 000	$US85 billion
Bam, Iran	December 2003	6.6	30 000	About $US1 billion
Izmit, Turkey	August 1999	7.4	30 000	$US6.5–10 billion
Papua New Guinea	July 1998	7, followed by tsunami	More than 2000	Whole villages, lagoon
Port-au-Prince, Haiti	January 2010	7.3	230 000	$8.5 billion

   (a) Do you think that earthquakes and tsunamis should be measured by their size on the Richter scale, by the number of people killed, or by the cost of the damage caused?
   (b) Locate these earthquakes on a world map that shows plate boundaries (for example, figure 1 in subtopic 13.4). What is the relationship between these earthquakes and the plate boundaries?
   (c) Compare the size of these earthquakes with the largest ones described in subtopic 13.7. What are all the factors that contribute to large loss of life and to the amount of damage in an earthquake?
8. 'If people are well prepared for earthquakes and volcanic eruptions, there will be fewer deaths and injuries and less destruction and damage.' What is your opinion about this statement? Justify by using some examples.

13.14.2 Reflect

McDonald Island — a volcanic hotspot?

The Heard and McDonald Islands are a group of sub-Antarctic islands in the south-west Indian Ocean. They are 1000 kilometres north of Antarctica.

Heard Island is dominated by Australia's only active volcano, Big Ben, which is 2745 metres above sea level. Active plumes have been observed on Big Ben since 1947, and lava activity has been recorded on satellite images. Heard Island is colonised by both animals — albatrosses, petrels, gulls, penguins and seals — and plants — mosses, lichens and some vascular plants (those with a system of vessels to transport water and nutrients from roots to leaves).

McDonald Island is about 40 kilometres to the west of Heard Island. Recent satellite images have shown that a hotspot under the island was responsible for volcanic activity in the early 1990s, which increased the size and height of McDonald Island — it is now twice the size it was in 1980 and almost 100 metres higher. It is thought that the island had been dormant for 75 000 years before this eruption. Also, McDonald Island and Flat Island, which were once separate, are now joined.

9. Why is there volcanic activity on McDonald Island?
10. Briefly explain why McDonald Island is increasing in size.
11. Heard Island is 40 kilometres from McDonald Island. How might plants and animals come to colonise this growing island?

TOPIC 14 Fieldwork inquiry: How does a waterway change from source to sea?

14.1 Overview

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

14.1.1 Scenario and your task

Everybody lives in a catchment and its health is influenced by the activities in all areas within it. Your local water authority has received contradictory reports about the current state and health of your local catchment. As the reports are contradictory and the local water authority is not sure which is valid and which is not, they need to undertake a detailed study of the natural and built environments in the local catchment area. This will put them in an expert position to question and quash statements made by non-experts.

Your task

Your team has been commissioned by the local water authority to compile and present a report evaluating the current state of your local catchment. Your team must gather data to investigate how the catchment changes from the upper reaches to the lower. Your investigations will cover river characteristics such as depth, width and other channel characteristics, the fauna and flora in the area, and the land use in the catchment. In order to ensure that your report is accurate, your team can gather data about a local waterway and its immediate catchment by observing, collecting, interpreting and presenting your findings.

14.2 Process

14.2.1 Process

- You can complete this project individually or invite members of your class to form a group.
- **Planning:** You will need to research the characteristics of your local catchment area. In order to complete sufficient research, you will need to visit a number of sites within the catchment, comparing



different locations upstream and downstream of one creek or river. Access research topics in the Resources tab to provide a framework for your research:
  - **What** sort of data and information will you need to collect at your fieldwork sites?
  - **How** will you collect and record this information?
  - **Where** would be the best locations to obtain data? You can determine this once you know which waterway(s) you are visiting.
  - **How** will you record the information you are collecting? Consider using GPS, video recorders, cameras and mobile devices (laptop computer, tablet, mobile phone).
- Before going out into the field, examine topographic maps and aerial photos or satellite images of the relevant area to identify key landmarks (such as the location of your school, and the location of the waterway relative to the school). Locate the catchment boundary, the path of the waterway and the watercourse it contributes to. Construct a sketch map of the waterway — this map should show the catchment boundary/watershed, the river channel and the direction in which the water is flowing. Clearly note compass directions on the map. Gather spatial (mapped data) information about the region (using, for example, street directories, topographic maps, aerial photos and satellite images from sources such as Google Earth) and information about planning, population, land use, and flora and fauna.
- Discuss with your group what you might already know about your catchment and then divide the research tasks between you. Discuss the information you will be looking for and where you might find it. Choose land use categories that you will be able to recognise and a mapping symbol to be used for each. You can view and comment on other group members' articles and rate the information they have entered.



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Watch this eLesson: How does a waterway change from source to sea? (pro-0145)

14.2.2 Collecting and recording data

Depending on the catchment you visit, you could investigate some or all of the following:
- channel depth at various points across the stream
- channel width
- channel cross-section
- stream flow velocity (how fast the water is flowing)
- flora transects
- fauna surveys
- land-use surveys.

Other relevant observations may include:
- condition of the waterway banks
- general slope
- native and exotic vegetation
- cleared land

- evidence of erosion
- land-use zones
- potential pollution sources (including stormwater drains entering the waterway and sewage overflow points)
- building sites, industrial and residential areas
- pollution control devices
- erosion control.

Ensure that you take relevant measuring equipment into the field, and that several measurements are taken at each site. It is useful to divide tasks among groups and then share data when you are back at school. Use a copy of your map to record the information at each site.

14.2.3 Analysing your information and data



Once you have collected, collated and shared your data, you will need to decide what information to include in your report and the most appropriate way to show your findings. If using spreadsheet data, make total and percentage calculations. Some measurements are best presented in a table, others in graphs or on maps. If you have used a spreadsheet, you may like to produce your graphs electronically. Use photographs as map annotations (either scanned and attached to your electronic map or attached to your hand-drawn map) to show features recorded at each site. You may also like to annotate each photograph to show the geographical features you observed. Describing and interpreting your data is important.

Access the report template and the presentation planning template from the Resources tab to help you complete this project. Use the report template to create your report. Use the presentation template to create an engaging presentation that showcases all of your important findings.

14.2.4 Communicating your findings

You will now produce a fieldwork report and presentation of your findings. Your report should include all of the research that you completed and all evidence to support your findings. Ensure that your report includes a title, an aim, a hypothesis (what you think you will find, which is written before you go into the field), your findings and a conclusion. You will also need to recommend some type of action that needs to be taken to improve river management at the creek or river you visited.

14.3 Review

14.3.1 Reflecting on your work

Think back over how well you worked with your group on the various tasks for this inquiry. Determine strengths and weaknesses and recommend changes you would make if you were to repeat the exercise. Identify one area where you were pleased with your performance, and an area where you would like to improve. Write two sentences outlining how you might be able to do this.

Print your Research Report and hand it in with your fieldwork report and presentation, and reflection notes.

UNIT 4
CHANGING NATIONS

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TOPIC 15
Urbanisation and migration

15.1 Overview

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

15.1.1 Introduction

There are many advantages to living in large cities — for example, the economic benefit brought about by sharing the costs of providing fresh water, electricity or other energy sources and public transport between many people. There may be social benefits, because the cities provide a wider choice of sporting, recreational and cultural events. However, there are also disadvantages of living in a large city environment.

Starter questions

1. What are some examples of recreational, social or cultural activities that are found only in larger cities?
2. Apart from congestion of people and traffic issues, what are some disadvantages of living in a large city rather than a smaller town?
3. As a class, brainstorm some of the advantages and disadvantages of large cities, such as New York, Tokyo, São Paolo and Shanghai.
4. Would you rather live in a large city or a small country town? Explain your answer.

Tokyo at night



INQUIRY SEQUENCE

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Watch this eLesson: Our urban world (eles-1628)

15.2 Where do most Australians live?

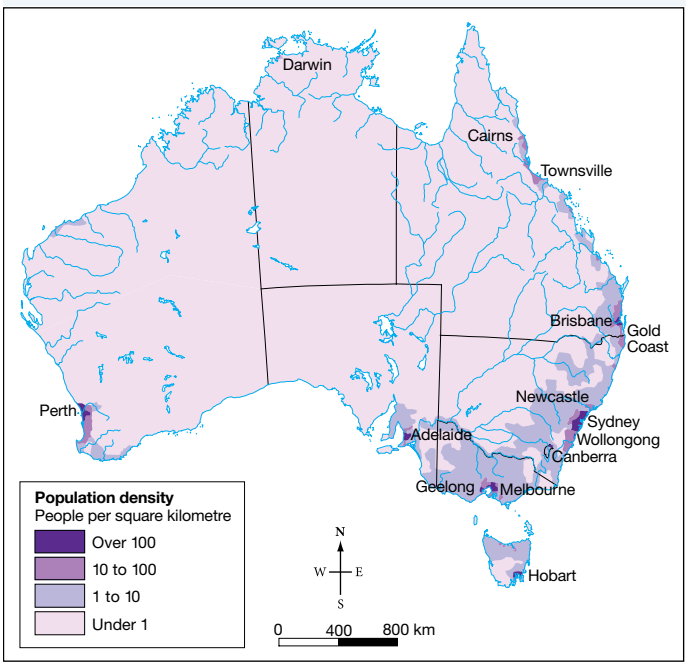
15.2.1 Why do Australians live where they do?

Australians live on the smallest continent and in the sixth largest country on Earth. With a population of 23 million and an area of 7 690 000 square kilometres, our **population density** is 2.9 people per square kilometre. We may think of ourselves as an outback-loving, farming nation, but we mostly live near the coast.

Most Australians currently live within a narrow coastal strip which extends from Brisbane in the north to Adelaide in the south. Over 80 per cent of Australians live in towns that have more than 1000 residents and are located within 50 kilometres of the coast. Australians love the beach, but is it just a coastal location that can explain this uneven **population distribution** pattern?

Figure 2 opposite shows the distribution of rainfall within Australia. Comparing figures 1 and 2, it is apparent that there is a strong interconnection between the availability of more than 800 mm of rainfall per year and population densities of more than 10 and more than 100 people per square kilometre in the east, south-east and south-west of Australia. It would be easy to say that Australians live in places where rainfall is higher, but if you look at these maps carefully

FIGURE 1 Australia's population distribution and density

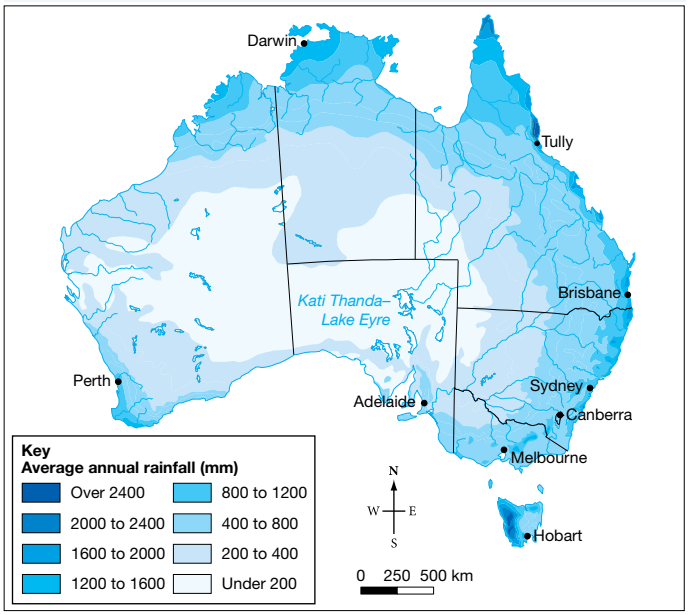


Source: MAPgraphics Pty Ltd, Brisbane.

there are major exceptions to this spatial pattern. What is the relationship between population density and total rainfall in the north of Australia? Is the population density high in the regions of high rainfall in Queensland and the Northern Territory?

Coastal locations and rainfall are not the only reasons Australians live where they do. The availability of mineral resources, irrigation schemes to enhance farm production, and remote and stunning tourist destinations are **geographical factors** that draw people to live in a particular place.

FIGURE 2 The distribution of annual rainfall in Australia.



Source: MAPgraphics Pty Ltd, Brisbane

FIGURE 3 A remote town in northern Australia, which has a very low population density.



15.2.2 How do population densities in Australia compare with those in other places?

Figure 1 shows both the population distribution and density for Australia in the present day. To better understand this data, we need to compare Australia's population density with that of other places in the world. This map shows that small areas around the major state capital cities have population densities of over 100 people per square kilometre of land. Look at table 1 on the next page and you can see that the average population density for Australia is well below the global average, and is easily the lowest of any of the permanently inhabited continents.

The population density of Australia is similar to that of Canada (3 people per square kilometre), but much lower than that of New Zealand (15 people per square kilometre), the United States (29 people per square kilometre) or China (134 people per square kilometre). Consider the geographical factors that Australia might share with Canada but not New Zealand, the United States or China that could explain the significant difference between their population densities.

TABLE 1 The average population density for each continent

Continent	Average population density (people per km^2)
Asia	95
Europe	73
Africa	34
North America	22
South America	22
Australia	3
Antarctica	0.00007

15.2 Activities

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

Remember

1. Which regions of Australia have the highest population density?
2. What is the difference between population density and population distribution?

Explain

3. What geographical factors other than rainfall may lead to the uneven distribution of population in Australia?
4. Use the statistics in table 1 to produce a world map that illustrates the contrasts between the average population densities for each continent. *Hint:* A pictograph may best highlight the differences.
5. Refer to figures 1 and 2 to produce an overlay map that identifies the ***interconnection*** between the distribution of population and the distribution of rainfall within Australia.
   (a) Describe areas where there are strong similarities between these two features, i.e. high population distribution and high rainfall, or low population distribution and low rainfall.
   (b) Describe ***places*** that have a high population distribution but low rainfall or vice versa.

Discover

6. Use your atlas to identify and list:
   (a) geographical land forms or climatic features that are common to Australia and Canada. *Hint:* Look for large regions that have an extreme climate. Explain why.
   (b) reasons New Zealand, the United States or China may have a higher population density than Australia. Explain.
7. Use various theme maps of Australia in your atlas to identify at least four possible ***place or environmental*** explanations for the pattern of distribution and density of Australia's population. Discuss your findings with the class.

Predict

8. Write a paragraph to explain the possible ***change*** in the distribution of Australia's predominantly urban population over the next 50 years if one of the following situations occurs.
   (a) The coastal urban areas become adversely affected by loss of land due to rising sea levels.
   (b) A 20-year-long drought occurs in south-eastern Australia.

Think

9. Use information from figure 2 to explain why, in the future, there may be significant movement of people from the southern states of Australia to ***places*** in the tropical north. Your answer must refer to specific information from the map.

myWorldAtlas

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› Population of Australia

15.3 Where have Australians lived in the past?

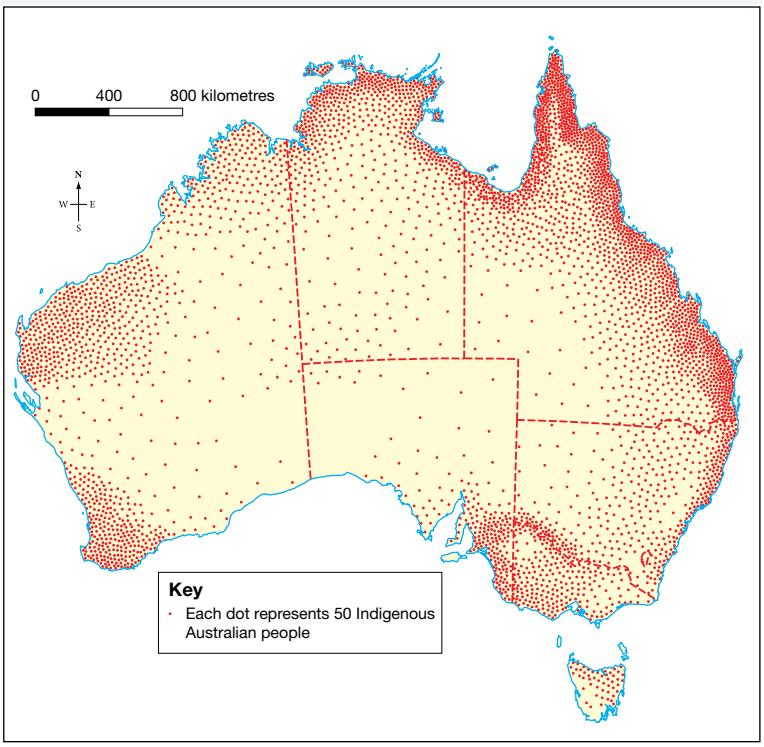
15.3.1 Before European occupation

Prior to European arrival to Australia, where did the **Indigenous** peoples live?

Until 1788, Indigenous Australian peoples inhabited all parts of Australia (see figure 1). The most densely populated areas, with 1–10 square kilometres of land per person, were the south-east, south-west and far north coastal zones, the north of Tasmania and along the major rivers of the Riverina region (south-western New South Wales).

The population density of Aboriginal and Torres Strait Islander peoples was highest in places close to coastal and river environments. These places had the best availability of food and other resources. In a location such as Port Jackson, New South Wales, food was abundant, meaning that the inhabitants needed to spend only about four hours each day hunting or gathering enough for their survival. In places where rainfall was unreliable, such as central Australia, the local peoples found it harder to survive. They often needed more than half a day to hunt and gather enough to satisfy their basic needs. When food resources ran low or with changing seasons, communities moved on to another part of their **country**. Being nomadic, they could manage their environment by not over-using the resources available at any one site.

FIGURE 1 Where Aboriginal and Torres Strait Islander peoples lived in 1788.



Source: MAPgraphics Pty Ltd, Brisbane

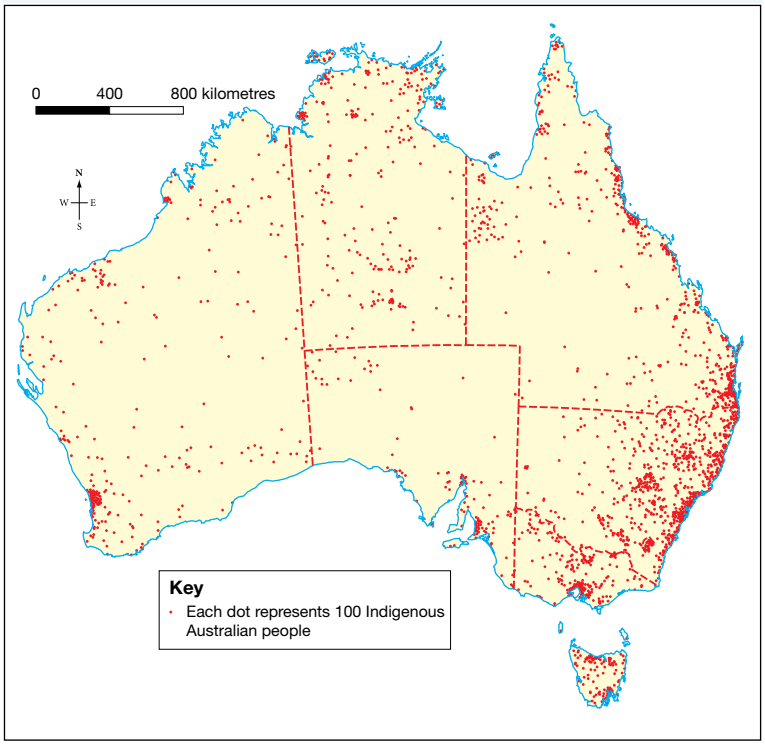
15.3.2 Where do the Aboriginal and Torres Strait Islander peoples live today?

It is believed that in 1788 there were between 350 000 and 700 000 Aboriginal and Torres Strait Islander peoples, although within 50 years this population had been greatly reduced by disease and British colonists. There are currently more than 520 000 Aboriginal and Torres Strait Islander peoples, making up about 2.5 per cent of Australia's population.

The Australian environment has changed significantly since 1788. Much land has been cleared, shaped and blasted for cities, farms and mines. Other than the management of vegetation by fire, prior to European colonisation the landscape of Australia had not been greatly altered by its human inhabitants. By the twenty-first century, little of Australia's environment has not been changed significantly by human occupation.

The patterns in figures 1 and 2, showing the distribution of Aboriginal and Torres Strait Islander populations in 1788 and 2006, are generally very similar. Since before 1788, most of Australia's peoples have tended to live in the same relatively small region of this country.

FIGURE 2 Where Aboriginal and Torres Strait Islander peoples live today.



Source: MAPgraphics Pty Ltd, Brisbane

FIGURE 3 Many Aboriginal and Torres Strait Islander families enjoy living in remote parts of the country.



FIGURE 4 Regional distribution of Aboriginal and Torres Strait Islander peoples and the non-Aboriginal and Torres Strait Islander population of Australia

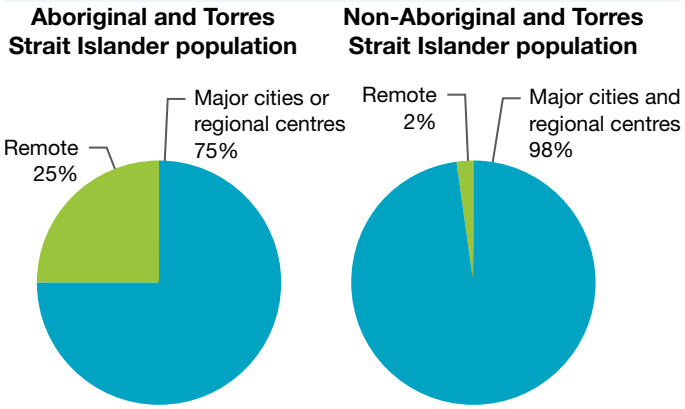
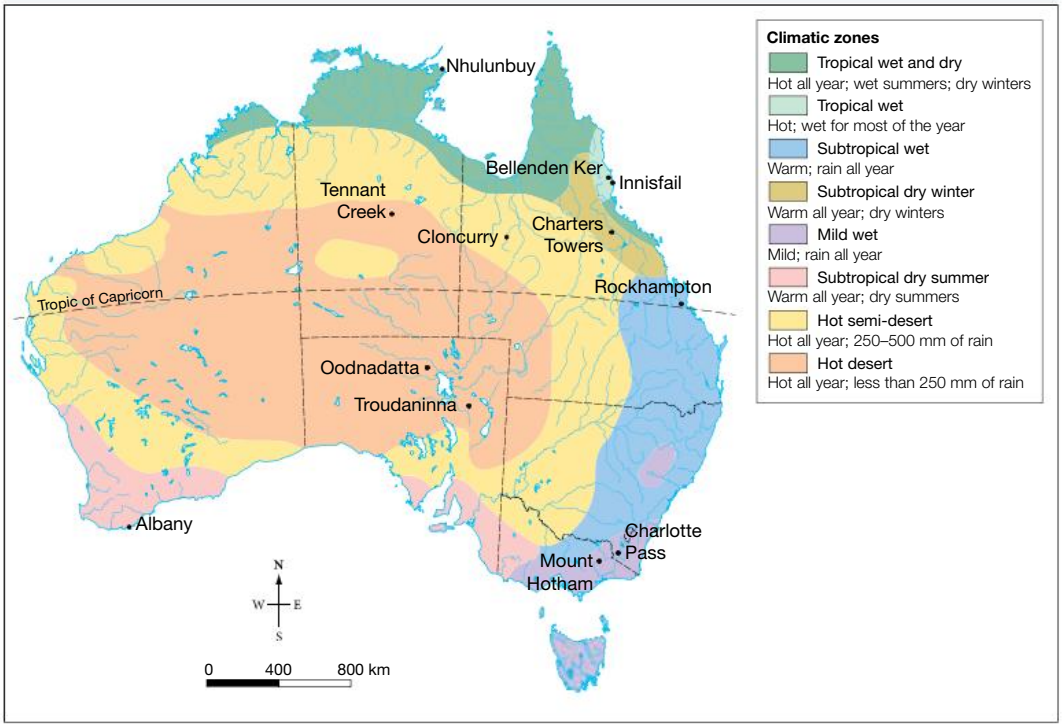


FIGURE 5 The eight main climatic zones of Australia



Source: Spatial Vision

15.3 Activities

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

Remember

1. How many Aboriginal and Torres Strait Islander peoples:
   (a) lived in Australia in 1788
   (b) live in Australia today?

Explain

2. (a) Identify the climatic zones in figure 5 that best match the population density areas in figure 1.
   (b) For each of the states shown in figure 1, write a sentence to describe the climate for the region. For example, 'This region has a mostly mild to subtropical climate with rainfall all year round.'

Discover

3. Refer to figure 4. Living so far away from major cities means that 25 per cent of Aboriginal and Torres Strait Islander communities have limited access to many of the services and opportunities that cities offer their residents. In a small group, brainstorm the lifestyle and service difficulties that may be associated with living so remotely.

Think

4. Collect some statistics that identify the health, wealth and educational inequalities which exist between Aboriginal and Torres Strait Islander peoples and non-Aboriginal and Torres Strait Islanders. For example, Aboriginal males have a life expectancy 17 years less than that of non-Aboriginal males born in the same year. Use the **ABS** weblink in the Resources tab to start your research. Write a paragraph or produce a series of graphs to comment on the inequalities you have discovered.

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Explore more with this weblink: ABS

myWorldAtlas
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› Indigenous Australians

15.4 What is urbanisation?

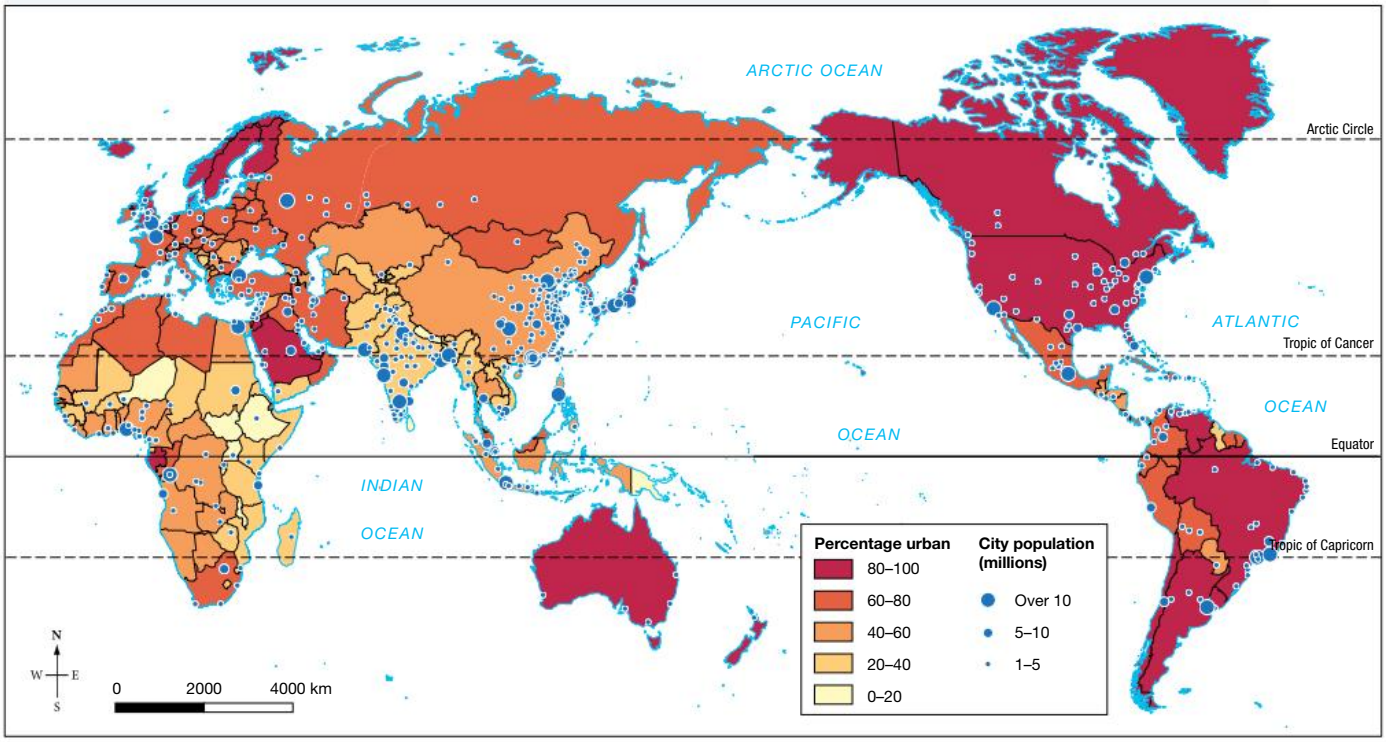
15.4.1 Urbanisation

As the world's population increases, **urban** areas continue to grow. In some regions, people are moving from rural to urban areas at very high rates.

Urbanisation is the growth and expansion of urban areas and involves the movement of people to towns and cities. The earliest cities emerged about 5000 years ago in Mesopotamia (part of present-day Iran, Iraq and Syria). Originally these cities depended on agriculture. In 1800, 98 per cent of the global population lived in rural areas and most were still dependent upon farming and livestock production — only 2 per cent of people lived in urban areas.

However, as cities grew and trade developed, urban areas became centres for merchants, traders, government officials and craftspeople. By 2008, the number of people living in urban areas had increased to 50.1 per cent, and in 2016 the figure had risen again to 54.5 per cent (see also figure 1 below). The rate of growth has varied in different regions (see figure 2 opposite).

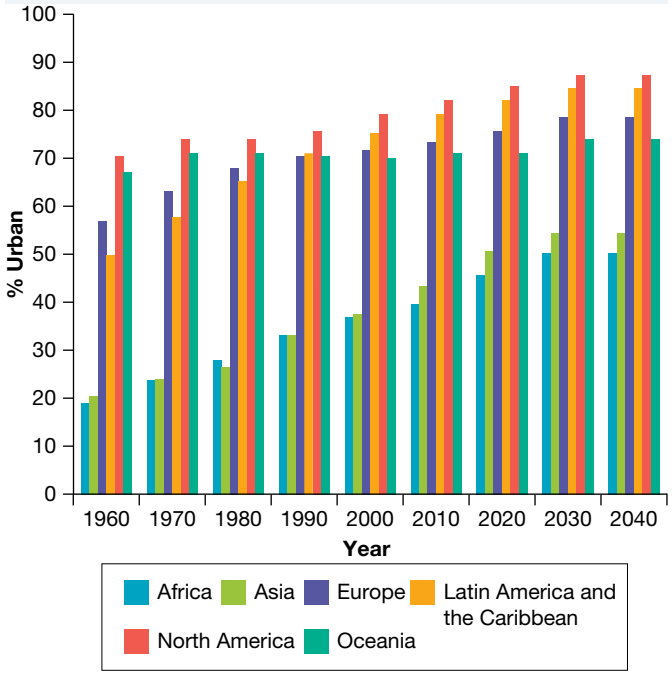
FIGURE 1 Percentage of population living in urban centres, 2014



Source: United Nations, Department of Economic and Social Affairs, Population Division (2014). World Urbanization Prospects: The 2014 Revision, CD-ROM Edition.

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Deepen your understanding of this topic with related case studies and questions.
› World urbanisation

FIGURE 2 The growth in urban populations over time.



15.4.2 Uneven urbanisation

FIGURE 3 Urban housing in Kuwait



Urbanisation has not occurred evenly across the world. Some countries are predominantly rural, such as Cambodia and Papua New Guinea (populations 79 per cent and 87 per cent rural respectively), whereas others are almost completely urban, such as Belgium and Kuwait (98 per cent urban for both). In fact, some countries have 100 per cent urbanisation, including Bermuda, Cayman Islands, Hong Kong, Macau, Monaco and Singapore. South America is becoming one of the most urbanised regions in the world and currently has a population of around 385 million people. It is estimated that, by 2050, 91.4 per cent of its population will be residing in urban areas.

Coastal urbanisation

People have lived on coastlines for thousands of years. Often at the mouth of rivers, coastal settlements became centres of trade and commerce and quickly grew into cities. Today, about half the world's population lives along or within 200 kilometres of a coastline (see figure 4). This means about 3.2 billion people live on only 10 per cent of the Earth's land area.

Countries that have over 80 per cent of their population living within 100 kilometres of a coastline include the United Kingdom, Senegal, Portugal, Belgium, the Netherlands, Sweden, Norway, Tunisia, Greece, Oman, the United Arab Emirates, Kuwait, Qatar, Sri Lanka, Japan, Singapore, Indonesia, Malaysia, the Philippines, Australia and New Zealand.

FIGURE 4 Cape Town in South Africa is a city located on the coast.



15.4 Activities

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

Remember

1. Define *urbanisation* in your own words.

Explain

2. How has urbanisation changed from 1950 to the present? How is this different around the world? What is expected to happen in the future?
3. Explain how figure 2 shows that urbanisation has varied in different regions of the world. Which two regions have the greatest rural population?
4. Use the **Urbanisation Gapminder** weblink in the Resources tab to watch an animation on urbanisation.
   (a) What does the graph show?
   (b) What do the colours represent?
   (c) In 1963, name two countries that were at the bottom of the graph and two at the top.
   (d) Why does Singapore appear where it does on the graph? What is an 'urban nation'?
   (e) Why do the 'bubbles' increase in size over time?
   (f) Which regions were highly urbanised in 2004?
   (g) What do the positions of the bubbles show about urbanisation in Africa, South Asia and China?

Discover

5. Refer to a world population density map in your atlas or online. Compare this map with the two regions that have the highest rural population. What pattern do you see?
6. Look at figure 1, which shows the population in urban areas. Identify and name the three countries with the highest and the three with the lowest percentage of people living in urban areas. Write a description of the general pattern shown in the map. Include patterns within different continents in your description.

Predict

7. Look at a physical map in an atlas to locate the countries with more than 80 per cent of their population located on the coast. Study the location of each country and create a table to record possible reasons for this pattern.

Think

8. Rural areas are where most food is produced. What are two possible outcomes for food production if urbanisation continues?
9. Draw a sketch of the photograph of Cape Town in figure 4. Annotate the sketch, identifying the possible advantages and disadvantages to the natural environment when cities and towns are located on the coast.

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Try out this interactivity: Urban Indonesia (int-3115)

Explore more with this weblink: Urbanisation Gapminder

15.5 Is Australia an urbanised country?

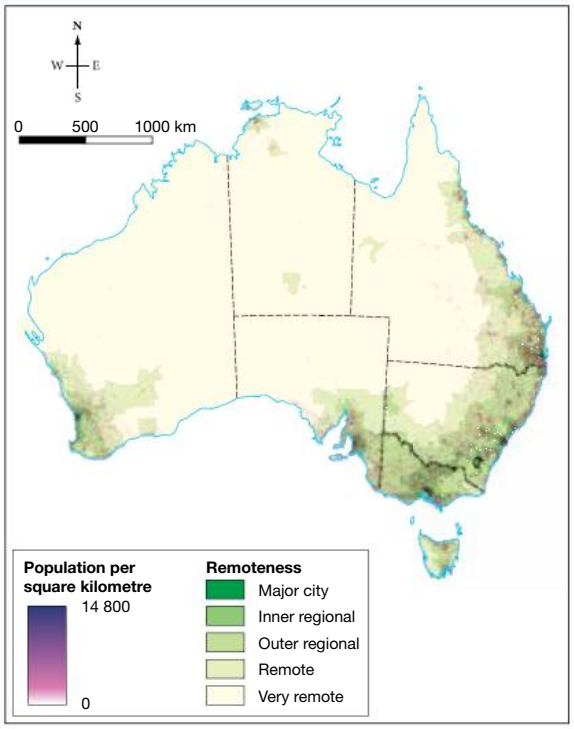
15.5.1 Australians in urban areas

With a population of 24 million people and a very large landmass, Australia has an average population density of only 3.1 people per square kilometre. Yet 84 per cent of people live within 50 kilometres of the coast, and most of these people — in 2014, 89 per cent of Australians — live in urban areas.

Australia is one of the most urbanised and coast-dwelling populations in the world and the level of urbanisation is increasing (see figure 1 at right). From Federation (1901) until 1976, the number of Australians living in capital cities increased gradually from a little over one-third (36 per cent) to almost two-thirds (65 per cent). From 1977 to the present, the population in capital cities has grown to 66 per cent. It is estimated that by 2053 this will have grown to 72 per cent (with an estimated 89 per cent in the four largest capital cities).

All Australia's capital cities have grown over time, as have many regional urban areas such as the Gold Coast and Moreton Bay regions. This growth is expected to continue in the future (see table 1).

FIGURE 1 A map of Australia's population distribution in 2011 shows that it is highly urbanised and coastal.



Source: Australian Bureau of Statistics

TABLE 1 Australian capital city populations 2016 and projected 2031 and 2061

City	2016 population	Projected 2031	Projected 2061
Sydney	4 986 714	6 206 843	8 493 740
Melbourne	4 605 993	5 984 219	8 580 556
Brisbane	2 397 068	3 190 129	4 787 996
Perth	2 181 194	3 248 550	5 451 406
Adelaide	1 340 503	1 566 929	1 920 727
Canberra	405 827	520 412	740 903
Hobart	222 533	247 320	270 655
Darwin	140 943	170 153	225 873
Total	16 280 775	21 134 555	30 471 856

15.5.2 What are the consequences of a highly urbanised Australia?

When cities expand, the urban landscape invades the surrounding land, changing or removing natural ecosystems and swallowing up farmland. This expansion is known as **urban sprawl**. Perth,

Western Australia, is a very good example of a sprawling city. The metropolitan area of Perth extends approximately 120 kilometres from Alkimos in the north to Mandurah in the south (see figure 2).

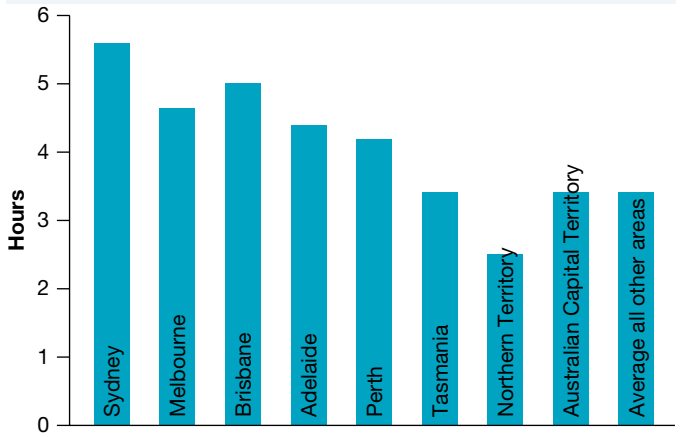
As Perth has grown outwards, the coastal sand dune systems have been cleared of vegetation. Sand dunes are easy to shape for residential development, and this has led to rapid and extensive north–south expansion along the coast. Inland from the sand dunes, wetland areas — where intensive agriculture such as market gardening (vegetables) and viticulture (grapes) once dominated — have also been absorbed by urban growth. These wetlands have often been reshaped to capture water run-off from new housing developments. The fertile soil has been lost forever.

Like many of Australia's cities, Perth depends heavily on private motor vehicles for transport. Perth's north to south morphology (shape) is reflected in its freeway system. This can become very congested, affecting commuting times (see figure 3).

FIGURE 2 Perth's urban sprawl



FIGURE 3 Average weekly commuting times in selected Australian cities



Source: AMP/NATSEM Race against time report, 2011

15.5.3 Ecological footprint

The amount of productive land needed on average by each person (in the world or in a country, city or suburb, for example) for food, water, transport, housing and waste management is known as an **ecological footprint**. It is measured in hectares per person per year. The average global ecological footprint is 2.84; Australia has an average ecological footprint of 9.3 (see table 2 at right). The country with the highest ecological footprint is Luxembourg with 15.8.

TABLE 2 Ecological footprints of Australian capital cities

City	Ecological footprint value (hectares/person/year)
Perth	7.66
Canberra	7.09
Darwin	7.06
Brisbane	6.87
Sydney	6.82
Adelaide	6.72
Melbourne	6.33
Hobart	5.50

15.5 Activities

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

Remember

1. What percentage of Australians live in urban areas? Of these, what percentage live in urban areas close to the coast?
2. List the disadvantages of urban sprawl.

Explain

3. Refer to figure 1 and describe the population distribution of Australia.
4. Refer to table 1. Draw a bar graph to show the predicted ***change*** in the populations of Australia's capital cities. What does your graph reveal?
5. Describe the spread of Perth shown in figure 2. Use an atlas to explain why growth has not occurred as extensively to the east as it has to the north and south.
6. Describe the average commuting times shown in figure 3. What reasons can you give for the differences between cities?

Discover

7. Conduct research to find which country in the world has the highest average population density. Find one country with a lower average population density than Australia.

Predict

8. Use your atlas or online research to find an urban growth map for the capital city in your state or territory. Describe the ***change*** that has taken place over time. Using this map and a physical map of your state or territory, predict where future growth might occur. Justify your responses.

Think

9. (a) What is an ecological footprint?
   (b) Refer to table 2. How does the ecological footprint data compare for Australian cities?
   (c) How do these figures compare with the average global ecological footprint?
   (d) Use the **UAE ecological footprint** weblink in the Resources tab to watch a video. How does the ecological footprint in the United Arab Emirates compare to that of Australian cities? What would happen if all cities had such a high footprint?
   (e) Create your own advertisement or animation using a video editing program to encourage people in your capital city to reduce their ecological footprint.
10. Study table 2 and your graph again. Consider the issues and problems that increasing city populations will create. Discuss this as a class and construct a consequence chart to summarise all the ideas. What might be some solutions to these issues and problems? Add this to your chart.

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Explore more with this weblink: UAE ecological footprint

myWorldAtlas

Deepen your understanding of this topic with related case studies and questions.

- Urbanisation in Australia

15.6 SkillBuilder: Understanding thematic maps

online only

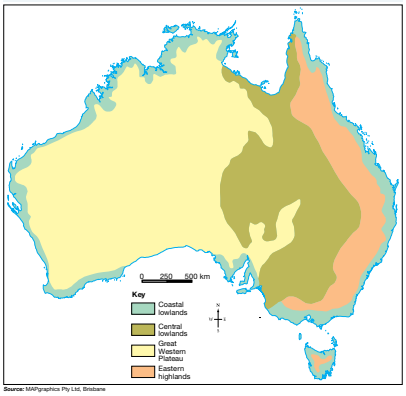
WHAT IS A THEMATIC MAP?

A thematic map is a map drawn to show one aspect; that is, one theme. For example, a map may show the location of vegetation types, hazards, or weather. Parts of the theme are given different colours or, if only one idea is conveyed, symbols may show location.

Go online to access:

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

FIGURE 1 Thematic map of the major landform regions of Australia



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Watch this eLesson: Understanding thematic maps (eles-1658)

Try out this interactivity: Understanding thematic maps (int-3154)

15.7 How urban are the United States and Australia?

15.7.1 Urbanisation in the United States and Australia

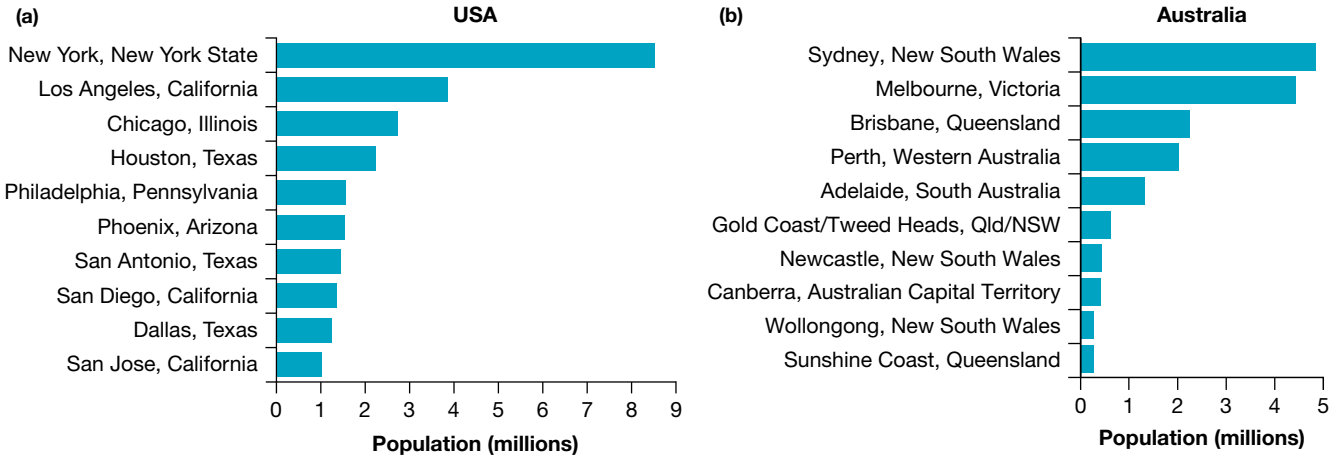
Both the United States and Australia are very large countries that are highly urbanised. In fact, both are among the world's most urbanised nations.

The United States and Australia have some similarities and some differences in terms of how urbanised they are, as revealed in table 1 and figure 1 on the next page.

TABLE 1 A comparison of urbanisation in the United States and Australia

	United States	Australia
Population	320 000 000 (2015 census)	23 800 000 (in 2015)
Population distribution	Over 81% live in urban areas, and 19.5% in rural areas.	Over 89% live in urban areas, less than 11% in rural areas.
People living in large cities	The United States has 10 cities that have a population of more than 1 million people.	Australia has 5 cities that have a population of more than 1 million people.
	Approximately 1 of every 10 people in the United States live in either the New York or Los Angeles metropolitan areas.	Approximately 4 of every 10 people in Australia live in either Melbourne or Sydney.

FIGURE 1 Population of the top 10 urban settlements in (a) the United States (2015) and (b) Australia (2014)



15.7.2 Causes of urbanisation

The causes of urbanisation are similar for both Australia and the United States. In each case, since the country was founded:

- fewer people were needed to work in rural areas as technology reduced the demand for labour on farms
- more jobs and opportunities were available in factories, which were located in urban areas
- the development of railways allowed goods produced in one city to be transported to rural and urban areas
- cities could grow and develop thanks to new technologies (steel-framed skyscrapers) and utilities (for example, electricity and water supply).

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Try out this interactivity: City folk (int-3117)

15.7.3 Consequences of urbanisation = conurbations

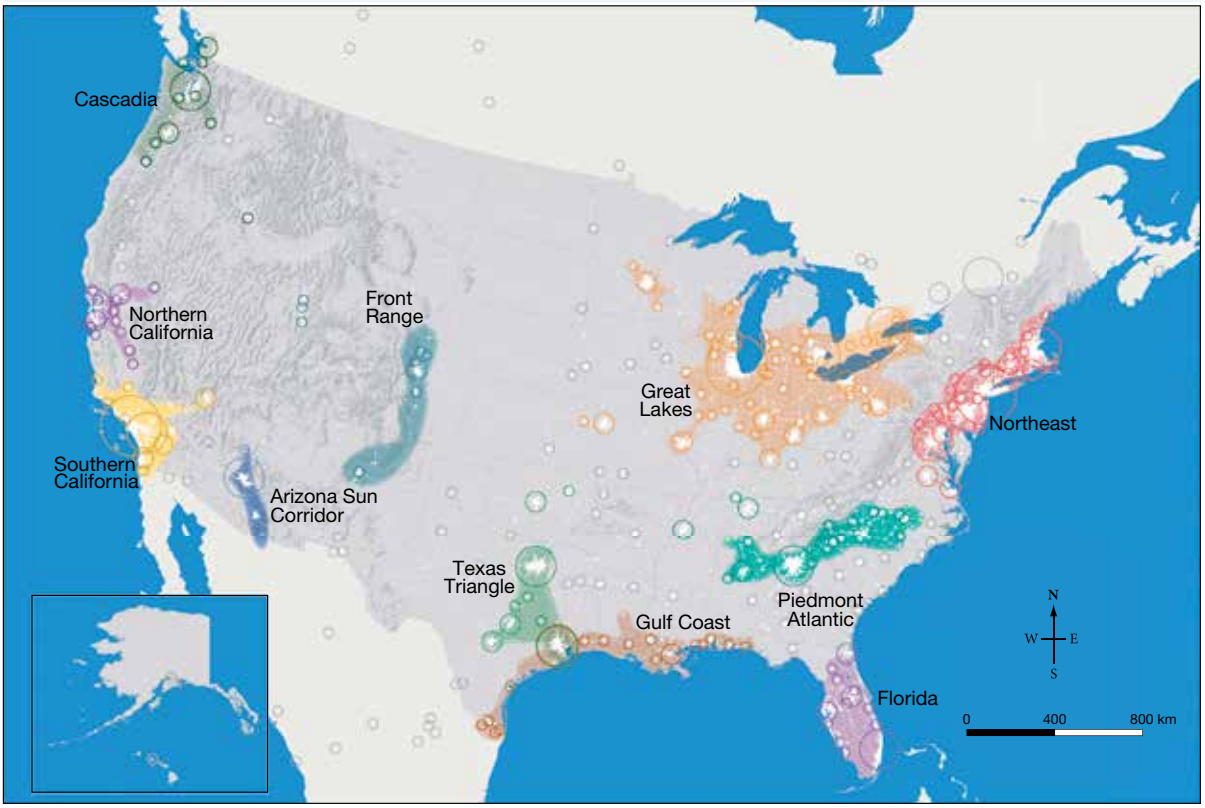
Conurbations

Sometimes there are so many cities in a particular region that they seem to merge almost into one city as they expand. A conurbation is made up of cities that have grown and merged to form one continuous urban area. Both the United States and, to a lesser extent, Australia have conurbations.

United States

Eleven conurbations have been identified in the United States (see figure 2 on the next page). The major conurbation is in the north-east region. It is often called BosNYWash because it covers the area from Boston in the north, through New York to Washington in the south. This region is home to over 50 million people and accounts for 20 per cent of the gross domestic product (GDP) of the United States.

FIGURE 2 Conurbations in the United States



Source: Adapted with permission from Bernard Salt.

Australia

Australia, on the other hand, has only two main conurbations (see figure 3 opposite). One is in south-east Queensland; the other, the Newcastle–Wollongong conurbation, stretches for over 250 kilometres and is home to almost six million people.

15.7.4 Other consequences of urbanisation

Homelessness

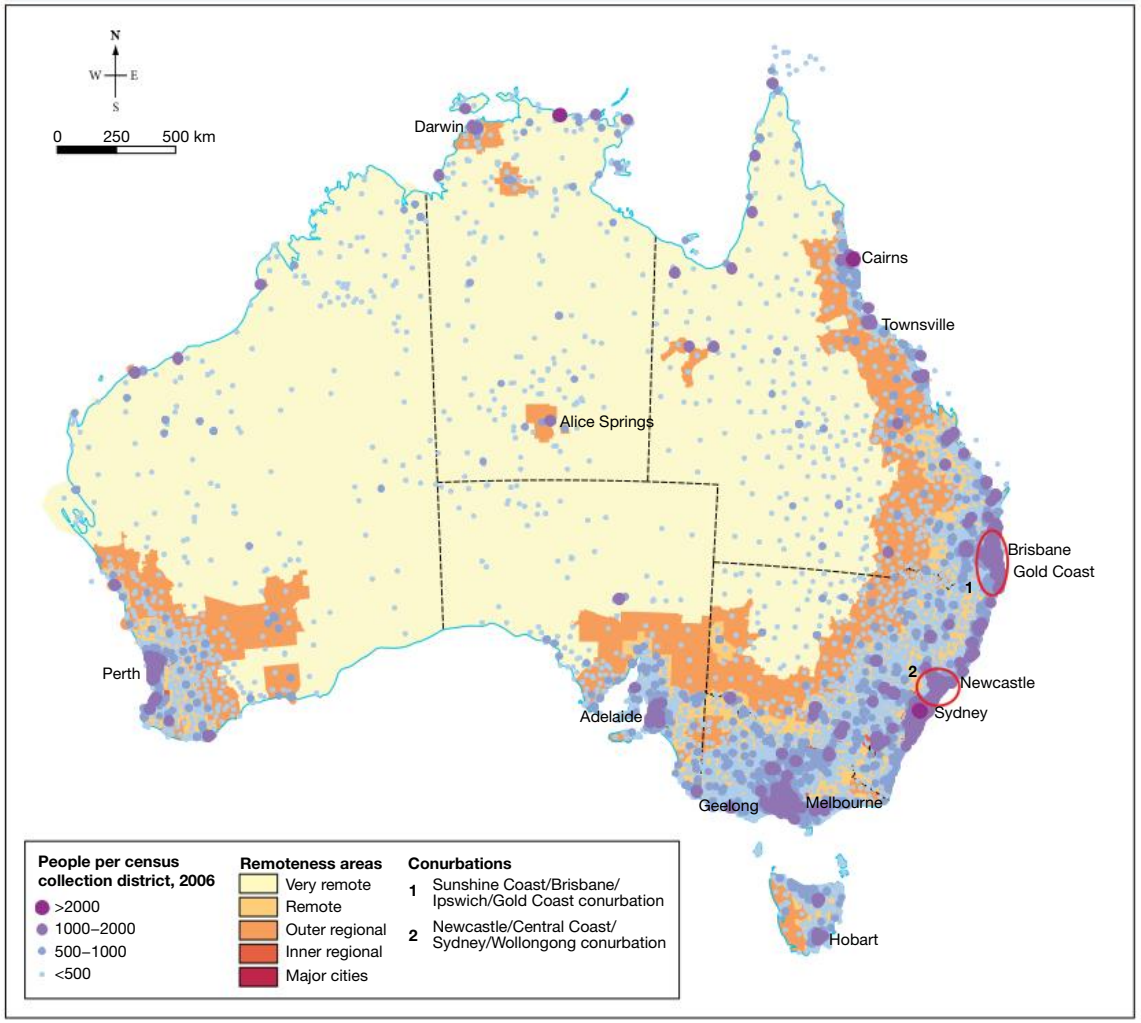
It has been estimated that there are more than 560 000 homeless people (living on the streets or in temporary shelters) in the United States and more than 105 000 homeless people in Australia. One reason for this is that urban housing projects do not provide affordable housing for the poor.

In the United States the highest number of homeless per capita reside in New York (130), Atlanta (131), Boston (132), Washington (133) and Honolulu (134).

Health issues

High population densities in urban areas make it easier for diseases to be transmitted, especially in poor neighborhoods. The urban poor suffer health issues caused by reduced access to sanitation and hygiene facilities and health care.

FIGURE 3 Australia's population centres and conurbations



Source: Australian Bureau of Statistics

Pollution

Air pollution from cars, industry and heating affects people who live in cities. A study in the United States showed that more than 3800 people die prematurely in the Los Angeles Basin and San Joaquin Valley region of southern California because of air pollution. Generally, Australia has a fairly high level of air quality. Cars and industry are the main factors influencing air quality in urban areas.

15.7 Activities

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

Remember

1. How does the population of the United States compare to that of Australia? How many times larger (approximately) is one than the other?
2. Refer to figures 2 and 3. Describe the distribution of the population in the United States and in Australia.
3. What is a conurbation?

Explain

4. Refer to table 1.
   (a) Compare the ***scale*** of urbanisation in the United States and in Australia.
   (b) Compare the numbers of people living in large cities in the United States and in Australia.
5. Refer to figure 1.
   (a) Compare the size of the 10 largest cities in the United States and in Australia.
   (b) What might explain the differences you noticed?
6. Explain, in your own words, the causes of urbanisation in the United States and Australia.

Think

7. Why do you think both Australia and the United States have conurbations?
8. Why might there be more conurbations in the United States than in Australia?

Discover

9. Conduct research to find out about other consequences of urbanisation in the United States and Australia, such as those affecting traffic, provision of adequate public transport, water supply and energy, waste management issues, urban sprawl and loss of farmland.

myWorldAtlas
Deepen your understanding of this topic with related case studies and questions.
› Urbanisation in Australia and the USA

15.8 SkillBuilder: Creating and reading pictographs

online only

WHAT IS A PICTOGRAPH?

A pictograph is a graph drawn using pictures to represent numbers, instead of bars or dots which are traditionally used on graphs. A pictograph is a simple way of representing data and conveying information quickly and efficiently in a different format.

Go online to access:

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

FIGURE 1 Top five countries by population, 2008

Country	Population
1. China	1 324 700 000
2. India	1 149 300 000
3. USA	304 500 000
4. Indonesia	239 900 000
5. Brazil	195 100 000

100 000 000 people

learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Creating and reading pictographs (eles-1659)

Try out this interactivity: Creating and reading pictographs (int-3155)

15.9 SkillBuilder: Comparing population profiles

online only

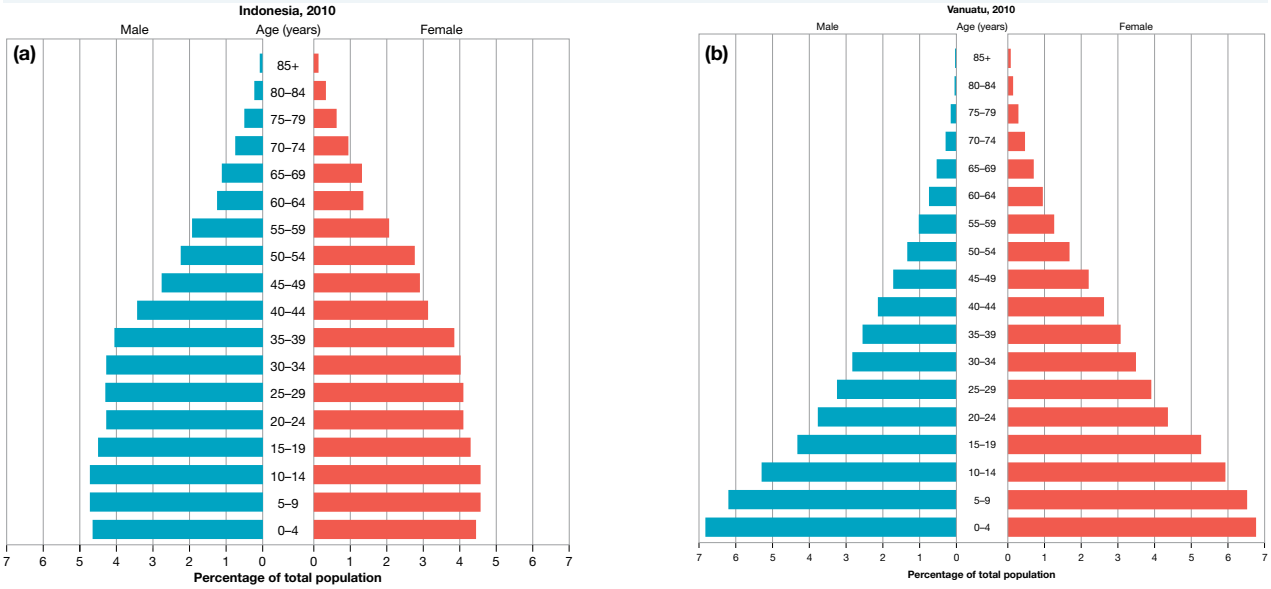
WHAT IS A POPULATION PROFILE?

A population profile, sometimes called a population pyramid, is a bar graph that provides information about the age and gender of a population. The shape of the population profile tells us about a particular population. Comparing population profiles of different places helps us try to understand how and why they may be similar or different.

Go online to access:

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

FIGURE 1 Population profiles of Indonesia and Vanuatu, 2010



learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Comparing population profiles (eles-1704)

Try out this interactivity: Comparing population profiles (int-3284)

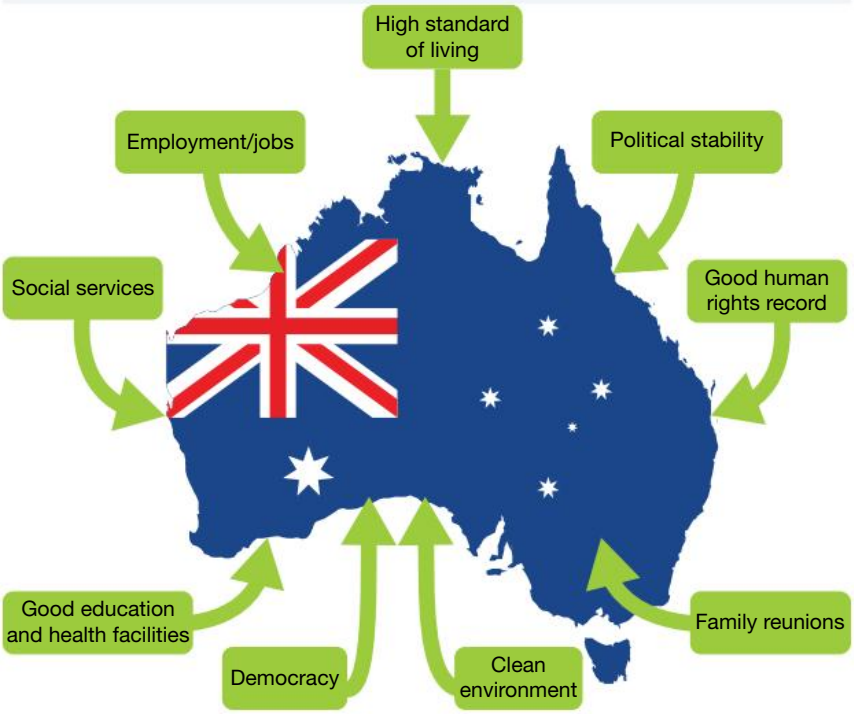
15.10 How has international migration affected Australia?

15.10.1 Why have people migrated to Australia?

Australia is a land of **migrants**. In a way we are all migrants — at some stage in the past, our ancestors came to this country to live. Today, half of our population of just over 23 million people either was born overseas or has at least one parent who was born overseas.

Since the earliest times, people have moved from one part of the world to another in search of places to live. Migrants have come to Australia for many reasons (see figure 1 on the next page).

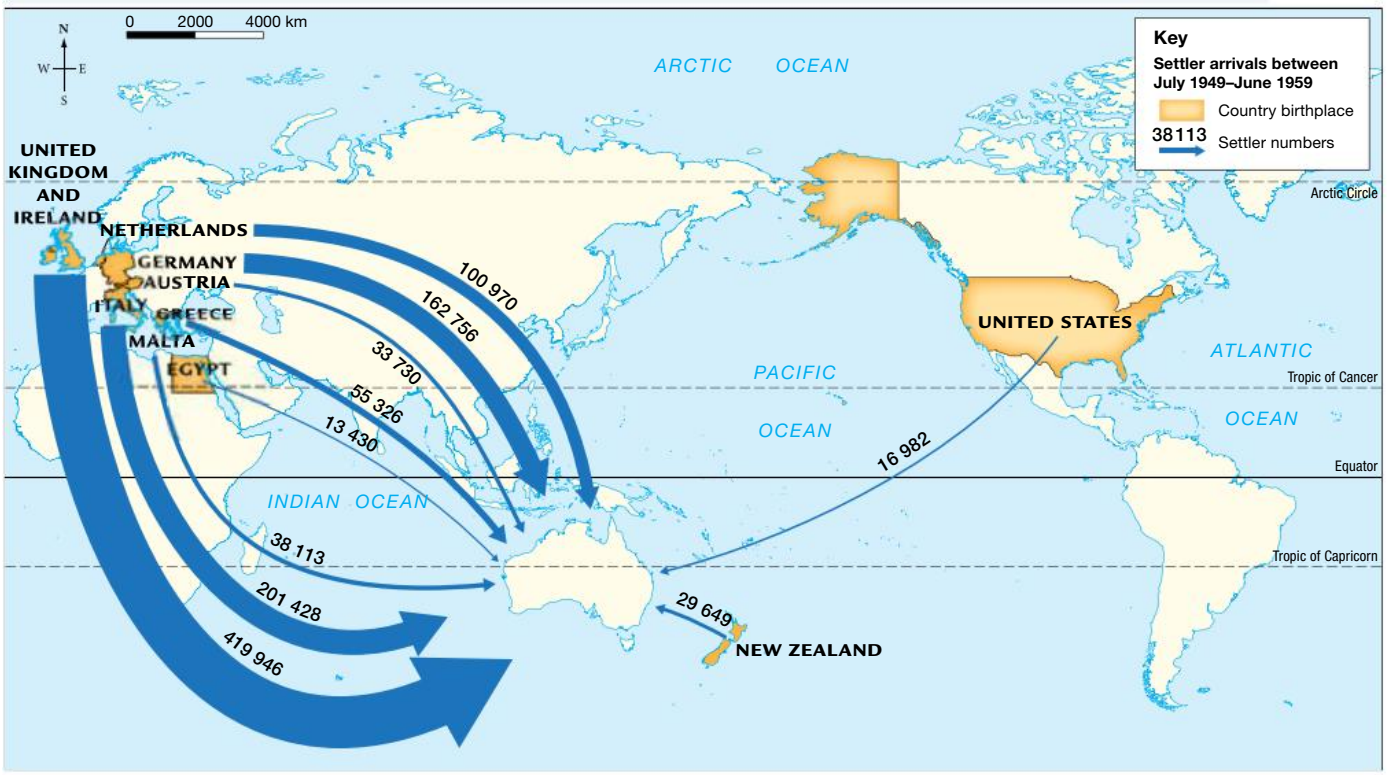
FIGURE 1 Reasons for immigration to Australia.



15.10.2 Where have our migrants come from?

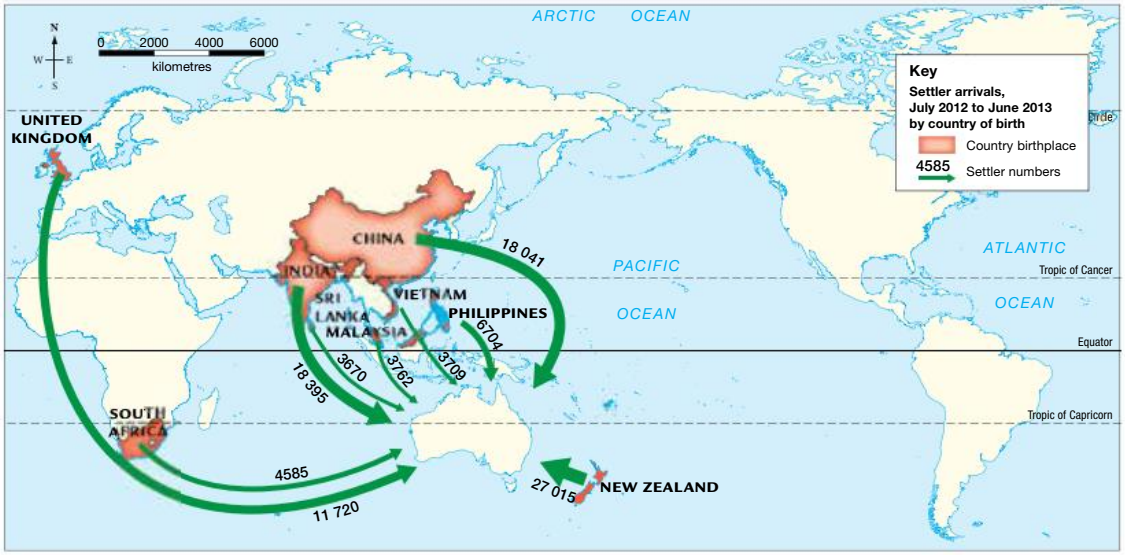
At first, migrants to Australia came exclusively from Europe (see figure 2 below); however, since 1975, the country has attracted more immigrants from Asia (see figure 3 and table 2 on the next page). Despite this, the most common ancestries today are still English, Australian, Irish, Scottish and Italian (see table 1 on the next page).

FIGURE 2 Origin of Australia's migrants, 1949–1959



Source: Spatial Vision

FIGURE 3 Settler arrivals July 2012 to June 2013 by country of birth



Source: Department of Immigration and Border Protection

TABLE 1 Ancestry of Australians, 2011

Ancestry (top responses)	Number of Australians	Percentage
English	7 238 533	25.9
Australian	7 098 486	25.4
Irish	2 087 758	7.5
Scottish	1 792 622	6.4
Italian	916 121	3.3

Source: © Australian Bureau of Statistics, licensed under a Creative Commons Attribution 2.5 Australia licence

Where have our migrants settled?

When they arrive, migrants tend to live in capital cities because of the greater availability of jobs and to be near family members, friends and people from the same country (see table 2 below). In 2011, 82 per cent of the overseas-born population in Australia lived in capital cities, compared with 66 per cent of all people in the country. About one-third of the population in our large cities was born overseas.

TABLE 2 Top 10 birthplaces of Australians, 2011

Country of birth	Number of people	Percentage of state population	Percentage of state population living in capital city
United Kingdom	1 098 638	5.1	5.6
New Zealand	483 376	2.2	2.3
China	318 965	1.5	2.1
India	295 355	1.4	1.9
Italy	185 402	0.9	1.1
Vietnam	185 032	0.9	1.3
Philippines	171 223	0.8	1.0
South Africa	145 670	0.7	0.8
Malaysia	115 790	0.5	0.8
Germany	108 001	0.5	0.5

Source: Based on Australian Bureau of Statistics data (Census of Population and Housing 2011) © Commonwealth of Australia, licensed under a Creative Commons Attribution 2.5 Australia licence

Overseas-born migrants who arrived in the past 20 years are more likely to live in a capital city than those who arrived before 1992 (85 per cent compared to 79 per cent).

Migrants from certain countries tend to be attracted to certain Australian states or territories more than others (see table 3 below).

TABLE 3 Top five countries of birth by state or territory, 2006 and 2011

ACT	NSW	NT	Qld	SA	TAS	VIC	WA
United Kingdom	United Kingdom	United Kingdom	United Kingdom	United Kingdom	United Kingdom	United Kingdom	United Kingdom
China	China	New Zealand	New Zealand	Italy	New Zealand	India	New Zealand
India	New Zealand	Philippines	South Africa	India	China	China	South Africa
New Zealand	India	India	India	China	Germany	New Zealand	India
Vietnam	Vietnam	Greece/USA	China	New Zealand	South Africa/ India	Italy	Malaysia

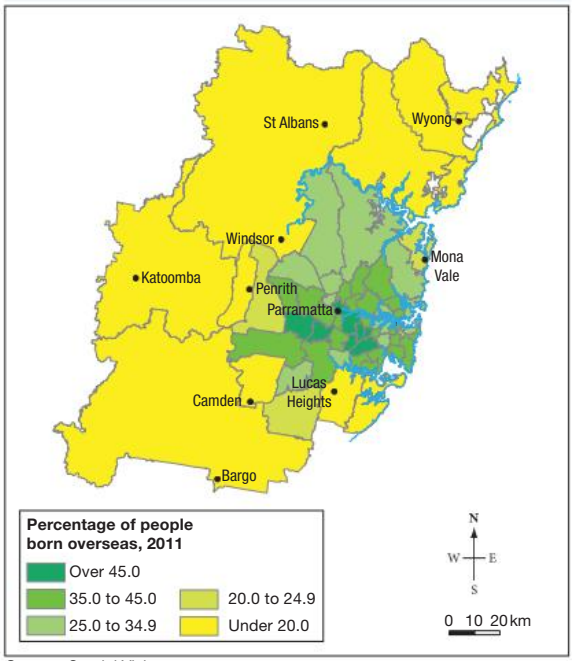
Source: Australian Bureau of Statistics

For example:

- More than half of all overseas-born people in Western Australia, South Australia and Tasmania were born in the United Kingdom and Ireland. Western Australia is the state with the highest proportion of its population having been born overseas, and is home to around one in five of all British-born migrants in Australia.
- Queensland has the greatest proportion of migrants born in Papua New Guinea and New Zealand.
- Nearly half of all Australian migrants born in Greece live in Victoria. People from Sri Lanka, Turkey and Greece also tend to live in Victoria. Victoria is home to the second-largest number of overseas-born people.
- New South Wales, Victoria and Western Australia account for about 80 per cent of Asian migrants.
- Combined, Victoria and New South Wales are home to almost 80 per cent of migrants from Vietnam.

Not only have immigrants tended to settle in larger cities, they have settled in particular suburbs and regions within the capital cities. Many migrants have settled in inner Sydney, for example, and especially in western Sydney suburbs (see figure 4 at right).

FIGURE 4 Percentage of Sydney residents born overseas, 2011



Source: Spatial Vision

15.10.3 Effects of international migration

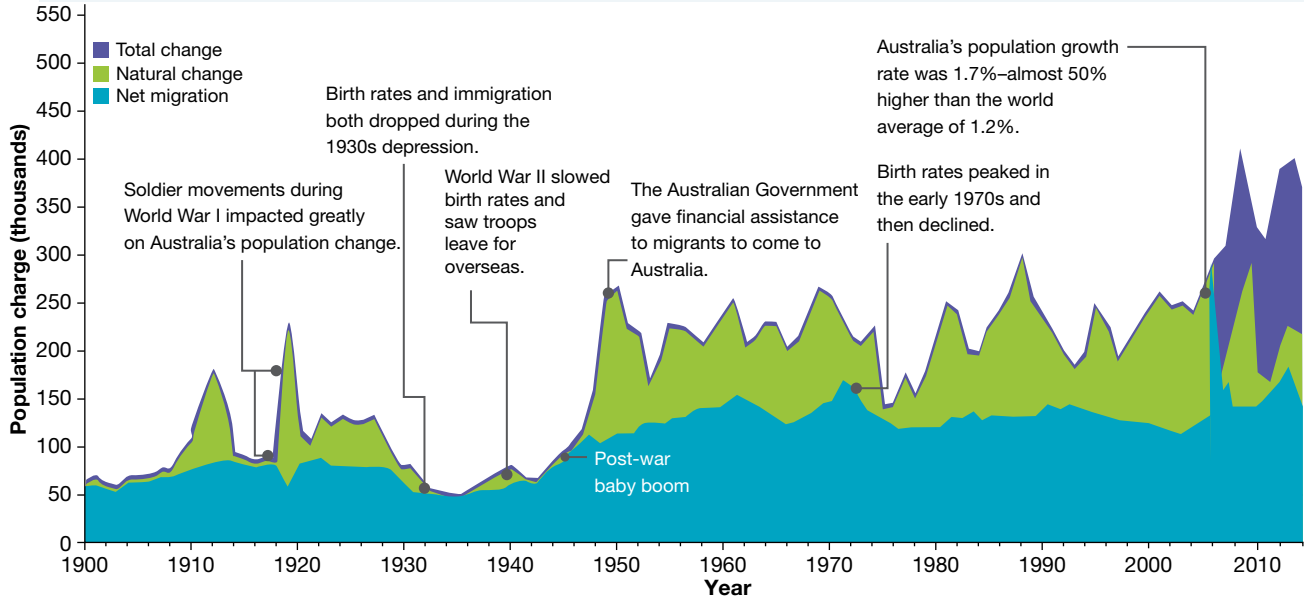
Social effects

Migration has helped increase Australia's population. The increase in population from only seven million at the end of World War II to more than triple that now is caused by both the arrival of migrants and increased birth rates since then (see figure 5 opposite).

Migrants to Australia have contributed to our society, culture and prosperity. Many communities hold festivals and cultural events where we can all share and enjoy the foods, languages, music, customs, art and dance.

Australian society is made up of people from many different backgrounds and origins. We have come from more than 200 countries to live here. Therefore, we are a very multicultural society — one which needs to respect and support each other's differences, and the rights of everyone to have their own culture, language and religion.

FIGURE 5 Australia's population growth, 1900–2014

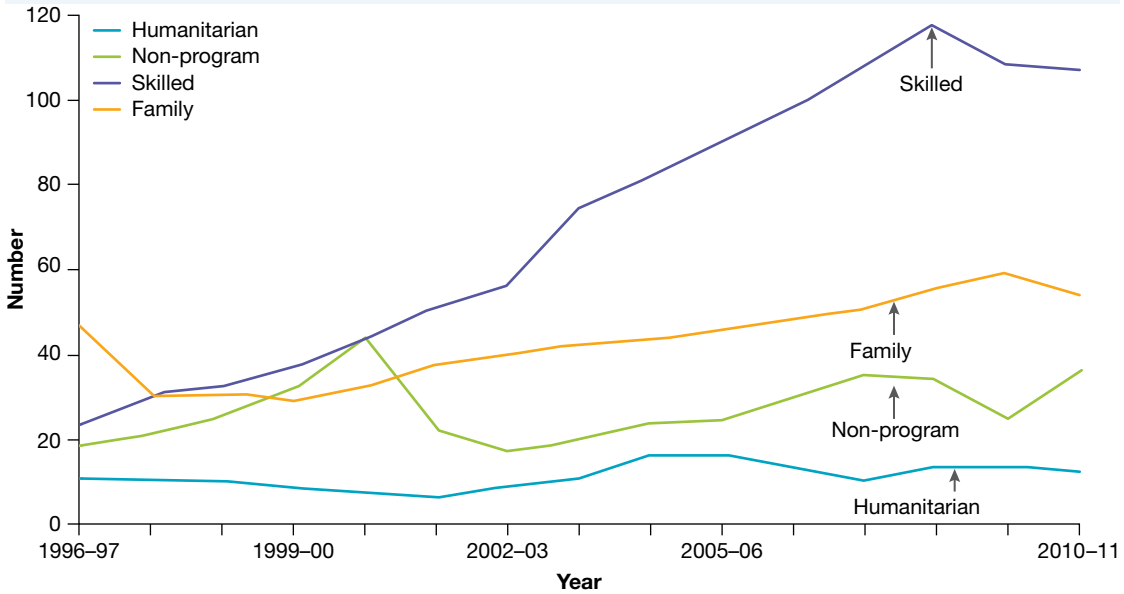


Economic effects

An increased population also means a greater demand for goods and services, which stimulates the economy. Migrants need food, housing, education and health services, and their taxes and spending allows businesses to expand. Apart from labour and capital (money), migrants also bring many skills to Australia (see figure 6).

Migrants generate more in taxes than they consume in benefits and government goods and services. As a result, migrants as a whole contribute more financially than they take from society.

FIGURE 6 Types of migrants to Australia, 1996–2011



Source: © G. Hugo, *Australia's changing population and the future*, presentation to the Migration Institute of Australia Migration 2010 conference, Sydney, 8 October 2010, and advice provided by the author to the Parliamentary Library, March 2012. Data sources: ABS 2007, *Australian Social Trends*, DIAC 2009 and 2011

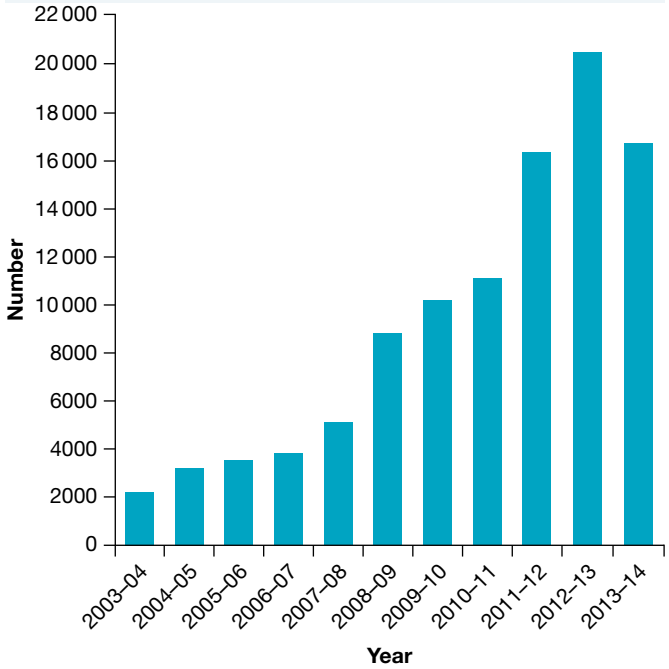
Environmental effects

In the past, people argued that immigrants put pressures on Australia's environment and resources by increasing our population and the need for water, energy and other requirements. Today, however, many people believe that Australia's environmental problems are not caused by migration and population increase, but by inadequate planning and management.

15.10.4 The future

Since 1995, the Australian government has been working to encourage new migrants to settle in regional and rural Australia. The Regional Sponsored Migration Scheme (RSMS) allows employers in areas of Australia that are regional, remote or have low population growth to sponsor employees to work with them in those regions (see figure 7 below). This takes the pressure off large cities and also provides regional employers with skilled workers. As we have seen, it has always been the case that most immigrants settle first in our cities, especially the state capitals. However, more migrants are now choosing to settle initially in regional areas. Around one in six new permanent arrivals are settling in regional Australia. There are many regional locations that want to attract migrants.

FIGURE 7 Migrants arriving under the Regional Sponsored Migration Scheme, 2003–14



Source: © Department of Immigration and Citizenship, *2011–12 Migration Program Report*

15.10 Activities

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

Remember

1. Using statistics, describe how Australia is truly a land of migrants.
2. Refer to figures 2 and 3. Describe how the origins of our migrants have ***changed*** since 1949.

3. Refer to figure 7. Describe how the number of migrants coming into Australia under the Regional Sponsored Migration Scheme has ***changed*** between 2003–04 and 2011–12.
4. Refer to table 3 and figure 4. Describe how the distribution of the areas of settlement by migrants varies within Australia.

Think

5. Refer to figure 5. Describe how important migration has been in terms of Australia's population growth.
6. What do you consider to be the main reasons for why people would migrate to Australia?
7. What do you believe are the two main benefits of migration to Australia? Give reasons for your answer.

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Deepen your understanding of this topic with related case studies and questions.
› International migration and Australian cities

15.11 Why are people on the move in Australia?

15.11.1 What makes Australians move?

In the United States, it is common for young people to leave home and travel to a university in another state or on the opposite side of the country. This is less common in Australia.

People move for many reasons. The average Australian will live in 11 houses during their lifetime — this means that many people will live in more. You may move to live in a larger house, or a smaller house as your family size or income changes. On retirement you may want to live near the mountains or the sea.

Forty per cent of Australians changed the place where they live in the five years between and 2011 (see table 1 at right). Some moved only within their suburb, but 6 per cent, or 1.2 million people, moved from a different country.

The major movements of Australians since 1788 are shown in figure 1 on the next page. The Great Australian Divide separates Australia into two regions, known as the Heartland and the Frontier. The Heartland is home to about 19 million people who live in a modern, urbanised, industrial state. The Frontier is a sparsely populated region of only about three million people who live in a place that is remote but rich in resources.

TABLE 1 The usual place of residence for Australians in 2006 versus 2011

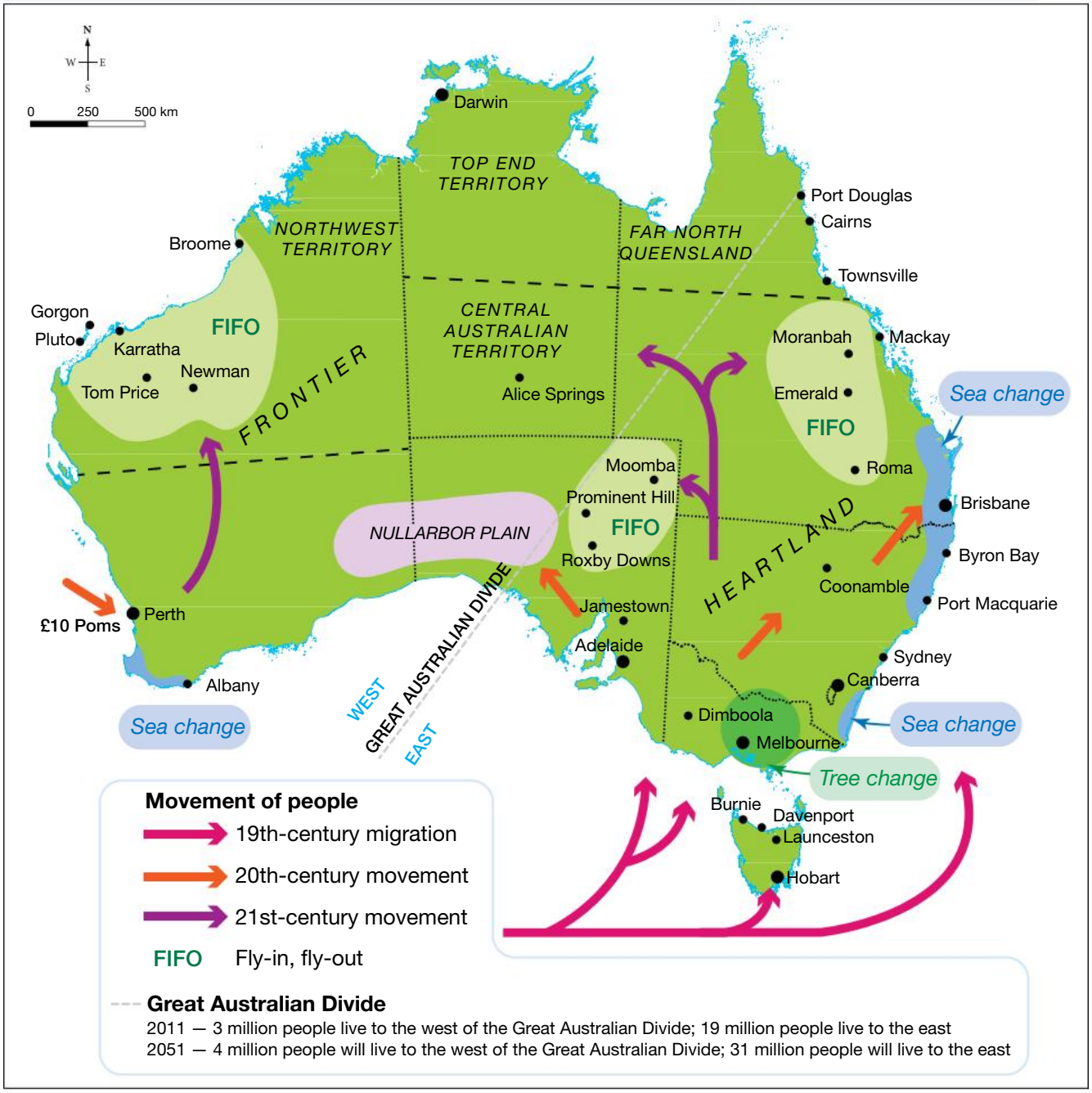
Location	Number of people
Same address	11 million
Same suburb, different address	1.4 million
Different suburb or state	5.2 million
Overseas	1.2 million
Not stated	1.2 million
Total	20 million

Sea change or tree change

The population movement caused by '**sea change**' or '**tree change**' — a move from an urban environment to a rural location — is a national issue affecting coastal and forested mountain communities in every state in Australia. The movement involves people who are searching for a more peaceful or meaningful existence, who want to know their neighbours and have plenty of time to relax. Local communities in high-growth coastal and mountain areas often cannot afford the services and increased infrastructure, such as roads, water and sewerage, that a larger population requires. Geelong, Wollongong, Cairns and the Gold Coast are all popular places for sea changers to settle.

Not every sea changer loves their new life, and many return to the city. Factors such as distance from family, friends, cultural activities and various professional or health services may pull people back to their previous city residences.

FIGURE 1 Australia's moving population



Source: MAPgraphics Pty Ltd, Brisbane

15.11.2 Fly-in, fly-out workers

Employment opportunities have grown within the mining industry in places such as the Pilbara. However, local towns do not have the infrastructure, such as water, power and other services, to support a large population increase. Rental payments for homes can be as high as $3000 per week; many places do not have mobile phone reception, and even internet access can be costly and slow. One way to attract workers to these regions is to have a **fly-in, fly-out (FIFO)** workforce. FIFO workers are not actually 'settlers', as they choose not to live where they work. Some mine workers from the Pilbara live in Perth or even Bali, and commute to their workplace on a weekly, fortnightly or longer-term basis. The permanent residents of

these remote towns are uneasy with the effects of the FIFO workforce because they change the nature of the town but choose not to make it their home. By not living locally, their wages leave the region and are not invested in local businesses and services.

15.11.3 Seasonal agricultural workers

Many jobs in rural areas are seasonal — for example, the picking and pruning of grapes and fruit trees requires a large workforce for only a few months each year. Many children born in rural areas leave their homes and move to the city for education, employment or a more exciting lifestyle than the one they knew in the country. This means that there are not enough agricultural workers to cover the seasonal activities.

Backpackers plus people from Asia and the Pacific Islands on short-term work visas often provide the seasonal workforce in these regions. Country towns such as Robinvale in northern Victoria now have Asian grocery stores, an Asian bakery and a shop selling Tongan canned goods, providing the seasonal farm workforce with a taste of home. Robinvale has more than 20 nationalities as either residents or seasonal workers.

15.11 Activities

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

Remember

1. What does FIFO mean?
2. What is the difference between a *tree changer* and a *sea changer*?

Explain

3. Refer to figure 1. Explain the difference between Australia's Heartland and its Frontier.
4. Look carefully at figure 1 and explain how the gap between Australia's east and west is predicted to alter over the next 40 years.

Discover

5. List the positive and negative factors of making a tree ***change*** or sea ***change*** as a:
   (a) family with young children
   (b) retired couple.
6. Convert table 1 into a pie graph, either using Excel software or by hand using a protractor. Describe the patterns that you can identify in your graph.

Predict

7. Do you think that the patterns you described in question 6 will still be evident in five years' time? Explain your answer.

Think

8. A more recent population migration is towards high-rise apartment living in the centre of major cities. How might this trend impact on these new residents and the sustainability of the environment their migration is creating? Use examples to justify your stance.

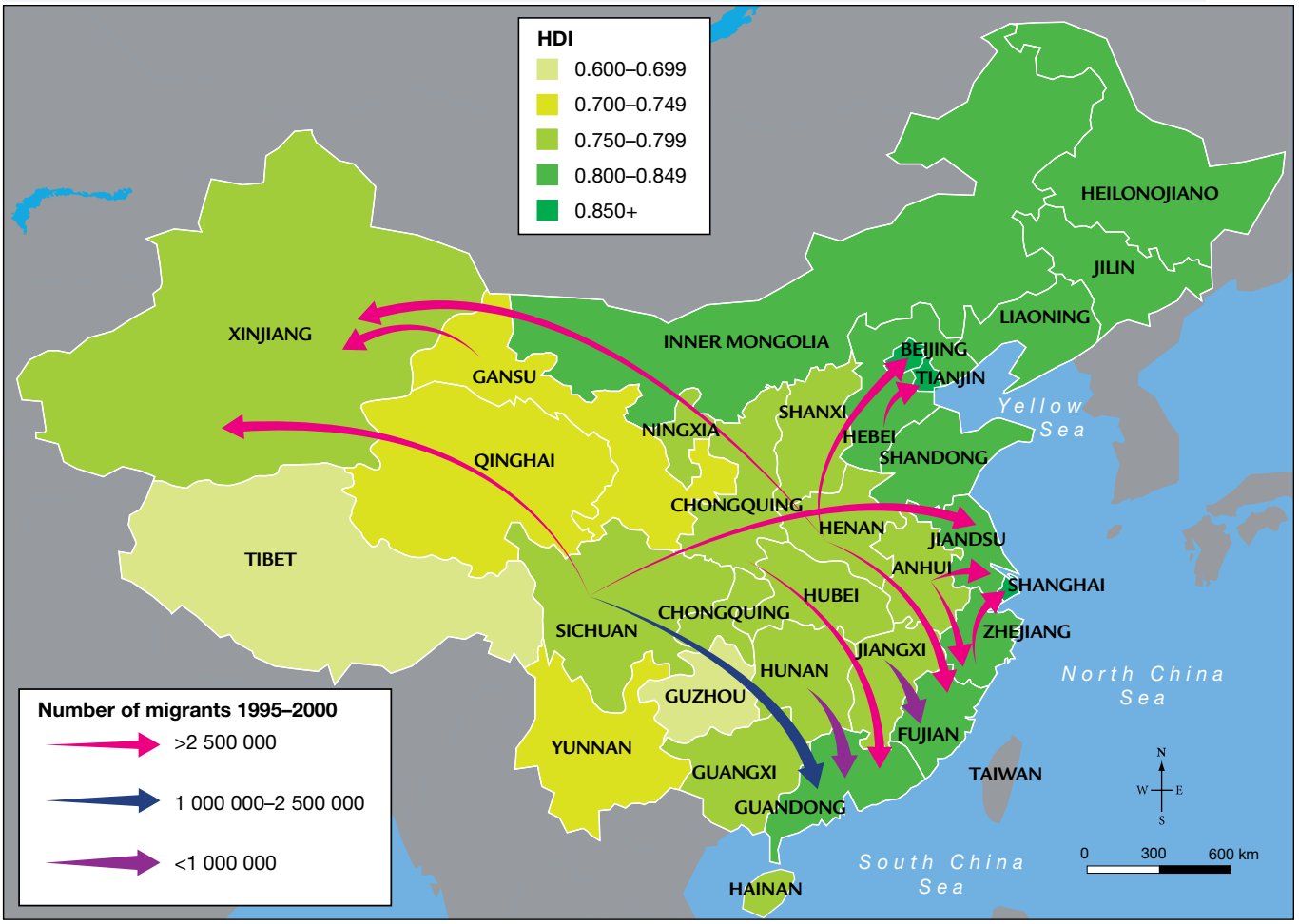
15.12 Why are people on the move in China?

15.12.1 Reasons for rural–urban migration

China has been experiencing a changing population distribution. The country's urban population became larger than that of rural areas for the first time in its history in 2012, as rural people moved to towns and cities to seek better living standards. China has become the world's largest urban nation.

Chinese labourers from the provinces have been moving to coastal cities in search of job opportunities, following reforms in 1978 which opened up China to foreign investment. Until then, rural–urban migration was strictly forbidden in China. Since then, more than 150 million peasants have migrated from the inner provinces to cities, mainly on the east coast. About half of rural migrants moved across provinces. This is the largest migration wave in human history (see figure 1 below).

FIGURE 1 People from Chinese inland provinces with lower wages and Human Development Index (HDI) values have moved to cities and provinces with higher HDIs and incomes.



Source: Spatial Vision

learnon RESOURCES — ONLINE ONLY

Try out this interactivity: Urban/rural China (int-3116)

Pull factors

Migrants from rural areas are attracted to urban regions largely for economic reasons — a higher income is achievable in a city (see figure 3 opposite). The average income of rural residents is about one-fifth that of urban residents on the east coast of China. Social factors are also important, with more opportunities for career development being available in cities; many people also desire a more modern urban lifestyle, with the benefits brought about by access to improved infrastructure and technology.

Push factors

Increasing agricultural productivity since the late 1970s has resulted in fewer labourers being needed on farms and thus a huge surplus of rural workers. These people have been forced to move to more urban areas in order to find employment. Agricultural production has meanwhile become less profitable, so workers have again been driven to cities to try to improve their economic situations (see figure 2 below).

FIGURE 2 A dramatic rural–urban migration shift has been occurring in China. In 2010, over half of China's population lived in rural areas, but by 2014 it was 46 per cent.



FIGURE 3 In 2015, Shanghai's population was estimated to be 23.74 million.



Political factors are also influential. China's central planners have encouraged local leaders in poor regions to encourage people to move to the cities. Their slogan was 'the migration of one person frees the entire household from poverty'.

15.12.2 Consequences of rural–urban migration

- China's urban population rose from around 170 million people in 1978 to 540 million in 2004, and then to nearly 800 million in 2015.
- In 1949, 89 per cent of people lived in rural areas; by 1979 this figure had dropped to 81 per cent. In 2014 this figure was 46 per cent.
- It is expected that, within 20 years, only 25 per cent of China's population will be living in rural areas, while the number of city-dwellers will rise to well over 1 billion people.
- Some people predict that by 2025, China will have 15 super-cities with an average population of 25 million people each.
- It is thought that the number of people living in China's countryside could shrink from 500 million to 400 million people.
- Labourers from rural regions working in cities have to leave their families for months at a time or more.
- Tens of millions of people are classified as rural dwellers, even though they spend most or all of their time working in the cities. These people are denied access to social services, including subsidised housing, income support and education for their children.
- A shift to an increased urban population results in reduced population pressures on the land.
- Up to 40 per cent of rural income comes from urban workers sending money to their families at home.

15.12 Activities

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

Remember

1. How has the percentage of people living in China's rural areas ***changed*** since 1949? What is this number expected to be in the future?
2. Describe the main ***changes*** that have occurred within China's urban population since 1978.

Explain

3. Explain in your own words the main reasons for the dramatic ***change*** in China's population distribution.
4. Classify each of the various consequences of this ***change*** as positive or negative.

Discover

5. Use the **China's urban growth** weblink in the Resources tab to respond to the following:
   (a) Describe population ***changes*** in the various cities in China.
   (b) 'The largest population growth has occurred in cities on China's coastline.' How true is this statement? Explain your answer using figures from the website.

Think

6. Creatively (in graphic or diagrammatic form) present some of the dramatic statistics in this subtopic to inform others of the ***scale*** of the ***changes*** happening to the distribution of China's population.

learnON RESOURCES — ONLINE ONLY

Explore more with this weblink: China's urban growth

myWorldAtlas Deepen your understanding of this topic with related case studies and questions.
› China

15.13 Review

online only

15.13.1 Review

The Review section contains a range of different questions and activities to help you revise and recall what you have learned, especially prior to a topic test.

15.13.2 Reflect

The Reflect section provides you with an opportunity to apply and extend your learning.

Access this subtopic at **www.jacplus.com.au**

15.6 SkillBuilder: Understanding thematic maps

15.6.1 Tell me

What is a thematic map?

A thematic map is a map drawn to show one aspect; that is, one theme. For example, the map may show the location of vegetation types, hazards or weather. Parts of the theme are given different colours or, if only one idea is conveyed, symbols may show location.

Why are thematic maps useful?

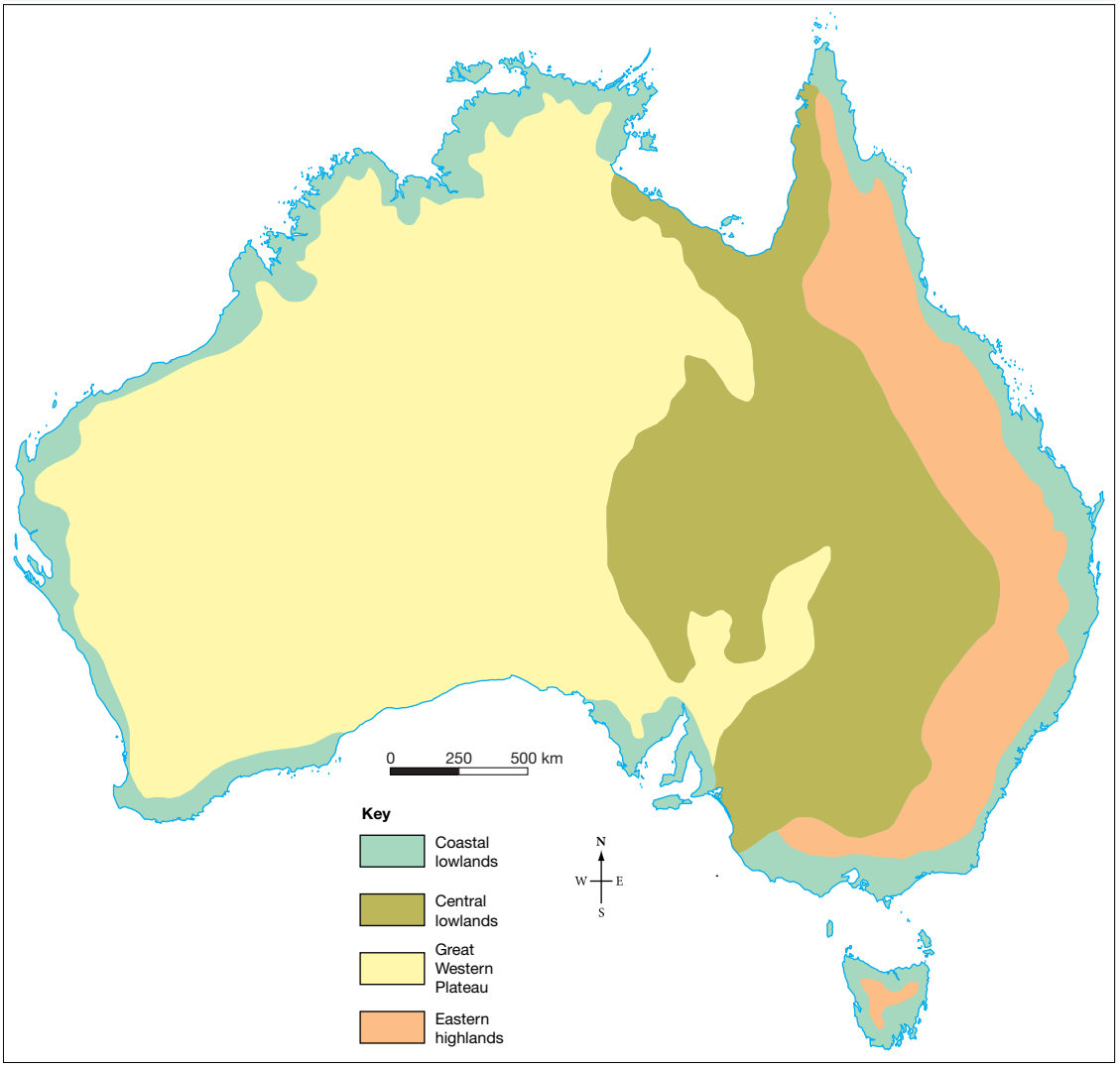
Thematic maps are used to identify and represent a single feature. No additional clutter is presented on the map — it allows the reader to focus on one feature only.

Thematic maps are useful for:

- focusing the viewer's attention on a single feature
- highlighting the significance of a single feature
- comparing different areas of a map in terms of the existence of a feature.

Model

FIGURE 1(a) Thematic map of the major landform regions of Australia



Source: MAPgraphics Pty Ltd, Brisbane

FIGURE 1(b) Topographic map of the natural features of Australia



Source: © MAPgraphics Pty Ltd, Brisbane

Figure 1a shows four major landform regions. It is a simplified version of a natural features map (figure 1b). Much of Australia is dominated by the Great Western Plateau, particularly in the west of the country. Following the coastline are the coastal lowlands, except around the Great Australian Bight and near the Victoria/South Australia border. The eastern highlands run parallel to the east coast from the northern tip of Australia to the south. The central lowlands run from the Gulf of Carpentaria to the Victoria/South Australia border.

A good description of a thematic map:

- utilises the title to identify the theme
- applies the key/legend in order to understand the colouring and/or symbols
- identifies and communicates the key theme and features.

15.6.2 Show me

How to understand a thematic map

You will need:

1. a thematic map
2. an atlas.

Procedure:

To understand a thematic map, you must be prepared to follow a planned approach to its study.

STEP 1

Read the title of the thematic map. What part of the world does the map show? When was the data gathered? What is the theme? In figure 1a, the theme is 'major landforms in Australia'.

STEP 2

Check that the map was put together by a reliable authority. Who is the source of the map? Sometimes textbooks don't state the source. However, you can usually find this information by looking at the list of acknowledgements in the book.

STEP 3

Read the key/legend to understand the colours and/or symbols that are being used. In figure 1a, four different colours are used to represent each of the four major landforms.

To interpret the colours you need to comment on where the various colours or symbols occur. Can you discuss the map by continent, or by region? An atlas may be useful to help you identify regions or places. In figure 1a, the eastern highlands stretch from the north of Australia to the south, parallel to the coastline.

STEP 4

You also need to discuss the colours or symbols that appear only in small areas of the map. In figure 1a, the central lowlands reach to the coast near the Victorian/South Australian border and the Great Western Plateau meets the coast in the Great Australian Bight.

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Watch this eLesson: Understanding thematic maps (eles-1658)

15.6.3 Let me do it

Developing my skills

Using figure 2 on the next page, describe the locations of the world's 20 largest cities.

Questions

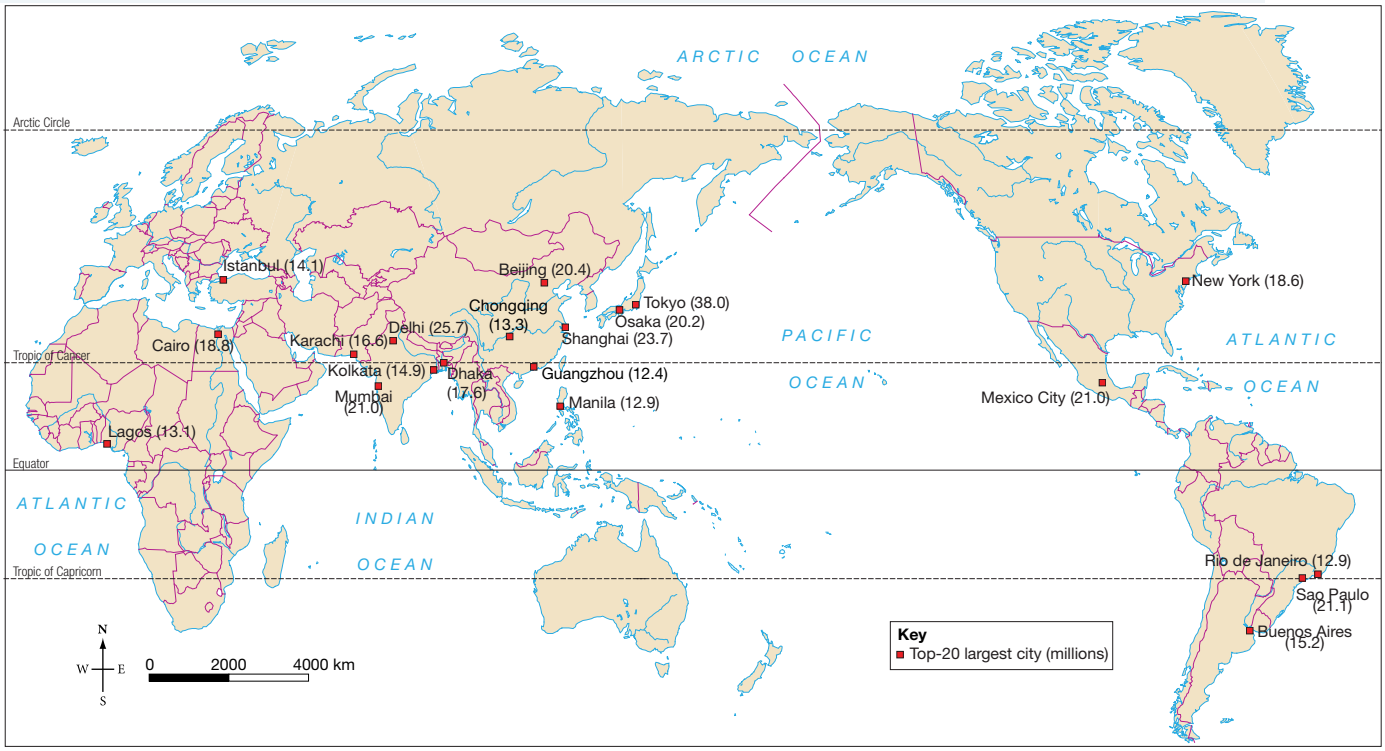
1. What is the title of the map in figure 2?
2. What theme is being shown in figure 2?
3. In which continent are most of the 20 largest cities located?
4. Which continents contain none of the 20 largest cities?
5. How many people live in the three largest cities in South America?

Checklist

I have:

- utilised the map title to identify the theme
- applied the key/legend in order to understand the colouring and/or symbols
- identified and communicated the key theme and features.

FIGURE 2 The world's 20 largest cities



Source: MAPgraphics Pty Ltd, Brisbane. Data from United Nations, Department of Economic and Social Affairs, Population Division (2014). World Urbanization Prospects: The 2014 Revision, CD-ROM Edition.

Skills questions

1. Thematic maps are used to show:
   (a) the interconnection between places
   (b) the shape of the land between two places
   (c) a set of ideas
   (d) one key idea.
2. A thematic map provides:
   (a) totals of information
   (b) quality of information
   (c) percentages of information
   (d) summarised information.
3. Why is a range of colours used on a thematic map?
4. Why are thematic maps quite simple maps?

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Try out this interactivity: Understanding thematic maps (int-3154)

15.8 SkillBuilder: Creating and reading pictographs

15.8.1 Tell me

What is a pictograph?

A pictograph is a graph drawn using pictures to represent numbers, instead of bars or dots which are traditionally used on graphs. Data can be drawn vertically or horizontally. Each picture is given a value.

Why are pictographs useful?

A pictograph is a simple way of representing data and conveying information quickly and efficiently in a different format. It is very visual for the reader.

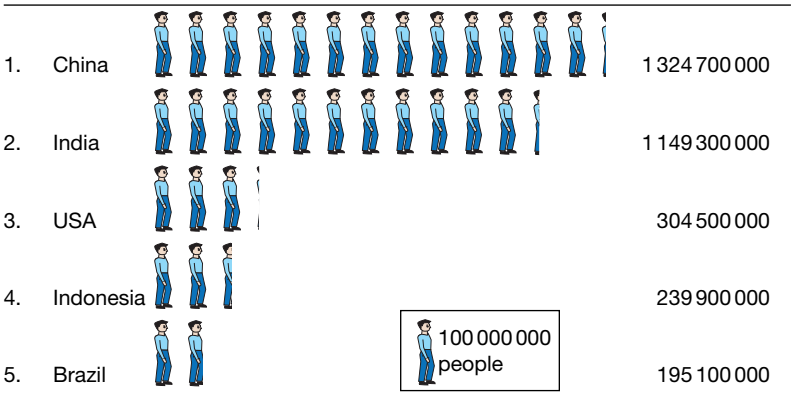
Pictographs are useful for:

- simplifying data
- showing differences between data
- presenting data.

Model

The pictograph in figure 1 below shows that the populations of China and India are large in comparison to those of other countries. The populations of the United States and Indonesia appear to be similar, but the key/legend shows that each complete symbol (person) represents 100 million people, so in fact there is a large difference in the population sizes. Indonesia's population is almost 250 million, while that of the United States is over 300 million.

FIGURE 1 Top five countries by population, 2008



A good pictograph has:

- been drawn in pencil
- used clear and simple pictures or graphics of the same size.

15.8.2 Show me

How to create and read a pictograph

You will need:

- a basic set of data
- a piece of paper on which to draw the pictograph
- a light grey pencil
- coloured pencils
- a ruler.

Procedure:

To complete a pictoraph you need a small set of data on one theme to graph.

STEP 1

Decide on a simple picture to represent the data that you are going to graph. For example, you might decide to use stick figures to represent numbers of people, fish if your data is about fishing, or dollar signs if your data concerns money.

STEP 2

Consider the data and determine a number that each picture should represent. In figure 1, the drawing of one person is equivalent to 100 000 000 people in a population. Choose a scale that will not require too many pictures for each part of the graph, and check what the size of the graph will be when your representations are included. The pictograph must fit on the page or in the space you have available.

STEP 3

Draw lines on your page, equal distances apart, to represent each variable (for example, country or year) for which you have data. On these lines you need to draw the appropriate number of pictures.

STEP 4

Spend some time doing calculations to determine how many pictures you need to represent each number. Notice in figure 1 that 'part people' are used. For example, half a person in the pictograph would represent 50 000 000 people. Think how your pictograph will show 'parts of the whole' to represent the data you are plotting.

STEP 5

Complete your pictograph with its drawings. Ensure that the key/legend is in place and that the pictograph has a clear title.

STEP 6

Reading a pictograph requires you to carefully read the data provided. Check the title, check the key/legend and determine the numbers represented by the graph. Write a few sentences summarising what the pictograph tells you. For example, the pictograph in figure 1 shows that the populations of China and India are large in comparison to those of other countries.

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Watch this eLesson: Creating and reading pictographs (eles-1659)

15.8.3 Let me do it

Developing my skills

Use the data below to draw a pictograph of the 10 cities with the largest populations.

Rank	City	Country	Population (rounded figures, 2011)
1	Tokyo	Japan	35.7 million
2	Mexico City	Mexico	19 million
2	Mumbai	India	19 million
2	New York City	United States	19 million
5	São Paulo	Brazil	18.8 million
6	Delhi	India	15.9 million
7	Shanghai	China	15 million
8	Kolkata	India	14.8 million
9	Dhaka	Bangladesh	13.2 million
10	Jakarta	Indonesia	13.2 million

Questions

1. What did you immediately notice when you first looked at your completed pictograph?
2. Which cities did you not expect to see on this list? Why?
3. Which country did you think would contain one of the 10 cities with the highest populations, but does not?
4. How much larger is Tokyo than Mexico City?
5. Sydney is Australia's largest city (4.61 million). Draw a pictograph to show the population of Sydney. Use the same representation as you did for the first pictograph. What do you notice?

Checklist

I have:

- drawn in pencil
- used clear and simple pictures or graphics of the same size.

Skills questions

1. Pictographs show:
   (a) a series of numbers
   (b) numbers as pictures
   (c) pictures of a range of ideas
   (d) your drawing skills.
2. A pictograph does not:
   (a) show differences between data
   (b) present data
   (c) simplify data
   (d) complicate data and its interpretation.
3. Why should you take time to decide on the quantity that each picture will represent?
4. Why might it be important to carefully choose the picture to be used?

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Try out this interactivity: Creating and reading pictographs (int-3155)

15.9 SkillBuilder: Comparing population profiles

15.9.1 Tell me

What is a population profile?

A population profile, sometimes called a population pyramid, is a bar graph that provides information about the age and gender of a population. The bars identify the proportion of a country's population within a particular age group. The graph is split to show information about males and females. The shape of the population profile tells us about a particular population.

Why are population profiles useful?

Population profiles help us to interpret and understand a list of statistics. Any patterns are easily identified and compared. A triangular shape that is widest at the base, as in figure 1 below, tells us that the population is growing rapidly. A square shape, as in figure 2 on the next page, indicates that population growth is slow. An inverted triangle, as in figure 3 on the next page (a prediction of Germany's population in 2050), tells us that there is negative growth — that is, the population is decreasing.

A population profile is used to show us the structure of a population.

- If the lower bars of the profile are wide, then the population is young (that is, there is a larger proportion of young people than older people in the population).
- If the upper bars of the profile are wide, then the population is ageing.
- Comparisons can be made of the numbers of males and females within a population.
- Exceptions, particularly indents, in the shape may be due to significant events, such as war, disease, emigration or natural disasters.
- Expansions in the shape may be due to factors such as immigration, changes in birth control laws or the ending of a war.

FIGURE 1 Population profile of Niger, 2009

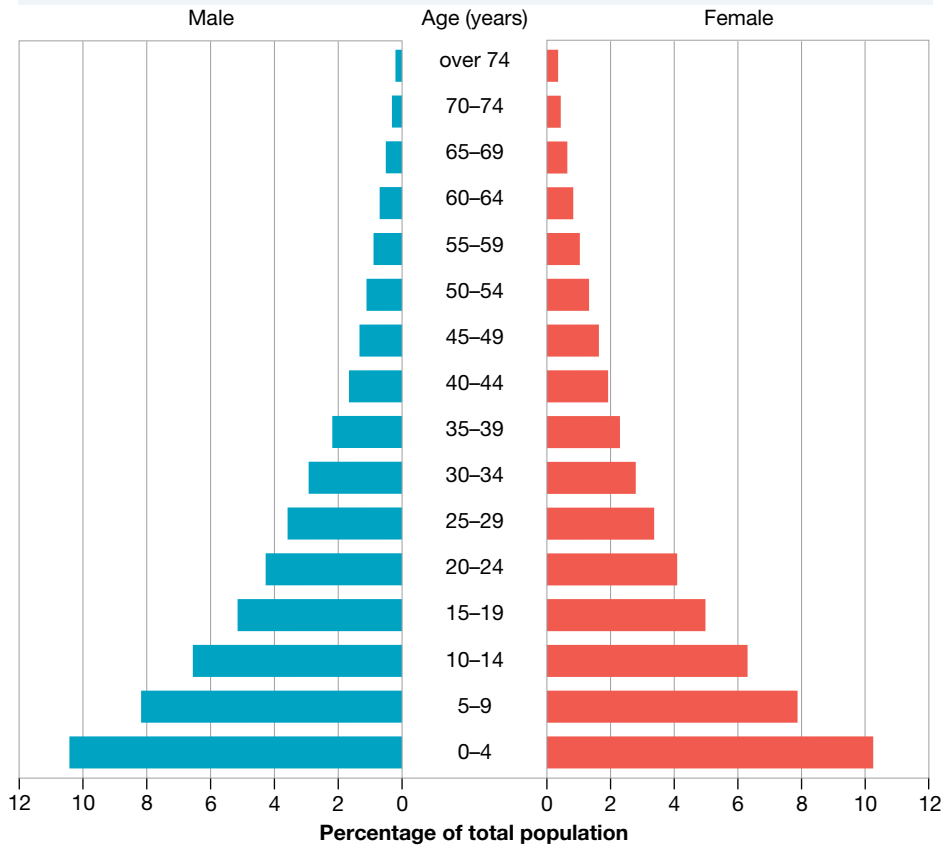


FIGURE 2 Population profile of Germany, 2009

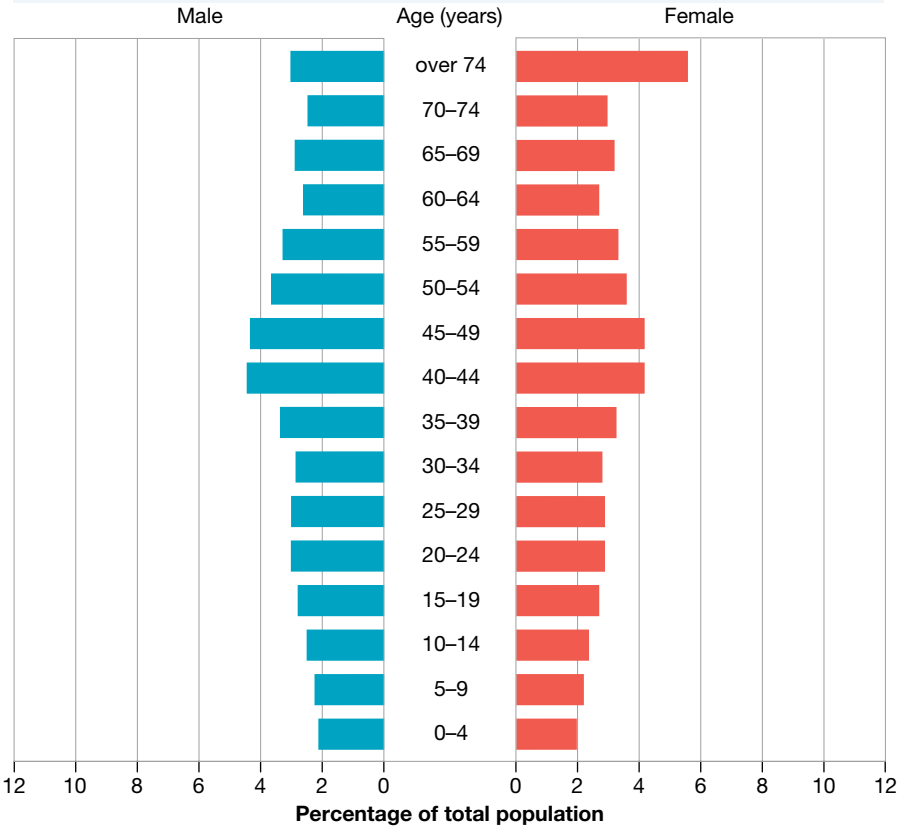
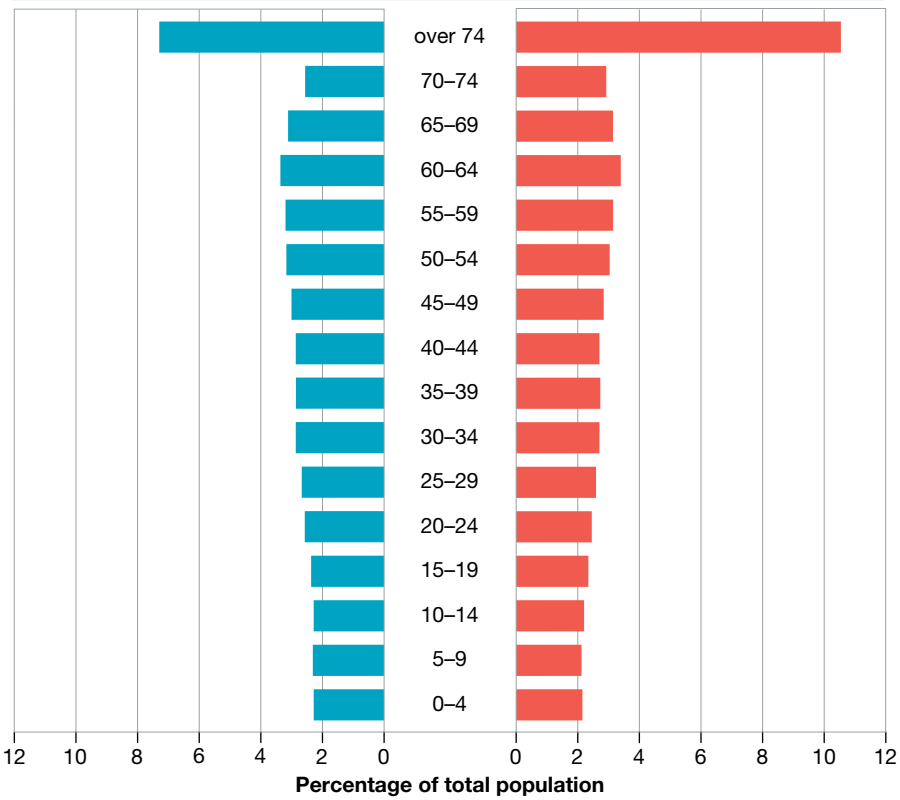


FIGURE 3 Population profile of Germany, 2050



Population profiles are useful for:

- comparing populations of different countries or places
- planning future urban developments
- determining the facilities required in an area — for example, a widening in the bars showing the 5–14 years age groups means more schools will be needed, while a widening in the bars showing the 60+ years age groups means aged care facilities will be required
- planning by governments for services for the future.

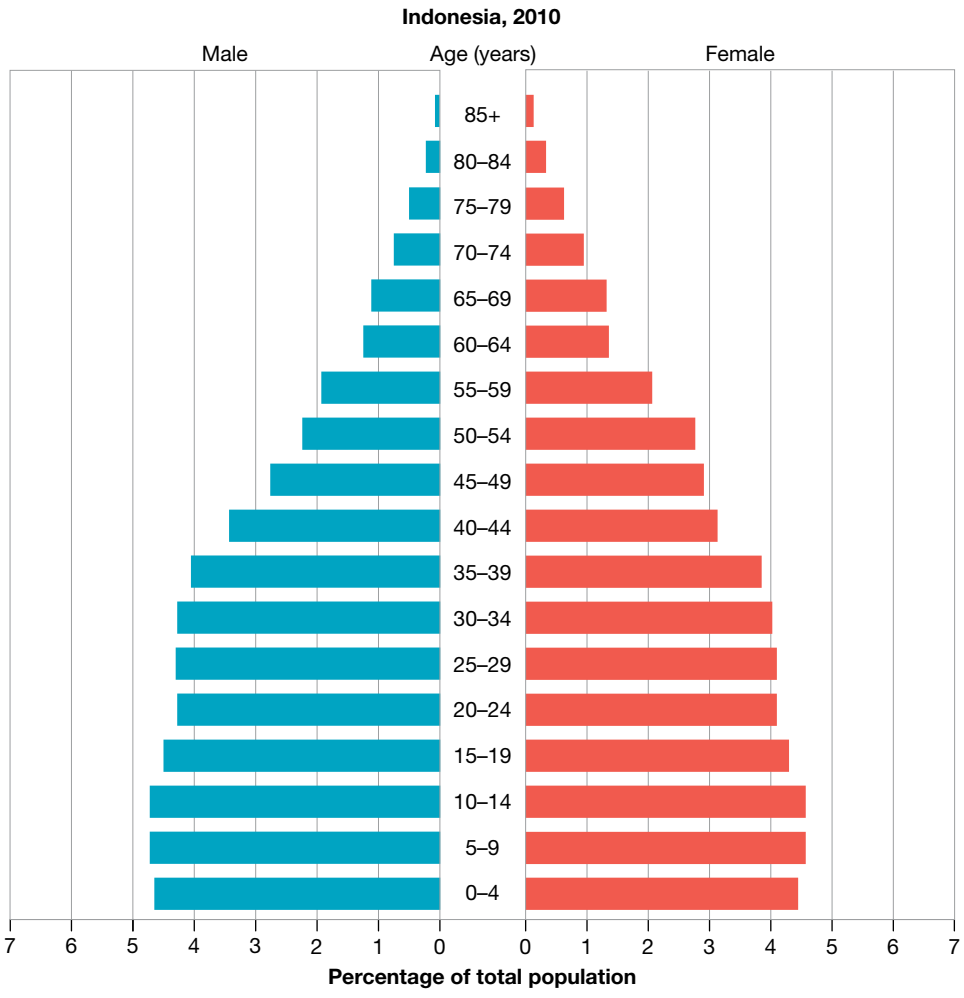
Model

In figure 4 below and on the next page, Indonesia's profile does not fit a triangular shape; it is not very wide at the bottom, suggesting that it has relatively fewer young people and an ageing population. The profile of Vanuatu is widest at the base (the 0–4 years age group) and tapers in a triangular shape, indicating that it has a youthful population. Vanuatu will have to consider the needs of its population carefully in the future.

In Vanuatu, 41.8 per cent of the population can be regarded as dependent (very young or very old), but in Indonesia the dependent population makes up 32.5 per cent of the population. People in Vanuatu's population could be expected to live into their 70s, whereas those in Indonesia can expect to live into their 80s.

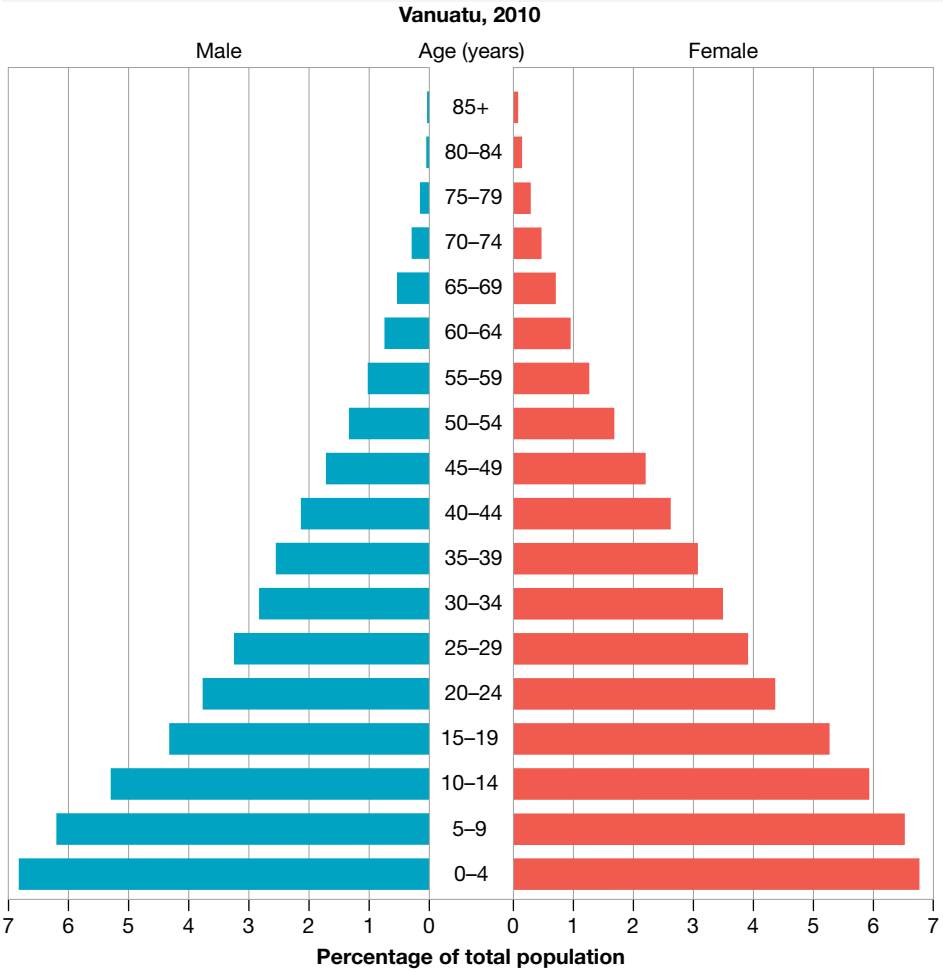
In Vanuatu the gender balance is skewed to males (the bars show that the male population is slightly larger than that of females in most age groups), whereas in Indonesia the numbers are more evenly balanced (although the proportion of females increases in the 60+ years age groups).

FIGURE 4 Population profiles of Indonesia and Vanuatu, 2010



(*continued*)

FIGURE 4 Population profiles of Indonesia and Vanuatu, 2010 (*continued*)



A clear comparison of population profiles has:

- identified the countries to be compared
- considered the three categories of level of dependence (see step 2)
- provided quantification (numbers) from the population profile
- compared male populations with female populations.

15.9.2 Show me

How to compare population profiles

You will need:

- two population profiles to compare — these can be for the same place at different times, or for two different places at the same time (as in figure 4).

Procedure:

STEP 1

To complete a comparison of population profiles, you must have two or more population profiles for the same place at different times, or for different places at the same time. For this example, we will use the population profiles for Indonesia and Vanuatu shown in figure 4.

STEP 2

Populations can be broadly grouped into three categories according to the level of dependence of the age groups:

- children (0–14 years) — dependent population, i.e. those that need others to provide their basic needs
- adults (15–64 years) — economically productive and independent, i.e. the workforce of a population
- aged (65 years and over) — economically inactive and dependent, i.e. no longer earning money and therefore relying on other means of support such as pensions or savings.

A population is considered to be old when less than 30 per cent of the population is younger than 15 years and more than 6 per cent is aged 65 years and over. A population is considered to be young when more than 30 per cent of the population is younger than 15 years and less than 6 per cent is aged 65 years and over.

For each population profile, calculate the percentage of males and females in each of the three categories described above. You can do this by using the **Population pyramid** weblink in the Resources tab and selecting the country and year that you want to research. Alternatively, use the **US Census Bureau** weblink in the Resources tab and select the report type 'Population by five year age groups', then choose the country and year that you want to research. You will find that population figures (as a percentage or the actual number of people) are produced for each age group. Calculate the total population in each of the three categories of dependence. What does this tell you about the population in each of the population profiles?

STEP 3

Look for patterns revealed by each population profile. Look at the gender structure — the number of males and females — of the graph. Is it in balance — that is, are there as many males as females? Often there are more females than males in the older age groups because females tend to have a longer lifespan. Migration can result in the movement of one gender more than another. War can affect the gender structure as a higher proportion of men may be killed. After a war, however, more births are likely to occur. Government policies such as the one-child policy of China (since 1979, and became less restrictive in 2016), where males are favoured, has changed the gender balance in affected countries. Write a statement about the balance of the population profiles.

Are the profile shapes for Indonesia and Vanuatu similar? If not, at what age groupings do the variations appear? Write a few statements to summarise your findings. Some key points you could cover include Vanuatu's economic development and Indonesia's mass education and family planning programmes of the 1990s.

STEP 4

Consider any unusual aspects. Traditionally, population profiles were called population pyramids because they were shaped like a pyramid or triangle — wide at the base and narrow at the top. Are there any indents (places where the graph narrows unexpectedly) or extended age groupings? Can you suggest why these may occur? Historical and economic events are an important consideration. A country's history — for example, conflicts or natural disasters — can often explain unusual changes. When economic times are tough, fewer children are born; when economic times are good, parents feel they have the finances to support larger families. You will need to research the background of a country to gain information that will allow you to make an accurate interpretation of its population figures.

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Watch this eLesson: Comparing population profiles (eles-1704)

Explore more with these weblinks: Population pyramid, US Census Bureau

15.9.3 Let me do it

Developing my skills

Using the **Population pyramid** weblink in the Resources tab, find the population profile for South Africa in 2010 and compare it with the population profile for Thailand in 2010 by writing a paragraph about population structure (using the steps above to help you).

Spend some additional time on the website looking at the changes in population pyramids over time and for other countries. It is amazing what you will discover!

Questions

1. What percentage of people in Thailand are aged less than 10 years? Compare this with the figure for South Africa — what percentage of people in that country are aged less than 10 years?
2. In which country, South Africa or Thailand, is a female most likely to live longest?
3. Which population profile is narrowest in the 0–4 years age group?
4. At what point does the population structure for South Africa take on a pyramid shape?
5. Which country, South Africa or Thailand, is likely to have more people in the workforce in 2025? Give reasons for your answer.

Checklist

I have:

- identified the countries to be compared
- considered the three categories of level of dependence
- provided quantification (numbers) from the population profile
- identified and utilised male population and female population numbers
- compared the total populations in each gender.

Skills questions

1. Population profiles are used to show:
   (a) the number of people at a place
   (b) the number of men in a population
   (c) the number of women in a population
   (d) the structure of a population.
2. A population profile includes information about:
   (a) age
   (b) housing
   (c) health
   (d) history.
3. Suggest why population profiles use five-year age groupings.
4. Why is it easier to deal with population profiles using percentage figures rather than total population numbers?

learnON RESOURCES — ONLINE ONLY

Try out this interactivity: Comparing population profiles (int-3284)

15.13 Review

15.13.1 Review

1. Describe the locations of the ***places*** in Australia that have the greatest population densities.
2. Describe the locations of the ***places*** in Australia that have the lowest population densities.
3. What is the ***interconnection*** between the location of regions with high population density and the distribution of rainfall within Australia?
4. How might a ***change*** in the patterns of rainfall distribution affect the location and density of population within Australia?
5. Use figure 2 in subtopic 15.2 and figure 1 in subtopic 15.3 to compare the population distribution of Aboriginal and Torres Strait Islander peoples with the distribution of rainfall in Australia.
   (a) Describe the ***interconnection*** between these two maps.
   (b) Aboriginal and Torres Strait Islander peoples prior to the British invasion in 1788 had a significant population distribution in the wet tropical north of Australia. How does this compare to Australia's current population density in figure 1 in subtopic 15.2?
   (c) Try to explain your answer to question 2 by referring both to figure 2 in subtopic 15.2 and to what you know about the Aboriginal and Torres Strait Islander peoples' rotational occupation of land.
   (d) Prior to the British invasion in 1788, Aboriginal and Torres Strait Islander peoples inhabited regions that are now inhabited by other people as well. Figure 2 in subtopic 15.3 shows that in 2006 the distribution of Aboriginal and Torres Strait Islander peoples was in some ways quite different from that of other people (see figure 1 in subtopic 15.2). Describe and try to explain these differences in population distribution and density.
6. What does the term *urbanisation* mean?
7. What ***change*** over time has there been in the percentage of people living in urban areas?
8. Has growth in urban areas been even across the world?
9. What is the global pattern of urban growth along coastlines?
10. Is Australia an urbanised country? Describe where most of the population lives (refer to figure 1 in subtopic 15.5).
11. How has China been 'reshaped' by internal population movements? Comment on changing distribution patterns of where people live in your answer, and refer to specific ***places*** and provinces that have been affected.
12. Classify the reasons for rural–urban movements within China into economic, social and political factors. Which factor do you consider the most important? Explain why.
13. Refer to table 1 below.

TABLE 1 Population figures for cities in China (census figures), 1990–2010

City	1990 (1 July)	2000 (1 November)	2010 (1 November)
Shanghai	8205598	15758892	22315426
Beijing	7362426	8503385	11716000
Tianjin	5804023	8146128	11090314
Guangzhou	3918010	8524826	11070654
Shenzhen	875176	7008831	10357938
Wuhan	3832536	8312700	9785392
Dongguan	—	6445777	8220237
Chengdu	3483834	5267817	7677122
Chongqing	3122704	6158790	7457600
Foshan	429410	5337340	7194311

Source: National Bureau of Statistics, China. Quoted from the website of the National Bureau of Statistics of the People's Republic of China, www.stats.gov.cn.

(a) Construct a line graph using the data in table 1 to show how the population of the 10 largest cities in China has changed between 1990 and 2010.
(b) Which city has had the quickest growth?
(c) Which city had the smallest population increase in that period?
(d) Refer to table 2 below. What do you notice about the ***scale*** of the population increase in China compared to that in Australia for the same period?

TABLE 2 Population figures for Australian capital cities in 1990 and 2010

City	Population 1990	Population 2010
Sydney	3 643 660	4 567 578
Melbourne	3 125 919	4 070 514
Brisbane	1 330 879	2 039 379
Adelaide	1 044 602	1 202 357
Perth	1 175 362	1 696 043
Hobart	189 039	214 551
Darwin	76 542	127 397
Canberra	281 099	358 494

14. How are settlement patterns between Australia and the United States:
(a) similar
(b) different?

15.13.2 Reflect

15. Study figure 1 below. Brainstorm and make a list of all the effects that urban growth might have on this coast.

FIGURE 1 Urban growth on the coast of Tel Aviv, Israel



16. Create a bar graph to show the data in table 3 below.

TABLE 3 Population change: components of total population growth rate 2008

	NSW	Victoria	Qld	SA	WA	Tasmania	NT	ACT	Australia
Natural increase (%)	0.66	0.68	0.84	0.48	0.89	0.52	1.31	0.91	0.72
Net overseas migration (%)	1.07	1.29	1.17	1.01	1.9	0.33	0.33	0.77	1.19
Net interstate migration (%)	–0.33	–0.02	0.5	–0.33	0.29	0.15	0.32	—	—
Total population growth (%)	**1.40**	**1.95**	**2.52**	**1.16**	**3.09**	**0.99**	**1.95**	**1.69**	**1.91**

(a) Which state or territory had most people who came from overseas (net overseas migration)?
(b) Which state or territory had most people who came from other states or territories in Australia (net interstate migration)?
(c) Which state or territory had the highest population increase due to natural births?
(d) Which state or territory had the highest population growth?

17. What might explain the similarities and differences between settlement patterns in Australia and the United States?
18. What do you think will be main consequences of continued urbanisation in China in the future, if it continues at a similar rate as for the past 40 years:
    (a) for China itself
    (b) for countries that trade with China?
19. What are your predictions for the development of conurbations in the United States and Australia in the future? Explain your answer.

TOPIC 16
Geographical inquiry: Investigating an Asian megacity

16.1 Overview

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

16.1.1 Scenario and your task

The latest liveability report for Asian megacities has been released, and residents are concerned. Populations are increasing by between one and five per cent every year, putting city infrastructure under extreme pressure.

City authorities have commissioned your team to put together a website increasing awareness of the characteristics of the Asian megacity and informing residents of current and newly proposed sustainable development planning initiatives.

Your task

Your team has been put in charge of creating a website designed to inform the residents of an Asian megacity about its characteristics. Each city will be different depending on its location, wealth or poverty, size and climate. Your investigations need to ensure that the audience can gain a comprehensive understanding of both population characteristics and city characteristics, and that any urban problems are presented. A key feature of your website will be to cover any urban solutions and innovations that are currently being implemented in your megacity.



16.2 Process

16.2.1 Process

- You can complete this project individually or invite members of your class to form a group.
- **Planning:** You will need to research the characteristics of your chosen Asian megacity. Research topics that have been loaded in the Resources tab to provide a framework for your research include: location and city characteristics (main economy, tourism, culture); population characteristics (migrants and migration, languages, religion); and urban problems, solutions and innovations. Choose a number of these topics to include in your website and ensure you add your own. Divide the research tasks among the members of your group.

learnon RESOURCES — ONLINE ONLY

Watch this eLesson: Investigating an Asian megacity (pro-0146)

16.2.2 Collecting and recording data

Begin by discussing with your group what you might already know about your chosen Asian megacity. Then discuss the information you will be looking for and where you might find it. To discover extra information about life in your Asian megacity, find at least three sources other than the textbook. At least one of these should be an offline source such as a book or an encyclopaedia. Remember that you will need to choose specific keywords to enter into your search engine to find other data. You can view and comment on other group members' articles and rate the information they have entered.

16.2.3 Analysing your information and data

- You now need to decide what information to include in your website. Maps to show location, graphs, tables and lists to illustrate data, and images and photos with annotations (descriptive notes) should all be included. Each of these should also have a written description. You should make sure that you have addressed each of the following points.
  1. Describe the pattern of distribution on each of the maps or satellite images you have drawn or collected.
  2. What are the main characteristics of your city?
  3. How has your city changed over time? Is information available on how it is predicted to change in the future?
  4. For what reasons are people attracted to move to this city?
  5. What are the main problems in this city? Are there any solutions being introduced to try to overcome these problems?
- Download the website model and website-planning template to help you build your website.
- Use the website-planning template to create design specifications for your site. You should have a home page and at least three link pages per topic. You might want to insert features such as 'Amazing facts' and 'Did you know?' into your interactive website. Remember the three-click rule in web design — you should be able to get anywhere in a website (including back to the homepage) with a maximum of three clicks.



16.2.4 Communicating your findings

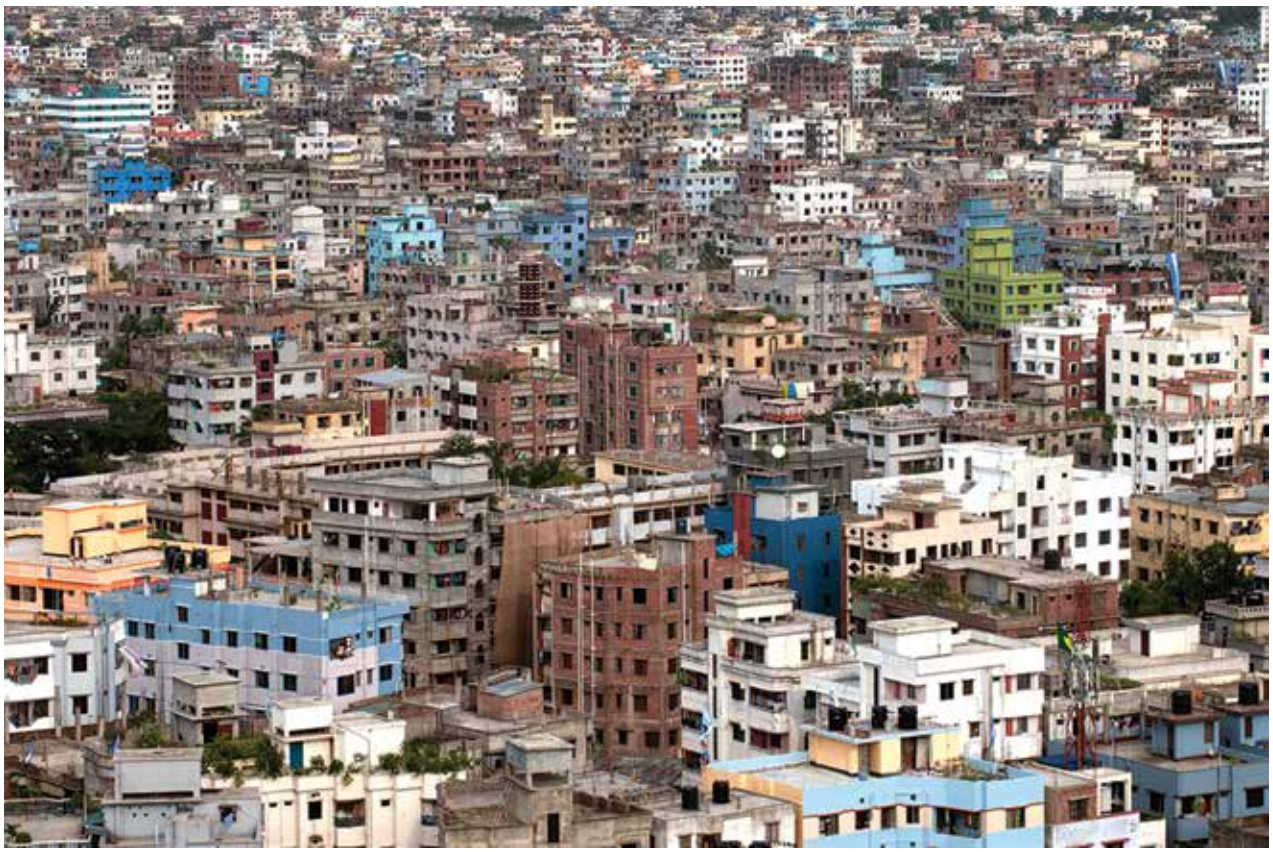
Use website-building software to build your website. Remember that less is more with website design. Your mission is to inform people about your Asian megacity in an informative and engaging way. You want people to take the time to read your entire website.

16.3 Review

16.3.1 Reflecting on your work

Think back over how well you worked with your partner or group on the various tasks for this inquiry. Determine strengths and weaknesses and recommend changes you would make if you were to repeat the exercise. Identify one area where you were pleased with your performance, and an area where you would like to improve. Write two sentences outlining how you might be able to do this.

Print out your Research Report and hand it in with your website and reflection notes.



UNIT 5
THE ANCIENT TO THE MODERN WORLD

17 From the ancient to the modern world 337

18 Depth study 1: Investigating medieval Europe (c. 590–c. 1500) 380

19 Depth study 2: Investigating the Black Death in Asia, Europe and Africa (14th century plague) 437

TOPIC 17
From the ancient to the modern world

17.1 Overview



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

17.1.1 Links with our times

In this topic we will examine the enormous changes that reshaped the world from about 650 to 1750 CE. Following the fall of the Western Roman Empire new forces shaped the old civilisations of Europe, western Asia and North Africa. Change also came to the old civilisations of East and South Asia while newer civilisations emerged in Africa, the Americas and other parts of Europe and Asia.

Great changes began in the fifteenth century, as Europeans rediscovered the learning of the ancient world and made great advances in arts and sciences. This time was also called the Age of Exploration. It was a time when voyages of discovery brought into contact peoples who had not known of each other's existence. In Lisbon, the capital of Portugal, the Monument to the Discoveries commemorates voyages by Portuguese sailors who led the way into the unknown.

Big questions

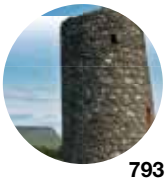
As you work through this topic, look for information that will help you to answer these questions:

1. What were the main causes of the big changes in the world during this period?
2. How did the way of life in societies change between ancient and modern times?
3. Why did contacts and conflicts occur between different peoples and what were the consequences?
4. What significant changes occurred in beliefs and values?
5. How did ideas about the world and the place of people in it change during this period?

Starter questions

1. Name two movies set between ancient and modern times. What impressions of those times did you get?
2. Using the timeline on the next page, choose two events you think could have changed the world and discuss why you chose them.
3. Why do you think that human beings, who had spread from Africa to all inhabitable continents in Stone Age times, only became aware of the existence of many of their fellow humans between the fifteenth and eighteenth centuries?

A timeline from the ancient to the modern world





630
Muslims conquer much of the Middle East.

793
The Vikings begin attacking Christian settlements. Attacks continue until the Vikings convert to Christianity c. 1000

600–799
Christianity spreads throughout much of Europe

800
Charlemagne is crowned as 'Emperor of the Holy Roman Empire'.

c. 802
The Khmer Empire is founded in Cambodia.

1066
The Normans conquer England.

1100–1199
Feudal lords dominate Japan.

1218–1260
The Mongols invade Afghanistan, Persia, Russia, parts of eastern Europe and China.

1099
The First Crusade captures Jerusalem from the Muslims.

1280
The Mongol Empire reaches its peak.

1206
The Delhi sultanate spreads Islam in India.

1291
The Last Crusade fails.

1368
The Ming dynasty is founded in China.

1405–33
Chinese admiral Zheng-He leads a fleet from China to eastern Africa.

1410
The first portable clock is invented.

1453
The Christian city of Constantinople falls to the Muslim Turks.

1446
By this year, Portuguese explorers have mapped Africa's north-west coast.

1492
Christopher Columbus sails from Spain and reaches the Americas.

1498
Vasco da Gama sails from Portugal to India.

1517
Martin Luther takes the first steps in the Protestant Reformation.

1543
Nicolaus Copernicus publishes his theory that the Earth is not the centre of the universe.

1534
Jacques Cartier of France makes his first voyage to North America.

1600
By this year, about one million African slaves have been transported to the Americas.

1606
Dutch sailors first land in Australia.

1607
The first British colony in North America is founded.

1608
Hans Lippershey makes the first telescope.

1681
The French sail the Mississippi River and claim a vast territory in North America.

1756
The Seven Years' War begins between Britain and France.

INQUIRY SEQUENCE

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learnon RESOURCES — ONLINE ONLY

Watch this eLesson: From the ancient to the modern word (Part 1) (eles-1059)

17.2 Examining the evidence

17.2.1 How do we know about the world between c. 650 and 1750?

Generally we know more about the period between ancient and modern times than about many ancient societies because more evidence has survived. However, we know less about many medieval societies that than we know about some ancient societies such as China and Rome. As you know, history is based on evidence from primary sources. There are gaps in our evidence because some societies in the period from around 650 to 1750 did not keep written records, some sources have been lost and most people could not read or write.

Can we always trust written sources from this period?

We have to be very careful about what written sources we trust. Very often we only have the recorded evidence of one side in a conflict. Also, the people who made written records usually came from the privileged groups in a society. For example, in China during this time, most written records were made by scholars who served as government officials. In Europe, especially during the Dark Ages, most written records were made by monks and other church people. Although such people did not all see things the same way, we need to look out for bias.

SOURCE 1 Medieval stocks at Stow-on-the-Wold, England. As punishment for small crimes during the Middle Ages, people had their feet locked in stocks like these.



Archaeological sources

We have many archaeological sources from these times. Some medieval sources have been discovered by archaeologists. Some still stand where they were built. Many of them tell us about religious beliefs. There are Christian churches, Muslim mosques, Buddhist and Hindu temples, Jewish synagogues, the sacred sites of other religions and the art that

represents the ideas of these faiths. Other remains tell us about everyday life, work and trade. These include towns, their walls and marketplaces, and traces of medieval villages. Sources like castles, weapons and armour tell us about war, which was a constant feature of these times.

SOURCE 2 The Thapae Gate is one of five original gates still in the walls of the city of Chiang Mai. This city was founded in northern Thailand in 1296.



Unsolved mysteries

There are still unsolved mysteries about these times and you will encounter some of these in the subtopics. Perhaps in time we will know more through the discovery of lost archaeological traces but we will probably never know the answers to some questions. Here are a few examples of mysteries or problems that historians have continued to investigate and debate:

- Why were the followers of a new religion, Islam, able to conquer huge areas during the seventh century?
- Why was Western Europe backward compared with the Byzantine and Islamic Empires during the Early Middle Ages?
- What happened in societies where there were no written records, such as in Australia, parts of Asia and Europe, and most of Africa, America and the Pacific?
- Why was Western Europe able to begin to dominate the world from the sixteenth century?

Using the sources

You will begin to gain an understanding of these times from just a few sources. Remember that to analyse a source you need to ask historical questions, for example:

- What is this source?
- When was it made or built or created?
- Where is it from?
- Who created this source?
- Why did it exist?

SOURCE 3 From the journal of Christopher Columbus, written for the King and Queen of Spain during Columbus's voyage of 1492, during which he accidentally discovered America

Your Highnesses, as Catholic Christians, and princes who love and promote the holy Christian faith, and are enemies of the **doctrine of Mahomet**, and of all **idolatry** and **heresy**, determined to send me, Christopher Columbus, to … India to see the said princes, people, and territories, and to learn their disposition and the proper method of converting them to our holy faith; and furthermore directed that I should not proceed by land to the East, as is customary, but by a Westerly route, in which direction we have … no certain evidence that any one has gone. So after having expelled the Jews from your dominions, your Highnesses, in the same month of January, ordered me to proceed with a sufficient armament to the said region of India …

17.2 Putting it all together

Using historical sources as evidence

1. Analyse Source 1 using the following questions.
   (a) What is it?
   (b) What was it used for and how would it have been used?
   (c) Where is it located?
   (d) During what period of history was it used?
   (e) What conclusions about that time can you draw from this source?
2. Using the historical questions listed on the previous page as a model, frame at least three questions that you could use to analyse Source 2.
3. Read Source 3.
   (a) Who instructed Columbus to make this voyage?
   (b) What was their attitude to Muslims, Jews and other non-Christians?
   (c) When did the voyage take place?
   (d) In which direction was Columbus ordered to sail to reach India?
   (e) Refer to a world map to find out what undiscovered continent would have stood in his way?
4. Explain why we know less about many medieval societies than about ancient societies.
5. What evidence do we have about medieval societies and what do we need to be careful of when analysing sources from that period?

17.3 People on the move

17.3.1 Civilisations under attack

During the fourth century CE, great empires existed in Europe, Asia and Africa. These were the Roman Empire, the Sassanian Empire of Persia, the Gupta Empire of India and the states that replaced the Han Empire of China. These civilisations were based on farming. Most of their people were peasants whose work supported ruling classes of nobles, warriors and priests. Outside these empires, most people were **nomadic** herders. Migrations of nomads would cause centuries of chaos and bring enormous changes to the empires.

India and China

The Gupta Empire was founded in India in 320 CE when Prince Chandragupta defeated his rivals. His son went on to create an empire stretching across northern India. This great civilisation was destroyed at the end of the fifth century by the White Huns, barbarian nomads who massacred entire populations.

In China, the Han dynasty had controlled a vast empire that had trading links with Rome and Persia. But the Han were overthrown in 220 CE. It took over 360 years of civil wars between the Chinese states, and invasions by Turkish and Mongolian nomads, before China was restored under the Sui dynasty (580–618 CE) and the Tang dynasty (618–907 CE).

DID YOU KNOW?

The time of the Gupta Empire was considered a golden age in India. It saw great advances in art, literature, mathematics and science. Indian scholars revolutionised mathematics by developing a symbol for zero and the numerals we now use in place of Roman numerals. They knew the Earth was round and that it orbited the Sun.

DID YOU KNOW?

Printing was invented in China under the Tang dynasty. The earliest printed book was produced in 868 CE, long before printing was first used in Europe.

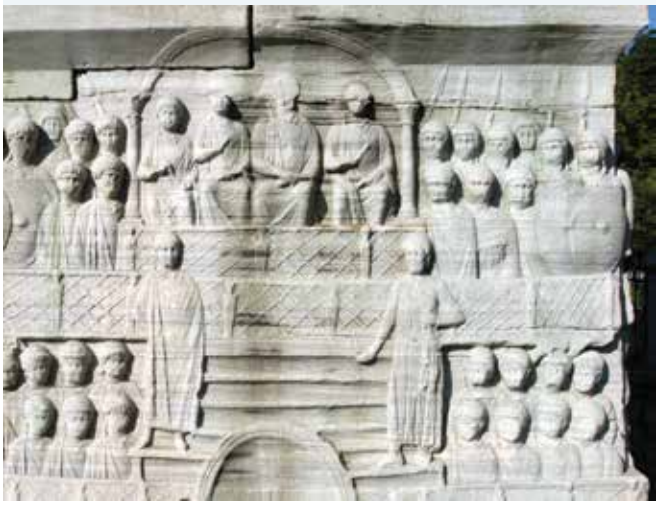
The fall of the Western Roman Empire

The Roman Empire weakened from about 180 CE. Over the following three centuries, Rome's power collapsed as people the Romans called barbarians swept into its territories. In 476 CE, a German chieftain named Odoacer deposed the last Western Roman emperor. Historians often use this event to mark the end of the ancient world and the beginning of the Middle Ages.

The Byzantine and Persian empires

Despite constant attacks by their nomadic enemies, two great empires remained. These were the Eastern Roman (Byzantine) Empire in Europe and the Sassanian Empire in Persia. The Goths, Franks and others who formed kingdoms in the former lands of the Western Roman Empire regarded themselves as Roman and acknowledged the authority of the Eastern Roman emperor in Constantinople (see Source 1). For centuries the Byzantine Empire kept ancient Roman culture alive. For a short time in the sixth century it managed to regain territories of the Western Roman Empire. But the Persian and Byzantine empires were weakened by destructive wars with each other. Persia was conquered by Muslim Arabs in 651 CE. A shrinking Byzantine Empire survived until 1453 CE when its capital, Constantinople, was overrun by the Turks.

SOURCE 1 A relief sculpture in the Hippodrome of Constantinople. The Hippodrome was the centre of Byzantine political, social and sporting life. This sculpture, erected in 390 CE, portrays Roman Emperor Theodosius I among his court.



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Deepen and check your understanding of the topic with the following resources and auto-marked questions:

- **Transformation of the Roman World**
- **Byzantine Empire**

17.3.1 Activities

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

Check your understanding

1. Which Asian empires suffered invasions from nomadic peoples?
2. What event do historians often use to mark the end of the ancient world?
3. What developments caused the collapse of the Persian and Byzantine empires?

Using historical sources as evidence

4. Look closely at Source 1. Explain why it is useful as evidence of the continuity of Roman culture through the Byzantine Empire.

17.3.2 Invaders and migrations

The Early Middle Ages were times of conflict caused by violent invasions by nomadic tribes who burst out of the **steppes** of Central Asia, the deserts of Arabia and the cold lands of northern Europe. Among the invaders were groups fleeing others who had invaded their homelands. Land occupied by significant groups is shown in Source 2 below.

Germanic peoples

The Goths, Vandals, Burgundians and Franks were Germanic peoples. The Goths migrated south to the Black Sea coast in the third century. Invasion by the Huns in 372–5 CE forced the Goths to flee into Roman territory. From the fifth century, the Goths divided into Ostrogoths and Visigoths while the Vandals and Burgundians occupied Roman territories. In the following century the Franks conquered most of **Gaul**.

Huns

From about 370 CE, Central Asian nomads called Huns invaded eastern Europe. These ferocious fighters attacked their enemies by firing arrows from horseback. They carved out a huge empire from Central Asia to Germany before an alliance of Romans, Visigoths and Burgundians defeated them in 455 CE.

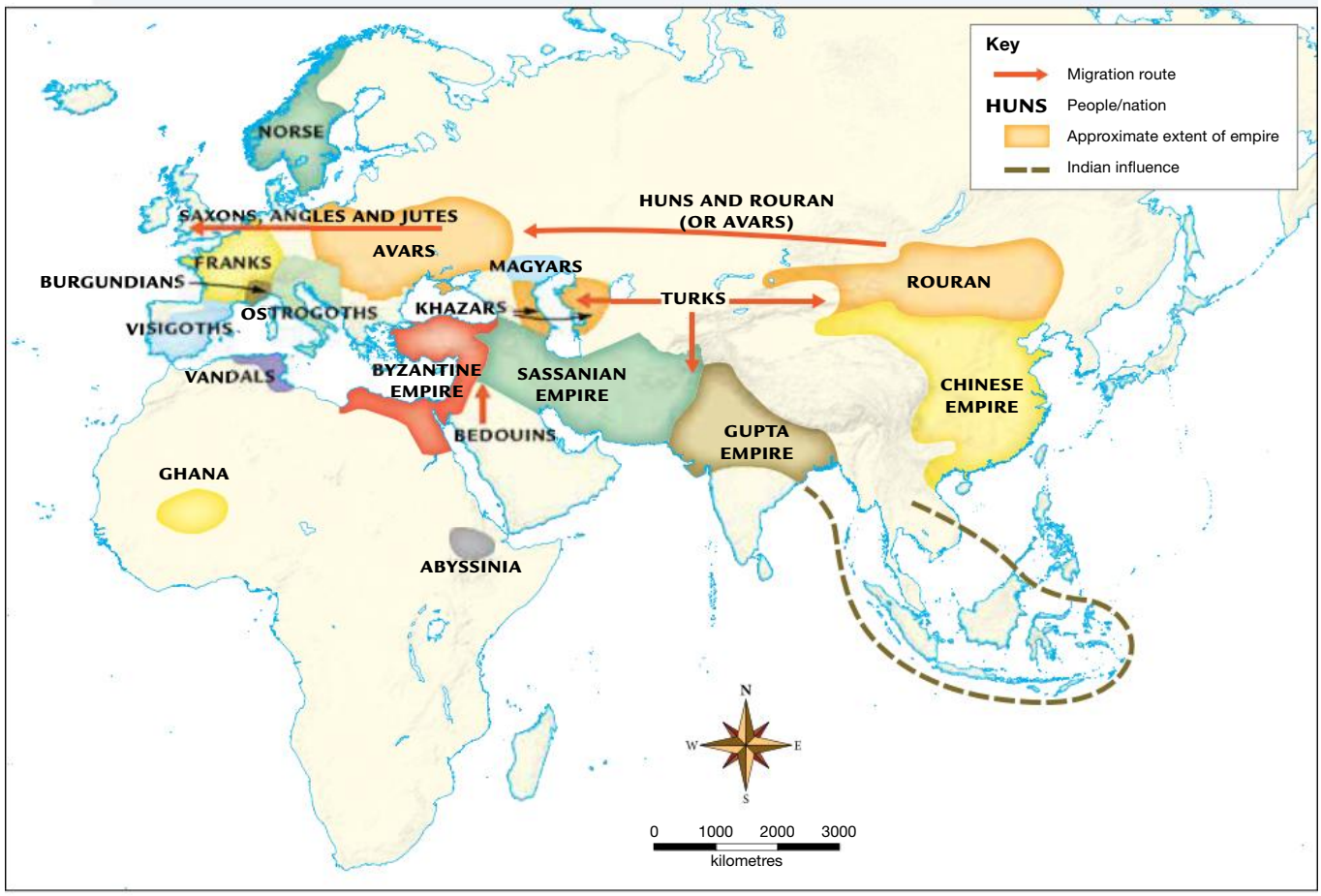
Celts

Celtic tribes had spread to Britain and Ireland after 500 BCE. Following the Roman invasion of Britain in 43 CE, the Celts (Britons) lived under Roman rule until the Roman army left Britain in 410 CE. The Britons were then overrun by invading Saxons, Angles and Jutes.

Saxons, Angles and Jutes

These tribes from Germany and Denmark invaded Britain in the fifth century. The Britons fought back but they were steadily driven into the western corner of their island. In most of Britain, the invaders destroyed every trace of Roman civilisation.

SOURCE 2 A map showing invasions and migrations in the Early Middle Ages in Europe, Africa and Asia



Source: Map drawn by Spatial Vision.

The word *England* comes from a phrase meaning 'Angle people's land', and the invaders came to be known as Anglo-Saxons. They lived in villages in small kingdoms. Each Anglo-Saxon king was a war leader who ruled with the help of thanes (nobles) and the Witan (a kind of early parliament or council of advisers). Anglo-Saxon England united as a nation only in the tenth century after it was almost completely conquered by Danish Vikings.

The Anglo-Saxons spoke the earliest form of English, which is called Old English. However, they had no written language until they became Christians from the seventh century. Among their few written records is the *Anglo-Saxon Chronicle*, a year-by-year record of events in their kingdoms. It was commenced four centuries after the invasions. Another famous Anglo-Saxon text is the epic saga *Beowulf*. This legend of a Scandinavian warrior was handed down by word of mouth until it was written down between the eighth and eleventh centuries.

Rouran (also called Juan-Juan) and Avars

The Rouran were nomadic tribes who raided China's northern borders from the fourth century to the sixth century. They expanded westwards, causing other tribes to flee before them. In 552 CE, their power was broken by Turkish tribes, who revolted against them, and northern Chinese armies. It is possible that the Avars who moved into eastern Europe about this time were the Rouran. The invading Avars caused Slavic peoples (Serbs and Croats) to flee south. They, in turn, pushed the Greeks further down the Balkan Peninsula. The Avar state was finally destroyed by Franks and Bulgarians in 796 CE.

Turks

In the sixth century, the Turks spread south almost to India and west to the **Caucasus**, where they became known as Khazars. From the eighth century, their ruling classes adopted **Judaism** as their religion. In the tenth century, the Russians destroyed the Khazar Empire.

Bedouins

In the seventh century following the rise of Islam, Bedouin nomads poured out of the deserts of Arabia, conquering all before them.

Norse (or Vikings)

From the eighth century to the eleventh century, the Norse peoples from Sweden, Norway, Denmark and Finland created new terrors. They plundered and settled coastal areas as far apart as Ireland, Russia, the Byzantine Empire and Italy.

Magyars

In the ninth and tenth centuries, Hungarian nomads called Magyars attacked central and western Europe. In 955 CE, German forces inflicted such a massive defeat upon them that the Magyars fled back to Hungary.



17.3.2 Activities

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

Check your understanding

1. In the civilisations that suffered invasions, the peoples' way of life was based on farming. How did the way of life of the invading tribes differ from that?
2. Identify three geographical regions that invading tribes came from.

Using historical sources as evidence

3. Using information from Source 2, the text in this section and a modern map, draw up two columns. In the first column place the names of each invading or migrating group. In the second column, write down the place that each group threatened, invaded or occupied.

17.3 Putting it all together

Identifying continuity and change

1. Describe the main changes brought to the world by invasions and migrations between the fifth century and the eleventh century CE.

Determining historical significance

2. Explain why the fall of the Roman Empire is regarded as an event that is of great historical significance.

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Complete this digital doc: Worksheet 17.1: People on the move

17.4 Religions on the move

17.4.1 Islam's spread

The spread of Islam and Christianity in the Early Middle Ages shaped the world we live in today. From the seventh century, the rise of Islam in Arabia created a powerful new civilisation that expanded into three continents while Christianity gradually spread throughout Europe.

The religion of Islam was founded in Arabia by the prophet Mohammed (570–632 CE). Its followers were called Muslims, and by the time of Mohammed's death all the Arabian tribes had converted to Islam. Within just over one hundred years, Muslim Arabs conquered vast areas of Asia, Africa and even south-western Europe.

SOURCE 1 The Byzantine Christian church of Hagia Sophia was converted to a mosque by Constantinople's Turkish Muslim conquerors.



- Between 630 CE and the early eighth century, the Muslims conquered Syria, Jordan, Palestine and Iraq. They took Egypt from the Byzantine Empire and overthrew the Sassanian Empire in Persia. Muslims came to rule most of Spain and Central Asia up to the borders of China.
- Generally, conquered peoples were not forced to become Muslims. Many continued to practise other religions.
- Muslim expansion threatened Christian states. Constantinople, the capital of the Byzantine Empire, withstood Arab sieges during the 670s and in 717. In 718, the Bulgarians blocked Arab advances into south-eastern Europe and, in 732, the Franks stopped the Muslim advance into France.
- In the ninth century, Muslim armies pushed into southern Italy. The Muslim Turks conquered Constantinople in the fifteenth century, ending the Byzantine Empire.

DID YOU KNOW?

In 607 CE, the Bishop of Rome, Boniface III, became the first leader of the Christian Church to use the title 'Pope'. The Byzantine Empire did not recognise his authority and held that the Byzantine Emperor was the Church's head.

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Deepen and check your understanding of the topic with the following resources and auto-marked questions:

- **Spread of Islam**
- **Medieval Christendom**
- **Holy Roman Empire**

17.4.1 Activities

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

Check your understanding

1. When and by whom was Islam founded?
2. What areas did Muslims conquer between the seventh and ninth centuries?
3. Which Muslim invaders destroyed the Byzantine Empire in the fifteenth century?

Using historical sources as evidence

4. Look closely at Source 1. What clues does it provide for the conversion of this church to a mosque?

17.4.2 Spreading Christianity

Christianity became the state religion of the Roman Empire in 391 CE. It had spread throughout the Roman Empire and into Ethiopia and Nubia (now known as Sudan) in Africa by the time Rome fell. Islam

SOURCE 2 A map of Europe in 1000 CE. By this time, most of Europe had converted to Christianity.



Source: Map drawn by Spatial Vision.

overwhelmed Christian rule in the Middle East and North Africa but Christianity was to spread through Europe during the Early Middle Ages.

- The Germanic kingdoms that replaced Roman rule all became Christian, beginning with the Goths in the fourth century and ending with the Franks, whose king, Clovis I, was converted in 479 CE.
- Christianity had been brought to Britain during the Roman occupation, and Ireland was converted in the fifth century.
- Christian missionaries began converting Anglo-Saxons in England and the Frisians in the Netherlands in the late seventh century.
- Christianity expanded further when Charles the Great, known as Charlemagne, came to be king of the Franks in 768 CE. He crushed the Saxons in Germany and forced them to become Christians, defeated the Lombards in Italy, attacked the Muslim Moors in Spain and crushed the Avars.
- Charlemagne united much of France, Italy and Germany under the Carolingian Empire. In 800 CE, the Pope crowned him 'Emperor of the Holy Roman Empire'. However, Charlemagne's empire broke up quickly after his death.
- From 793 CE, Vikings attacked Christian settlements. They sacked **monasteries** and churches and carried off Christian prisoners to be sold as slaves.
- By the end of the Early Middle Ages, Europe was almost completely Christian. The Bulgarian Empire adopted Christianity in 864 CE. Byzantine priests converted the Russians of Kiev Rus about 990 CE. In approximately 1000 CE, the Magyars and Vikings became Christians and Viking raids ended.

SOURCE 3 A high cross at Drumcliffe, Ireland. St Columcille founded a Christian monastery at this site in 547 CE. The carvings on the cross represent scenes from the *Bible*. They were originally painted in bright colours.



SOURCE 4 The broken round tower of a monastery at Drumcliffe on the west coast of Ireland. Irish **monks** used such towers for storage, as bell towers, as lookouts from which Viking ships could be spotted and as refuges in times of Viking raids.



17.4.2 Activities

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

Check your understanding

1. Who was Charlemagne and why did the Pope crown him 'Emperor of the Holy Roman Empire' in 800 CE?
2. Make a list of European peoples who had converted to Christianity by 1000 CE.

Using historical sources as evidence

3. Examine Source 2. What part of Europe was still under Muslim rule in 1000 CE?
4. Explain why the Christian high cross in Source 3 would have been covered in brightly painted Bible scenes.
5. Look closely at the features of the round tower in Source 4. Explain how the design of this tower would have helped to protect Irish Christian monks from Viking raiders.

17.4 Putting it all together

Identifying continuity and change

1. Describe the changes brought to the world between ancient and modern times by the spread of Islam and Christianity.

Determining historical significance

2. Explain how the spread of Islam and Christianity in the Early Middle Ages was significant for the modern world.

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Complete this digital doc: Worksheet 17.2: Religions on the move

17.5 A different way of life

17.5.1 Life in the countryside

In Europe during the Early Middle Ages, smaller, weaker states replaced the Roman Empire. A new kind of **self-sufficient** society developed. Some big cities declined while others grew and population levels changed. There was less trade and learning; wars were frequent and destructive; and plagues could be devastating.

As the Roman Empire collapsed, landowners could no longer prevent their slaves from leaving. The huge plantations worked mostly by slaves broke down and, about 500 CE, the amount of farmed land shrank. But between 700 and 1000 CE, farm production grew. Warmer weather during those centuries probably helped. From about 800 CE, a new way of farming, known as the three-field system, developed on the manors of big landowners.

SOURCE 1 A modern artist's reconstruction of a typical house of a poor peasant family in medieval times



A new social system

Local power and loyalties replaced the central power of the former Western Roman Empire. The new states did not have ancient Rome's power to collect taxes and to keep professional armies, so kings depended on local landowners to fight for them. This made big landowning families increasingly powerful and local rulers weaker. With such changes came feudalism. Under the feudal social system, peasants worked land and received protection in return for serving a landowner — usually a lord or a knight. The landowner held land in return for serving a king (see topic 18 Investigating medieval Europe).

17.5.1 Activities

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

Check your understanding

1. What happened to the ancient Roman system of farming on plantations worked by slaves?
2. Why were the new local rulers weak compared to those who once held power in the Roman Empire?

Using historical sources as evidence

3. What can you tell about the way of life of medieval peasants from Source 1?

17.5.2 Population, learning, cities and trade

At the beginning of the Early Middle Ages, population levels fell because of wars, shrinking food production, epidemics and loss of jobs in manufacturing and trade. In 542 CE, over 230 000 people died of a plague in Constantinople. This same epidemic may have killed 100 million people worldwide. However, from the sixth century, population levels rose and they continued to rise until the early fourteenth century.

Literacy and learning

Charlemagne (see Source 2) was the first 'Emperor of the Holy Roman Empire' (see subtopic 17.4 Religions on the move). He made his capital, Aachen, a great centre of learning. However, in most of western Europe during much of the Early Middle Ages, learning survived only in monasteries.

In contrast, literacy and the learning of ancient Greece and Rome were kept alive in the Byzantine Empire. In the same period, Islamic societies experienced a golden age of learning as ancient books from Egypt, Greece, Rome, Persia and India were translated into Arabic. This helped the Islamic world to advance further in science and medicine than Christian Europe.

SOURCE 2 A statue of Charlemagne in Vatican City



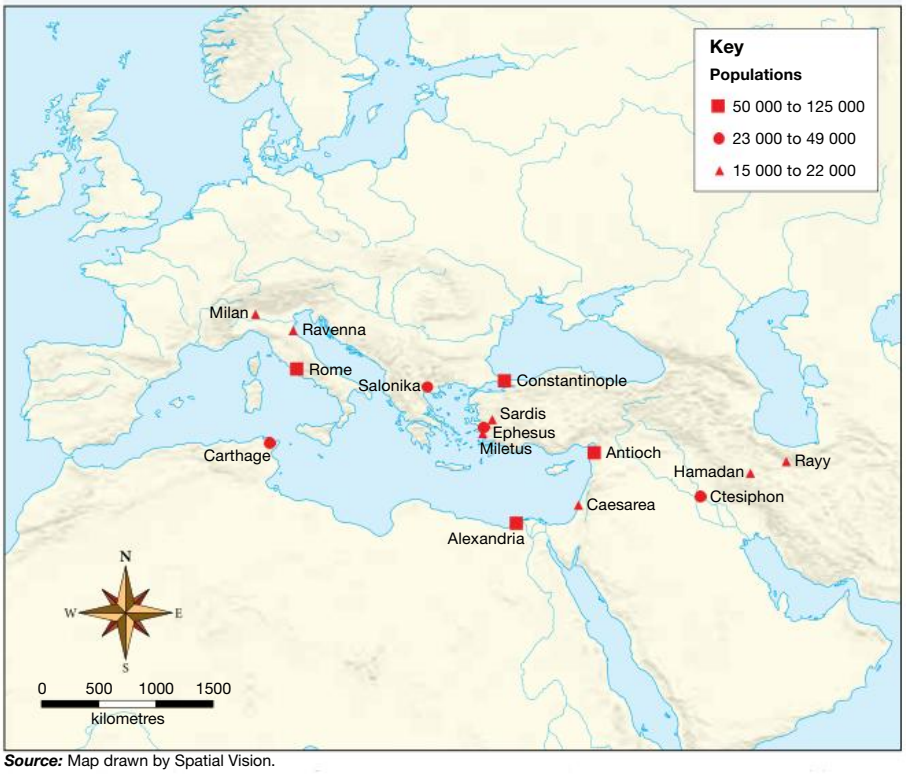
Cities and trade

Under the Roman Empire, cities had administered provinces, raised taxes and been centres for trade and the production of goods. Cities no longer served these purposes, and so their populations declined. However, by the tenth century, many European cities were growing again. Trade became difficult because there was no longer a big and powerful central state to construct and maintain roads. Wars and lawlessness also made it dangerous to travel or transport goods over long distances. By the eighth century, Europe's trade had fallen to a tiny fraction of the level of the first century. This was partly because Muslim expansion had cut Europe's trade routes to the east. In contrast, Islam's network of caravan trade routes was huge.

DID YOU KNOW?

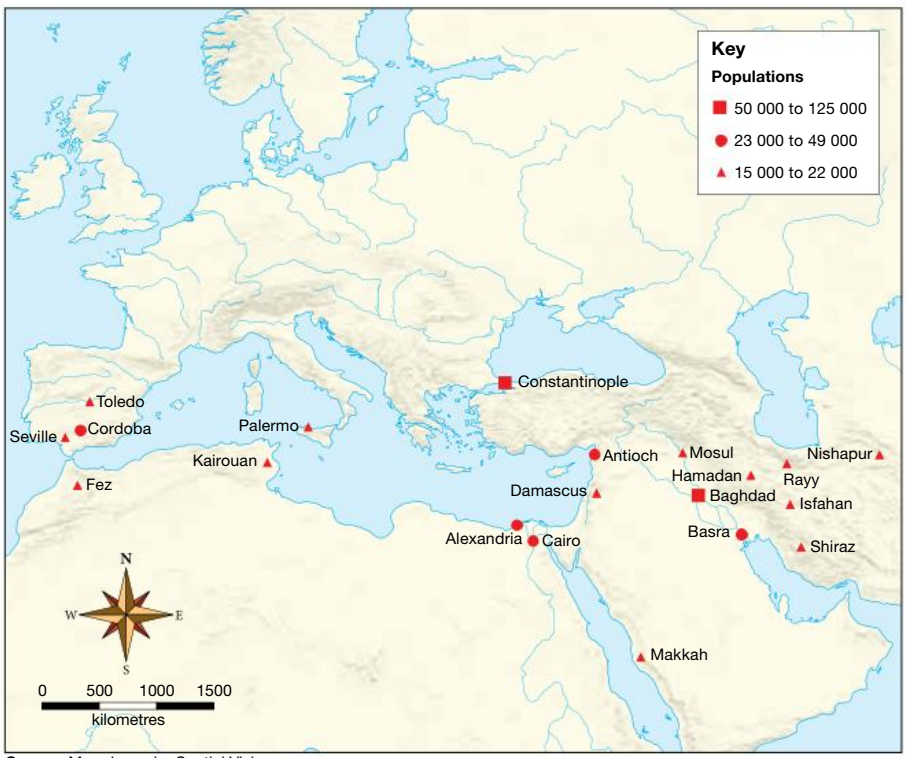
Arab conquests in Central Asia and Africa gave Muslims control of gold and silver mines. Some of this wealth was used to purchase weapons, timber, furs and slaves from Europe. Vikings supplied the slaves by kidnapping people during raids. European merchants did the buying and selling that delivered the slaves to the Arabs.

SOURCE 3 A map of cities in Europe, western Asia and North Africa in 528 CE



Source: Map drawn by Spatial Vision.

SOURCE 4 A map of cities in Europe, western Asia and North Africa in 1000 CE



Source: Map drawn by Spatial Vision.

17.5.2 Activities

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

Check your understanding

1. Explain what epidemics are and what effects they could have.
2. What role did monasteries play in preserving learning?
3. List reasons why population levels fell in the first centuries of the Early Middle Ages.

Using historical sources as evidence

4. Look at Source 2.
   (a) Describe the way Charlemagne is portrayed in this statue.
   (b) What were his achievements that would have led to him being considered worthy of such a statue? You may need to refer to subtopic 17.4 Religions on the move to answer this question.
5. Compare Sources 3 and 4 and check them against Source 2 in subtopic 17.4.
   (a) List the cities with populations over 23 000 people in the year 528 CE.
   (b) List the cities with populations over 23 000 in the year 1000 CE.
   (c) Which of the second group of cities were under Christian control?
   (d) Which of the second group of cities were under Muslim control?
   (e) As cities were centres of trade and learning, what conclusions can you draw about changes in trade and learning in the Muslim and Christian worlds during the Early Middle Ages?

17.5 Putting it all together

Identifying continuity and change

1. Create a mind map to demonstrate the main changes in Europe between the fall of the Roman Empire and around 1000 CE in:
   (a) farming
   (b) population levels
   (c) learning
   (d) cities
   (e) trade.

Analysing cause and effect

2. Identify and describe the reasons why the Muslim world was more advanced than the Christian world during the Early Middle Ages.

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Complete this digital doc: Worksheet 17.3: Lifestyle changes

17.6 Rulers, religion and the changing map of medieval Europe

17.6.1 Rulers and the people

Later medieval times saw the growing power of rulers and big landowners, increased inequality, the further spread of major religions and an increase in the scale and destructiveness of warfare.

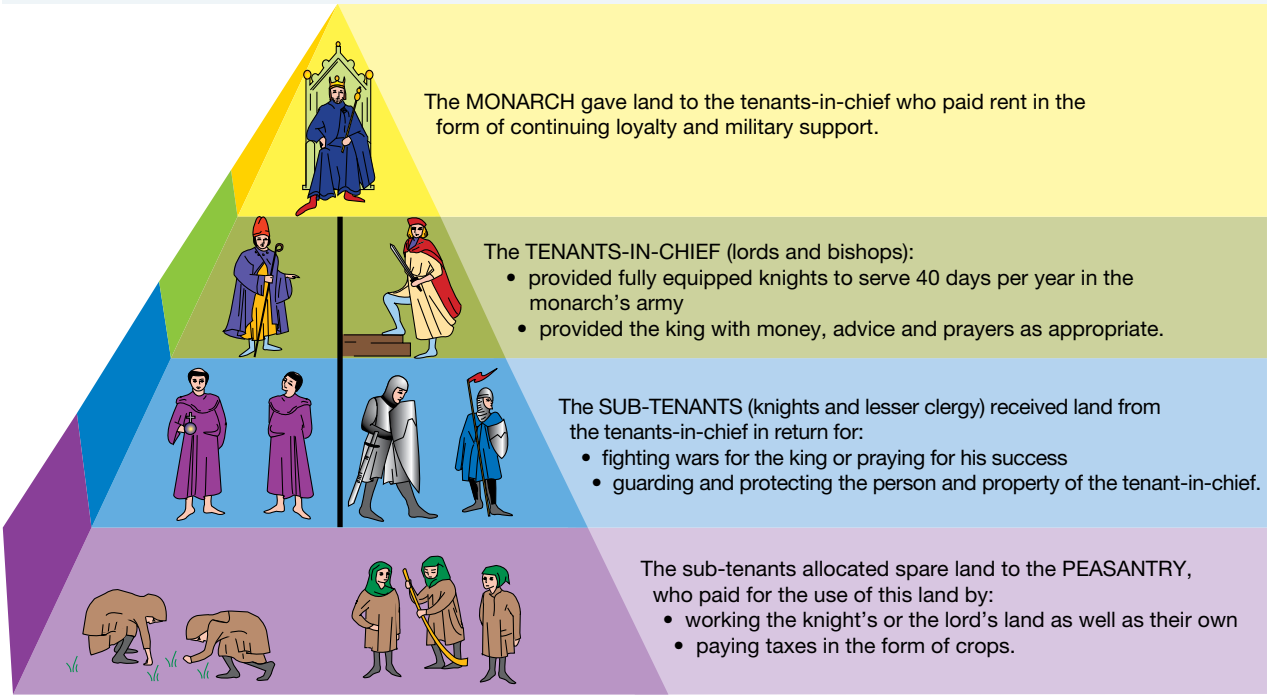
Under feudal systems in medieval times, kings were at the top of societies. In many kingdoms, all land theoretically belonged to the king. The next most powerful class was made up of tenants-in-chief (big noble landowners). They were followed by sub-tenants (knights and lesser clergy). Each of these groups received lands from those above them in return for serving or fighting. At the bottom of society were the peasants, who worked to provide a surplus for those above them (see Source 1 on the next page).

Inequality was common to all medieval civilisations. In most societies, slaves were only a small proportion of the population. However, by around the tenth century, **serfdom** became the lot of most peasants. Conditions varied from place to place, but generally, serfdom meant that peasants were not free to leave the land. It also meant that feudal lords had the right to force serfs to work for them, to tax them and to place other burdens on them. It was a kind of slavery that ended in most of western Europe by the fifteenth century, but continued in eastern Europe and much of Asia and Africa until much later.

War

Wars continued to be frequent and many were fought on a bigger scale. New technologies made them even more destructive. The invention of the stirrup enabled heavily armed knights to fight on horseback. New weapons such as the crossbow and longbow caused high casualties. Castles and walled cities offered some protection until gunpowder was adopted for war. By the fourteenth century, wealthy kings could hire **mercenary** armies to fight their rivals and crush rebellious nobles by using cannons to smash castle walls. Peasants were the main victims — armies killed and maimed them, stole their food and animals, and destroyed fields and villages.

SOURCE 1 A diagram showing the organisation of medieval society under feudalism. From the tenth century, increasing numbers of peasants were serfs.



17.6.1 Activities

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

Check your understanding

1. Explain what it meant to be a serf.
2. Rulers and nobles waged wars but which class usually suffered regardless of which side won?

Using historical sources as evidence

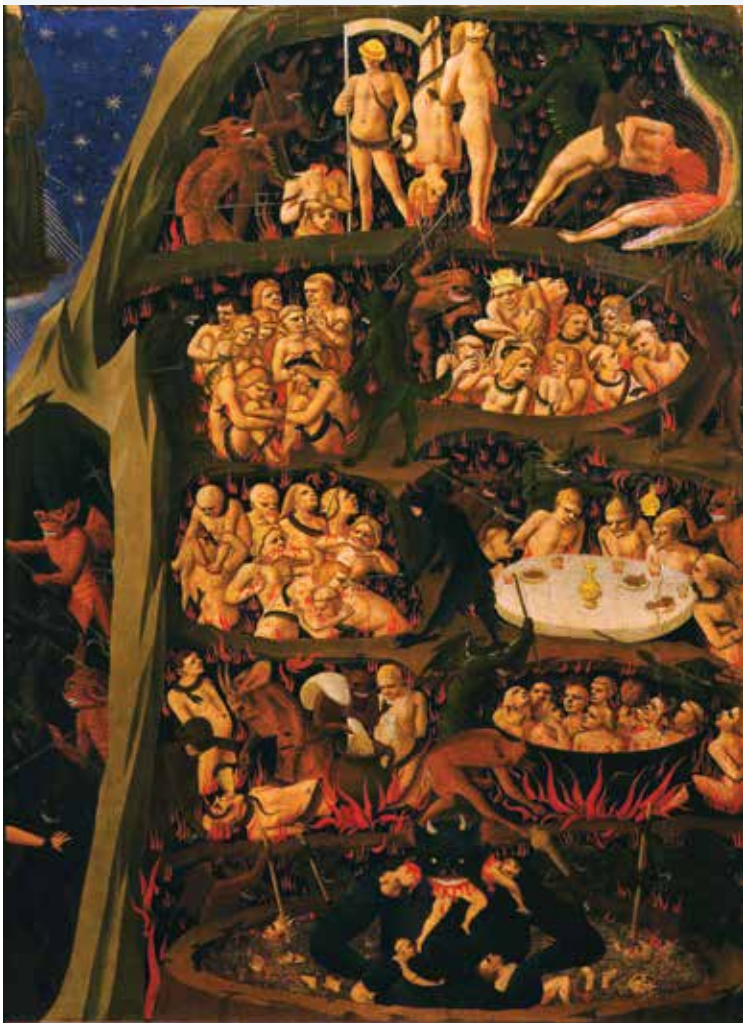
3. Referring to Source 1, explain how people at each level of medieval society benefited from those below them.
4. Which social class really provided everything for all higher classes?

17.6.2 Religion and rulers

Traditional local religions declined due to the spread of Islam, Christianity and Buddhism. Increasingly, rulers claimed to be chosen by gods. In Christian Europe, kings claimed to rule by 'divine right'; that is, they were God's chosen representatives on Earth. In Africa and in the Buddhist and Hindu kingdoms of Asia, rulers claimed to be demigods.

In societies where rulers claimed such powers, religious leaders usually supported them. This meant that attempts to overthrow a ruler could be seen as rebellion against a society's god or gods. In Christian Europe, priests taught ordinary people that their unequal position in society was God's will and that they must accept it. Generally, people did as the Church told them. Life was short and the promise of heaven offered hope of a better life after death. The threat of burning in hell was a big incentive to obey the Church (see Source 2). However, such threats did not prevent nobles and kings waging war against one another. Nor did they prevent members of royal families murdering each other to gain power.

SOURCE 2 Detail from medieval Italian artist Fra Angelico's *The Last Judgement*, 1432–1435



DID YOU KNOW?

In 1054 CE, the Christian Church split, creating a division that has lasted to the present. Western Europe followed the Catholic Church while most of eastern Europe followed the Orthodox Church.

17.6.2 Activities

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

Check your understanding

1. Why do you think rulers claimed to be chosen by gods or to themselves be demigods?
2. Suggest why rulers might have felt less fear of hell than their subjects felt.

Using historical sources as evidence

3. Analyse Source 2 using the following questions.
   (a) Who created this source?
   (b) For what reasons might it have been created?
   (c) Describe the tortures suffered by the sinners in this depiction of hell.
   (d) How do you think believing in the possibility of such an afterlife would affect people's behaviour?

17.6.3 The changing map of Europe

The map of Europe changed often during later medieval times. Kings of strong states increased their power while some new kingdoms also became powerful. From 1095 CE, Europe launched Crusades to take the **Holy Land** from the Muslims (see topic 18 Investigating medieval Europe). Crusader states were set up in the Middle East, but Acre, the last crusader stronghold, fell to the Muslims in 1291. By the end of the Middle Ages, Christians had driven the Muslims out of Spain. However, Muslims came to dominate Europe's Balkan Peninsula.

Western Europe

In 1066, William, Duke of Normandy, invaded and conquered England with an army of Norman knights. In the following centuries, Norman England invaded Ireland, conquered Wales and fought to dominate Scotland. From 1337, England fought the Hundred Years' War with France over English claims to the French throne. The war saw the weakening of the power of feudal lords because kings came increasingly to depend on standing armies of peasant infantry armed with longbows, rather than mounted knights. From 1445 to 1485, England was divided by civil war (the War of the Roses) over rival claims to its throne.

Southern Europe

In the eleventh and thirteenth centuries, the Muslims were driven out of Spain, Portugal and southern Italy. The last stage was the capture of Muslim Granada in 1492. In Italy, independent city-states grew wealthy through control of trade in the Mediterranean Sea.

The Byzantine Empire and the Balkans

In the eleventh and twelfth centuries, the Byzantine Empire was powerful. However, Bulgaria had a successful rebellion in 1185 and crusaders captured Constantinople in 1204. The Byzantine Empire disappeared when the Ottoman Turks captured Constantinople in 1453. By the end of the Middle Ages, the Turks controlled the entire Balkan Peninsula.

Central Europe

Throughout later medieval times, the area that is now Germany and other modern central European states formed the Holy Roman Empire. It was made up of several kingdoms, principalities and city-states. Hungary became powerful and Poland formed a huge state through a union with Lithuania, the last part of Europe to be converted to Christianity.

Eastern Europe

In the thirteenth century, the Mongols (Tartars) from Central Asia invaded eastern Europe, conquering huge areas of Russia and creating **vassal states**. In the sixteenth century, the Tartars were driven out of Russia.

SOURCE 3 A map of Europe in 1328



Source: Map drawn by Spatial Vision.

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Deepen and check your understanding of the topic with the following resources and auto-marked questions:

- **Byzantine Empire**
- **Invasion of Britain**

17.6.3 Activities

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

Check your understanding

1. Against which countries did Norman England make war?
2. How did the Hundred Years' War change the nature of medieval warfare?
3. When were the Muslims driven out of most of south-western Europe?

Using historical sources as evidence

4. Examine Source 3.
   (a) What were the main states in central Europe?
   (b) Which part of Europe was controlled by the Mongols in the thirteenth and fourteenth centuries?

Sequencing chronology

5. Create a timeline of events in Europe during later medieval times using the dates and references in this spread.
6. Outline the conclusions you can draw from your timeline about territory gained or lost in medieval Europe by Christians and Muslims.

17.6 Putting it all together

Identifying continuity and change

1. Describe how rulers, war and religion changed Europe during late medieval times.

Analysing cause and effect

2. In small groups discuss ways in which religious beliefs helped rulers to maintain their power.

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Complete this digital doc: Worksheet 17.4: Power and conflict

17.7 Migrations, invasions and empires in Asia

17.7.1 Change in Asia and the Pacific

Outside the Islamic and Christian worlds, other peoples were on the move. From about the eighth century, great migrations and invasions took place and new empires arose far from the old centres of civilisation.

East Asia

On the islands of Japan, a social system developed that was similar in many ways to European feudalism. From 794 to 1192, the powerful Fujiwara family dominated Japan. Rulers depended on local lords called daimyo to control local areas.

In China, the Tang dynasty fell in 907 because of rebellion and invasions by nomads. The Chinese empire fell apart until its southern territories were restored under the Song dynasty (960–1279). Under the Song, China experienced a golden age in literature, the arts and sciences, and produced new inventions including gunpowder and printing with moveable type.

SOURCE 1 The Longhua pagoda in Shanghai is a seven-storey Buddhist temple. It was constructed in the tenth century during the Song dynasty.



South and South-East Asia

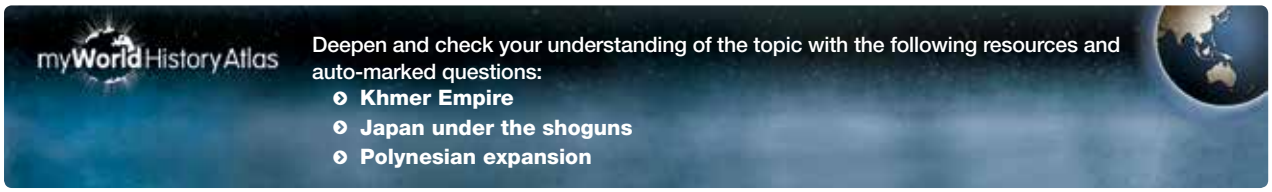
From the seventh century, most of India was divided into Hindu kingdoms that were often at war with each other. However, Muslims from Afghanistan came to dominate the north-west. By 1206, they had captured most of northern India, which became known as the Delhi Sultanate.

Indian traditions also influenced civilisations that emerged in much of South-East Asia from the sixth century. This region came to be dominated by the Khmer Empire with its centre at Angkor in Cambodia from the beginning of the ninth century to the early fourteenth century. Distinct from the rest of South-East

Asia, northern Vietnam was strongly influenced by Chinese culture, as it was part of the Chinese empire from the fourth century until it broke away and formed the state of Dai Viet in 939.

The Pacific

Also during this period, and unknown to the peoples of the continents, there were big movements of Polynesian peoples who navigated over vast distances across the Pacific Ocean. Their first migrations probably started from Malaya and Indonesia. Polynesians left no written records, but it is believed they reached Easter Island and Hawaii about 500 CE and New Zealand about 1000 CE.



17.7.1 Activities

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

Check your understanding

1. What did the social system of Japan have in common with that of medieval Europe?
2. Which older civilisations influenced South-East Asia?

Using historical sources as evidence

3. In what ways does Source 1 provide evidence to support the view that the Song dynasty was a golden age in China?

17.7.2 The rise and fall of the Mongol Empire

Arguably the most amazing event of these times was the eruption of hordes of ferocious mounted warriors from Central Asia. In 1206 CE, a chief called Temujin became **khaghan** of the Mongol and Turkic tribes. He took the title Genghis **Khan** and united the tribes into a disciplined army that fell upon surrounding civilisations, killing and conquering over an enormous distance.

Why did the Mongols conquer?

One theory is that the Mongols needed to expand the territory they controlled. Low rainfall had reduced the amount of grass available for their stock, and the Jin and Xia dynasties that controlled northern China had cut off the trade upon which the Mongols depended. These states and China became Genghis Khan's first targets for invasion.

How did the Mongols conquer?

As they conquered other societies, they took some of the defeated men into their own armies; foremost among these were the Turkic Uighurs. The Mongols used cavalry, consisting of lightly-armed, fast-moving archers and **lancers**. They used giant catapults to bombard town and city walls. But their main weapon was terror. If a city or town refused to surrender, the Mongols would massacre everyone. It is possible that 90 per cent of Eastern Persia's population died in Mongol invasions. Many millions were also killed in China and Russia.

SOURCE 2 From the Muslim scholar Ibn al-Athir, *The Complete History*, written c. 1231

This thing involves … the greatest catastrophe … which befell all men generally, and the Muslims in particular …

For … these **Tatars** spared none, slaying women and men and children, ripping open pregnant women and killing unborn babies …

Tatars conquered most of the habitable globe, and the best, the most flourishing and most populous part … in about a year; nor did any country escape their devastations which did not fearfully expect them and dread their arrival.

Moreover they need no … supplies, for they have with them sheep, cows, horses … the flesh of which they eat …

Stories have been related to me … as to the terror of the Tatars … so it is said that a single one of them would enter a village or a quarter wherein were many people, and would continue to slay them one after another, none daring to stretch forth his hand against this horseman …

SOURCE 3 *The sacking of Suzdal by Batu Khan*. This illustration is from a sixteenth century Russian chronicle. In February 1223, Suzdal, the capital of a Russian principality, was captured by a Mongol army led by Batu Khan and burned to the ground.



The Mongols in East Asia and South Asia

Genghis Khan advanced into China in 1207 after defeating the Jin and the Xia empires north of China. His grandson, Kublai Khan, completed the invasion in 1260 and founded the Mongolian Yuan dynasty. In 1368, the Chinese rebelled and founded the Ming dynasty. Over the next thirty years, the Chinese drove the Mongols out. Under Ming, China's prosperity was restored, manufacturing and trade increased, and thousands of peasants were conscripted to build vast palaces and to strengthen the Great Wall.

In 1281, Kublai Khan sent a huge fleet with 150 000 soldiers to invade Japan. While the Japanese were desperately fighting to prevent the landing, a typhoon destroyed the Mongol fleet.

The rulers of several states decided that it was better to become vassal states and pay tribute to the Mongols rather than be conquered. These states included Burma, the Khmer Empire and some Thai states.

Mongol forces led by Timur the Lame captured Delhi and massacred its people in 1398. After Timur left, India broke up into warring states. In 1526, Babur, another descendant of Genghis Khan, defeated India's Hindu and Muslim kings and founded the Mughal dynasty.

The Mongols in Eastern Europe and western Asia

In 1218, Genghis Khan ordered his generals to complete China's conquest while he led other Mongol forces west. Mongol armies invaded Russia and penetrated eastern Europe as far as Hungary and Poland by 1241. Lithuania, Bulgaria and Serbia became vassal states.

Other Mongol armies invaded the Muslim lands of western Asia, including Persia. They destroyed the Abbasid Muslim dynasty and occupied its capital, Baghdad, in 1285.

SOURCE 4 A map of the Mongol Empire near its peak in 1280



Source: Map drawn by Spatial Vision.

Running the Mongol Empire

The Mongol Empire was the largest **contiguous** empire in human history. At its peak, it was four times the size reached by the Roman Empire. The Mongols encouraged trade because of the benefits it brought them, and they tolerated different religions. Their own religion was **shamanism** but they provided tax benefits to Buddhist, Daoist, Islamic and Christian clergy to win support.

The collapse of the Mongol Empire

After Genghis Khan's death, his empire was divided between his sons and grandsons, creating four **khanates**. From 1269, the khanates often fought each other. There was also division within khanates as some Mongols wanted to adopt the settled ways of the people they ruled while others wanted to keep their nomadic traditions. Gradually, the Mongols lost control of lands they had conquered.

DID YOU KNOW?

In China, Kublai Khan and his successors encouraged painting, theatre, and advances in science, engineering and medicine. They employed Confucian scholars and Buddhist monks as advisers; oversaw the construction of palaces, roads and postal stations; and encouraged travel, trade and the exchange of ideas between the East and the West.

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Deepen and check your understanding of the topic with the following resources and auto-marked questions:

› **Mongol Empire**

17.7.2 Activities

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

Check your understanding

1. What were the Mongols' motives for invading countries in the beginning of the thirteenth century?
2. How were the Mongols able to overwhelm many great civilisations?
3. Why were the Mongols tolerant of different religions in their empire?

Using historical sources as evidence

4. Use Sources 2 and 3 to answer the following questions and to support your answers.
   (a) How did the Mongols strike fear into their enemies?
   (b) Why were Mongol armies able to advance without waiting for supplies?
5. Study Source 4 and compare it with maps of modern-day Asia and Europe.
   (a) Which modern-day countries occupy the land controlled by each of the Mongol khanates in 1280?
   (b) Name the places outside the Mongol khanates that were attacked by Mongol armies.

17.7 Putting it all together

Identifying continuity and change

1. Referring to the sources and other information in this subtopic, explain why the age of the Mongol Empire can be regarded as a turning point in Asian and European history.

Determining historical significance

2. Explain why the Mongol Empire has great historical significance.

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Complete this digital doc: Worksheet 17.5: Changes in Asia and the Pacific

17.8 Population, cities and trade

17.8.1 The rise of the cities

Many of the great changes that occurred between the 1400s and about 1750 resulted from events or ideas from later medieval times. These included the spread of Islam to India and parts of South-East Asia, the opening of trade under the Mongol Empire and the fall of Constantinople. Later medieval times also saw advances in farming and sailing technologies, and the growth of populations, cities and trade. All of these changes would influence the world in the centuries to come.

World population grew because changes in technology enabled more food to be produced. New technologies spread across Europe, Asia and Africa through trade routes. Important technological changes included:

- the mouldboard plough, which enabled heavy European soils to be turned and drained
- better irrigation methods
- improved breeds of farm animals, providing more meat from each animal
- the horse collar, enabling horses to pull heavier loads without choking
- improving crops and enriching soils
- cultivation of rice in areas such as the huge Ganges Delta in India
- the spread of techniques for growing crops such as corn in the Americas.

The population of Europe, Asia and Africa reached about 235 million by 1250 CE. But in the early fourteenth century, population levels fell due to:

- epidemics, especially the Black Death (bubonic plague) that began in 1347 and reduced the population by possibly a third

- the Little Ice Age (a cold period in the Northern Hemisphere), which caused many famines because much less food could be grown.

However, the population again grew rapidly after about 1350, reaching about 400 million by 1500. Environmental problems also grew. Forests were cut down for wood and to clear more land for farming, which increased soil erosion and flooding.

The number of big towns and cities once again grew. This was possible because:

- improved agriculture provided a surplus to feed people in towns and cities
- towns and cities were growing centres of trade, populated mainly by merchants and skilled craftsmen and their families.

As cities became wealthy, their power grew. In some European countries, representatives of cities sat alongside lords and church leaders as advisers to kings. Some trading cities came to be almost independent states, governed by wealthy citizens.

SOURCE 1 Cities like Genoa in Italy became wealthy trading ports from the fifteenth century.



17.8.1 Activities

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

Check your understanding

1. Copy the following sentences and complete them by filling in the gaps.
   (a) The world's population rose until the early _____ century because _____ enabled agriculture to produce more _____.
   (b) In the early fourteenth century, population levels fell in Europe, Africa and Asia due to _____ and _____.
   (c) Clearing forests for agriculture caused problems such as _____ and flooding.
2. Give two reasons for the increase in the number of large towns and cities in the Late Middle Ages.

Using historical sources as evidence

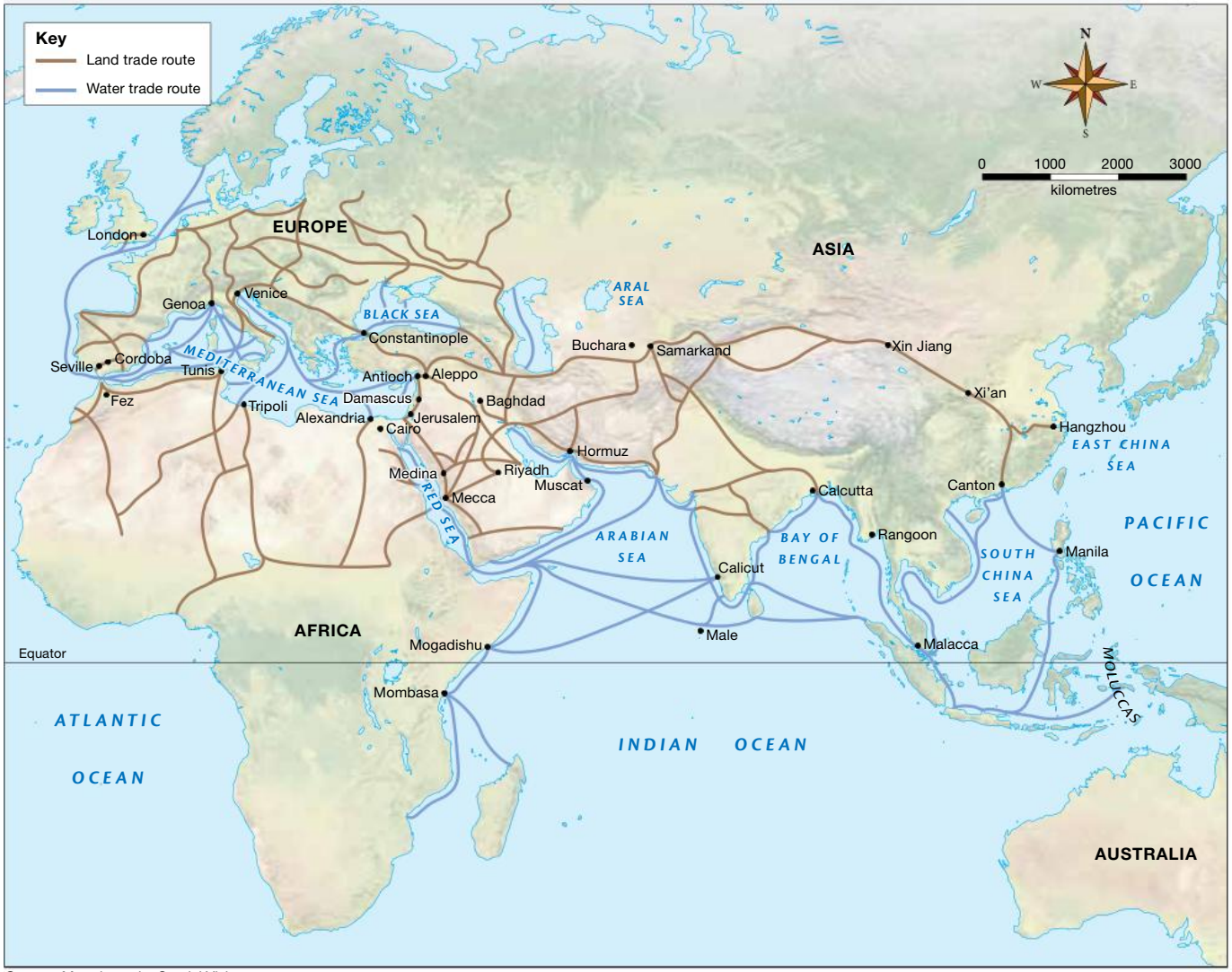
3. Look closely at Source 1. Identify and describe the features that provide evidence of Genoa's past prosperity as a trading port.

17.8.2 Trade routes

Trade expanded along ancient trade routes including the Silk Road, and new trade networks were opened. Goods traded included spices, silk, tea, salt, horses, gold and slaves. Land trade routes crisscrossed Europe, Asia and North Africa. Sea trade routes crossed Europe's Atlantic coast; Africa's east coast; the Baltic,

Mediterranean, Black, Red and Arabian seas; the Bay of Bengal; and the South China Sea. Long-distance voyages were very dangerous but they were helped by new technologies in ship-building and inventions such as the **mariner's astrolabe** and the **sternpost rudder**. The Chinese developed large ships that could carry hundreds of sailors and merchants. Between 1405 and 1433, Chinese admiral Zheng-He took a fleet all the way from China to east Africa.

SOURCE 2 A map of trade routes of Europe, Asia and Africa in later medieval times



Source: Map drawn by Spatial Vision.

DID YOU KNOW?

Towns could be dangerous places to live. There were few effective ways of getting rid of wastes, so the smell in towns was usually terrible. Also, fires in workshops and houses spread quickly and often. The city of Rouen in France was destroyed by fire eight times in 25 years.

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Deepen and check your understanding of the topic with the following resources and auto-marked questions:

› **Non-European exploration**

17.8.2 Activities

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

Check your understanding

1. Name some of the goods that were exchanged along trade routes.
2. How did the mariner's astrolabe and the sternpost rudder improve travel by sea?

Using historical sources as evidence

3. Imagine you are a merchant who is about to set out along one of the trade routes shown in Source 2. Make a plan for your journey. Include:
   (a) a copy of the route you will take
   (b) a list of provisions for your journey
   (c) a list of places where you will get fresh supplies of food
   (d) an estimate of the distance of your journey. (*Hint:* Use the scale in Source 2.)

17.8 Putting it all together

Using historical sources as evidence

1. Choose one of the trade routes in Source 2.
   (a) Name the medieval cities along the route.
   (b) Use a modern atlas to list the countries and/or seas crossed by this trade route.
   (c) Work in small groups to make a list of at least five questions that a historian could ask about this trade route.

Analysing cause and effect

2. Conduct research to write a brief account of the reasons for the wealth and power of one trading city in this period.

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Complete this digital doc: Worksheet 17.6: Summing up the Middle Ages

17.9 Muslim traders and Africa

17.9.1 Trade, wealth and slavery

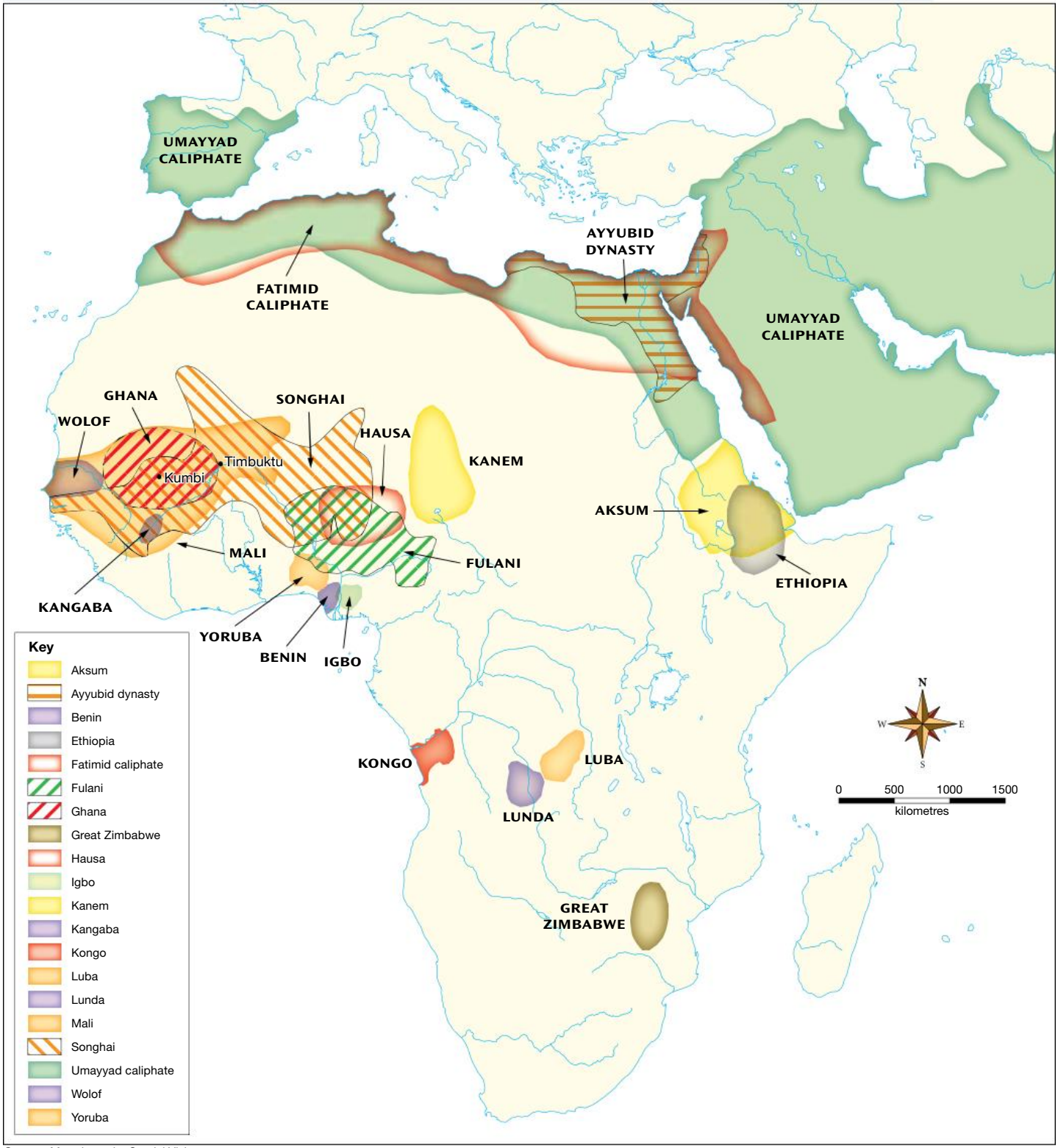
In the seventh century, Muslim Arabs conquered coastal North Africa. From there, Arab traders gradually spread along the east coast. Because traders could cross the deserts with camels, Arabs were able to spread Islam south of the Sahara into several West African kingdoms.

By the thirteenth century, Arab Muslims lived in and traded from bases in African coastal towns, from modern-day Somalia to Tanzania. Arab **dhows** brought manufactured goods to Africa from Arabia and India. Goods included weapons, tools, cloth, glass and pottery. The boats sailed back carrying slaves, ivory and gold.

Ghana

Ghana was the strongest of the farming kingdoms that arose in West Africa from the ninth century. Ghana was located north of the modern state of Ghana in what is now Mali. In 1062 CE, Islamic Berber nomads attacked Ghana, but it took 14 years before they captured its capital, Kumbi. Ghana collapsed but Mali rose in its place in the thirteenth century.

SOURCE 1 A map of medieval Africa showing the rise and fall of kingdoms



Source: Map drawn by Spatial Vision.

Mali

The first ruler of the Mali Empire was Sundiata (1230–1255). He expanded its territory and gained control of the gold trade, in which Arab traders transported gold north through caravan routes. Mali's rulers became Muslims and gained great wealth. When Mana Musa, who ruled Mali from 1312–1327, went on a

pilgrimage to Mecca, he took a huge party with him, including 12 000 slaves dressed in silk. Arab scholars were brought to Mali and, in the fourteenth century, they built a university at Timbuktu that operated until the sixteenth century, when invaders from Morocco destroyed it.

Other African civilisations

By the fifteenth century, Islam also influenced other wealthy African trading states, including the Hausa city-states, Kanem and the Songhai Empire. City-states also emerged in Guinea. In the sixteenth century, Portuguese and Dutch explorers visited some of their towns, including Benin. Between the thirteenth century and the fifteenth century, Great Zimbabwe became a wealthy African kingdom by trading gold through Muslim merchants on the coast.

SOURCE 2 Conical tower within the ruins of Great Zimbabwe



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Deepen and check your understanding of the topic with the following resources and auto-marked questions:

- **Incas**

17.9.1 Activities

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

Check your understanding

1. In which parts of Africa did Arab influence spread in medieval times?
2. How did the camel and the dhow help Muslims to trade and spread their influence in Africa?

Sequencing chronology

3. Create a timeline of medieval milestones in Africa using the information in this subtopic.

Using historical sources as evidence

4. Using Source 1 and a modern atlas:
   (a) make a list of West African kingdoms in the Middle Ages
   (b) find out which modern countries occupy the sites of these kingdoms.
5. Look carefully at Source 2 and explain how it provides evidence of a great civilisation.

17.9 Putting it all together

Analysing cause and effect

1. Explain how Muslim traders were able to spread their influence in Africa between the seventh century and the sixteenth century.

Identifying continuity and change

2. Using the sources and other information in this subtopic, identify what changed in Africa due to the activities of Muslim traders.

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Complete this digital doc: Worksheet 17.7: Populations, trade and traders

17.10 The emerging power of western Europe

17.10.1 New ways of thinking

Western Europe was changed by three great movements during early modern times. The first was the **Renaissance** that began in the fifteenth century. The second and third were the Scientific Revolution and the Enlightenment of the eighteenth century. Early modern times also saw Western Europeans spread their power by finding new sea routes, exploring, taking control of trade, conquering new lands and founding **colonies**. Three things — new ideas, the quest for riches and new uses for inventions — made this possible.

When Marco Polo visited China in the thirteenth century, he was amazed by its wealth and culture. Nobody in his time could have imagined that western Europe would come to dominate the world. The changes that made this possible started with the Renaissance in Italy in the 1400s. It was a period of renewed interest in the learning and arts of ancient Greece and Rome. It led to a movement in which some people began to think more independently and to seek a better understanding of their world.

The Scientific Revolution

The Renaissance brought a scientific revolution that encouraged thinkers to challenge authority and be guided by observation and reason. But such thinking was dangerous as the Catholic Church still expected people to follow its interpretations of science. Among the most famous of the new scientific thinkers were Leonardo da Vinci (1452–1519) and Galileo Galilei (1564–1642). Galileo proved by observations that the Earth rotated around the sun and he published his findings in 1632. But the Church still insisted that the Earth was the centre of the universe; they put him on trial and threatened him with torture. Galileo was forced to recant (take back what he had proved) and was kept under house arrest for the remainder of his life. However, challenges to old beliefs could not be stopped completely. Increasingly, the Church found it harder to crush new ways of thinking, especially after printing presses helped new ideas to spread.

SOURCE 1 The trial of Galileo, painted in the seventeenth century



The Enlightenment

By the eighteenth century, educated Europeans were influenced by what came to be known as the Enlightenment. In this period, a number of remarkable Europeans carried out their own experiments in the search for greater understanding. In this 'Age of Reason', thinkers criticised old systems of power. Their ideas would inspire others to overthrow the power of the Church, kings and nobles in the French Revolution, which began in 1789.

17.10.1 Activities

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

Check your understanding

1. What new attitudes marked the Renaissance, the Scientific Revolution and the Enlightenment?
2. Describe the attitude of the Catholic Church to these new ways of thinking.
3. Why was the Church unable to stop the spread of scientific thinking?

Using historical sources as evidence

4. Look closely at Source 1.
   (a) Describe what is happening in this painting.
   (b) Why was Galileo on trial?
   (c) How would you explain the different perspectives of Galileo and the people who were prosecuting him?

17.10.2 The quest for riches and the use of inventions

In the thirteenth century, the Mongols had encouraged trade and foreign contacts throughout their empire. European merchants had travelled along the Silk Road, creating a growing European demand for luxury goods from Asia. This demand contributed to the search for a sea route to Asia, especially after 1453 when the Ottoman Turks captured Constantinople and took control of overland trading routes linking Europe and Asia. By the 1400s, many merchants had become very wealthy. Some became bankers who lent money to rulers. Merchants encouraged artists and architects and saw that great profits might be made by funding exploration to find a sea route to Asia.

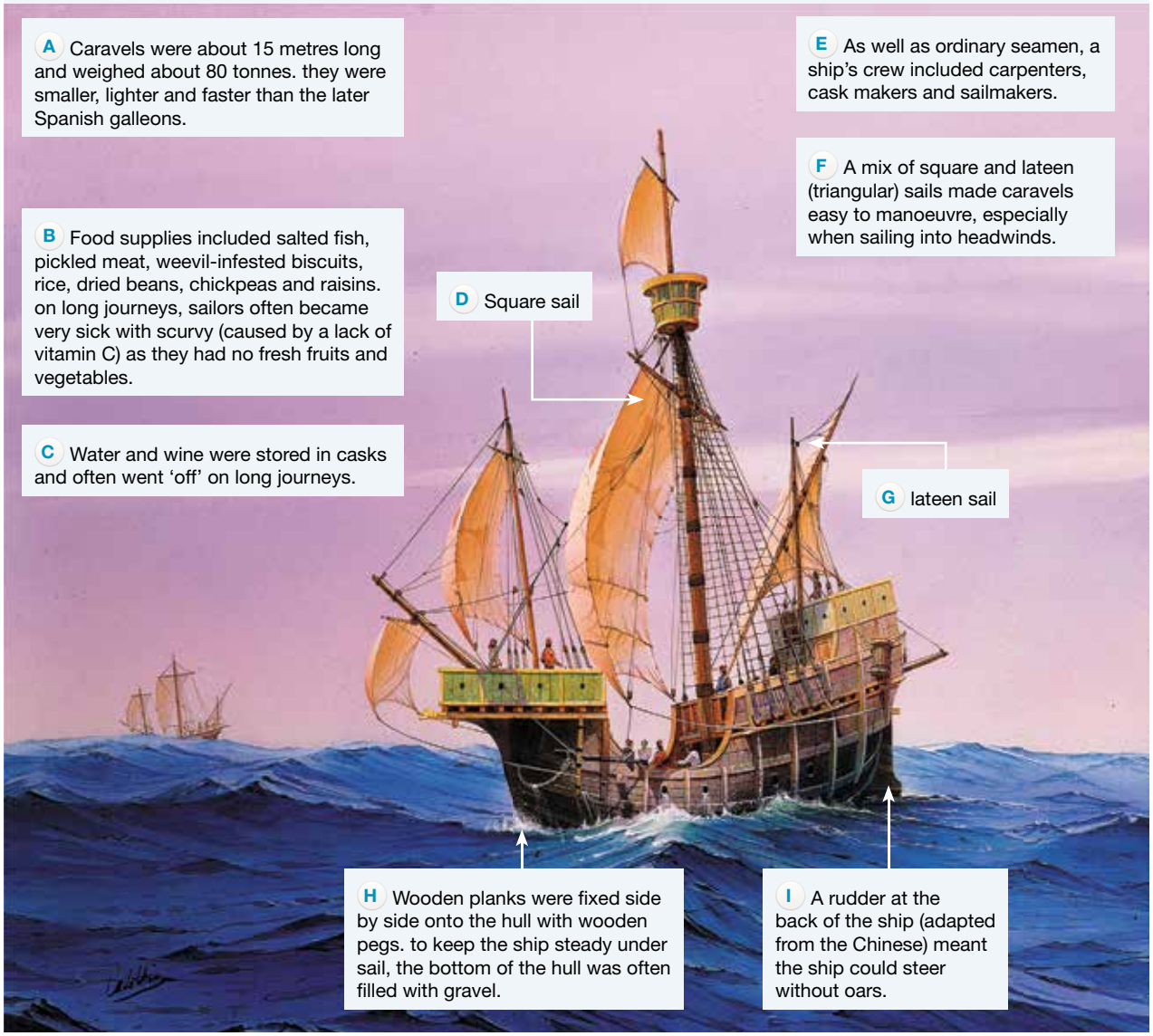
Western Europe's expansion was also made possible by its use of inventions from other cultures. Many inventions that Europeans adopted originated in China and had been in use for hundreds of years. These included gunpowder, the **compass** and printing. **Clockwork** had been invented in the Byzantine Empire. Modern mathematics had spread from fourth century India through the Islamic world to Europe. **Lateen sails** had been used for centuries on Arab dhows. But Europeans put such inventions to better use. Printing spread rapidly after Johannes Gutenberg produced the first European book on a printing press using moveable type in 1445. By 1500, there were about a thousand printers in Europe and new ideas were spreading widely through printed books. The first portable clock was made in 1410. Hans Lippershey, a Dutchman, made the first telescope in 1608.

Mathematics, compasses, telescopes and clockwork were very important for navigating ships. In the fifteenth century, a new shipbuilding method emerged in Europe. It used the lateen sails of Arab dhows with the fixed square rigged sails that had been used in ancient galleys to produce the world's first real ocean-going ship, the **caravel**. From the beginning of the sixteenth century, carracks were developed from caravels. These new ships were bigger, faster and could be sailed under different wind conditions.

DID YOU KNOW?

The first paperback books were printed in Venice by Aldus Manutius. They were made without heavy covers so that they could be carried in saddlebags.

SOURCE 2 A modern artist's impression of a fifteenth-century caravel



myWorld History Atlas

Deepen and check your understanding of the topic with the following resources and auto-marked questions:

› **The West visits the East**

17.10.2 Activities

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

Check your understanding

1. Why was the Silk Road important for trade?
2. What motivated Europeans to find a sea route to Asia?
3. Describe the role of merchants in the quest for a sea route to Asia.

Using historical sources as evidence

4. Using Source 2, identify three features of the caravel that would have made it more suitable than earlier ships for sailing across oceans.

17.10 Putting it all together

Identifying continuity and change

1. Form small groups to discuss ways in which the printing press, gunpowder and the compass could have contributed to the growth of European power.

Determining historical significance

2. Hold a class discussion on how history might have been different if the printing press had never been invented.
3. Draw a mind map to show how new ways of thinking, the quest for trade and the use of inventions contributed to Europe's expansion from the fifteenth century.

learnon RESOURCES — ONLINE ONLY

Complete this digital doc: Worksheet 17.8: The emerging power of Western Europe

17.11 Portuguese and Spanish voyages of discovery

17.11.1 Diaz, Columbus and Magellan

The spirit of inquiry that marked the Renaissance also contributed to European exploration and the expansion of Europe's influence throughout the world. Sea travel was extremely dangerous but there were huge profits to be made, and so the Portuguese and Spanish sailed through unmapped waters towards what many thought were the edges of the Earth.

Between the seventh and thirteenth centuries, Muslims had been the world's leading explorers and traders. But from the fifteenth century the lead was taken by the Portuguese and soon after by the Spanish. The small kingdom of Portugal took the first steps. Prince Henry, the governor of Portugal's southern coastal region from 1419, encouraged shipbuilders, sailors and cartographers. He founded a school for navigation and obtained funds from Italian and German bankers. Henry wanted to take over the African coastal trade from the Muslims. By 1446, Portuguese expeditions had explored and mapped the northwest coast of Africa and brought back cargoes of gold and slaves.

SOURCE 1 A map from Cosmographia printed in Germany in 1482. The map shows what Europeans knew of the world at that time.



In 1487, Portugal sent Bartholomew Diaz to find an eastern route to India by sailing around Africa. Diaz sailed down the west coast and reached the bottom of Africa but he had to turn back because many of his crew had died from diseases and the others refused to sail on. Ten years later, Vasco da Gama would succeed where Diaz had failed.

SOURCE 2 A map of the Americas drawn in 1587



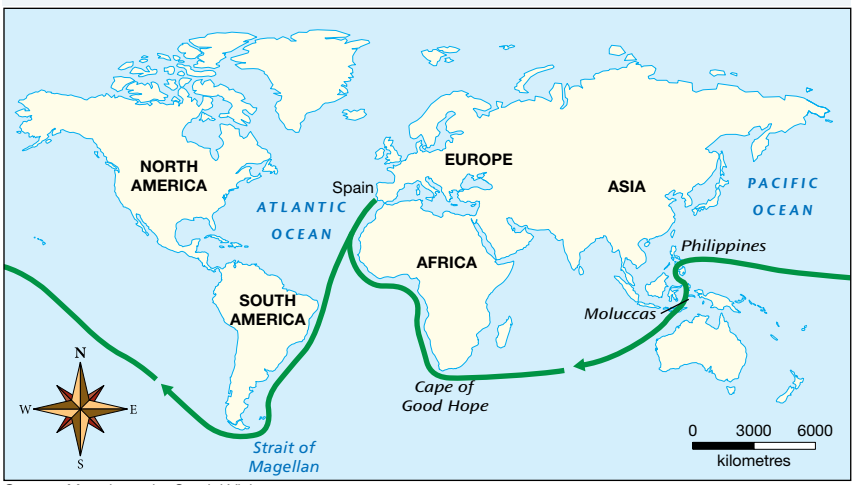
Columbus

With financial backing from Spain, Christopher Columbus, an Italian explorer, set out in August 1492 to find a western route to Asia. At that time, nobody in Europe knew that the Americas existed. So when Columbus reached the Americas in October, he believed he had reached Asia. Between 1493 and 1504, Columbus made three more voyages to the 'New World', as the Americas were called. He established Spain's first American colony on the island of Hispaniola and set the pattern of brutal Spanish treatment of the Native Americans.

Magellan

Ferdinand Magellan was a Portuguese sailor but, like Columbus, he worked for Spain. Magellan believed that he could travel west to Asia if he sailed south of the route Columbus had taken. In 1519 he set out with five ships. Three reached the Philippines and the Moluccas but only one ship survived to return to Spain through the Indian Ocean in 1522. That ship had **circumnavigated** the world.

SOURCE 3 A map of Magellan's voyage around the world in 1519–1522



Source: Map drawn by Spatial Vision.

myWorld History Atlas

Deepen and check your understanding of the topic with the following resources and auto-marked questions:

› **European exploration**

17.11.1 Activities

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

Check your understanding

1. What did Diaz accomplish for Portugal?
2. Which sentences in this section would provide evidence to support the view that sea voyages were very dangerous?
3. Why might Columbus have believed that he was in Asia when he reached the Americas?

Using historical sources as evidence

4. Read the information on Magellan's voyage and look at Source 3. Imagine that you are a member of the crew on the sole surviving vessel of Magellan's five ships. Describe how you would feel about the hazards of your voyage.
5. Compare Sources 1 and 2 and explain what Europeans knew about the world in 1587 that they did not know in 1482.

17.11.2 Motives for empire-building

In the sixteenth century, Portugal gained an empire that included Brazil and ports in Africa, India, Malaya and China. Spain's empire included the Philippines and much of the Americas. Forces that motivated Portugal and Spain included:

- rivalry with Muslim countries and the desire to take trade from the Muslims
- the search for legendary but non-existent Christian kingdoms in Africa and Asia
- growing demand for luxury goods from Asia
- the search for gold and silver that could increase European wealth and be exchanged for Asian luxury goods such as spices, silks, cotton and porcelain
- the desire to convert non-Christians to Catholic Christianity.

SOURCE 4 Part of the magnificent Alhambra, built near Granada in Spain by Muslims who ruled most of Spain and Portugal through much of the Middle Ages



17.11.2 Activities

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

Check your understanding

1. Of the five motives for empire-building listed in this section, which were mainly concerned with wealth and trade?
2. What were Spain's and Portugal's religious motives for conquests and empire-building?
3. Which of the five motives do you think were the most important to the Spanish and Portuguese? Give the reasons for your choice.

Using historical sources as evidence

4. Look closely at the small section of the Alhambra in Source 4. How would such achievements of the Muslims have influenced Spain's and Portugal's desire to take international trade from them?

17.11 Putting it all together

Identifying continuity and change

1. Explain how voyages of discovery enabled Europeans to redraw the map of the world.

Determining historical significance

2. Describe why Columbus's discovery of the Americas was historically significant even though it was accidental.

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Complete this digital doc: Worksheet 17.9: Portuguese and Spanish voyages

17.12 Vasco da Gama opens the East

17.12.1 Vasco da Gama captures the spice trade for Portugal

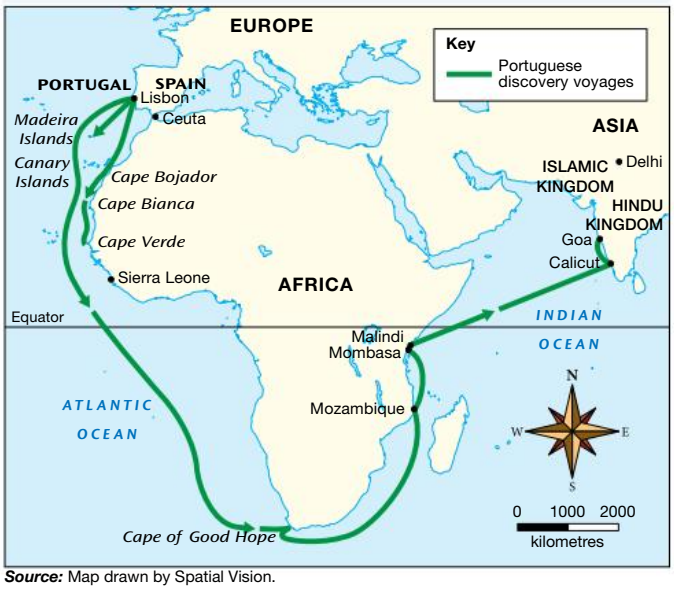
In 1497, Vasco da Gama commanded the first ships to sail from Portugal to India. Da Gama returned to Calicut in India in 1502 and captured the city as a trading port for Portugal. The Portuguese set up other trading posts along Africa's west coast and along the sea route to China. This enabled Portugal to dominate the trade in spices and luxury goods.

Vasco da Gama grew up at a time when Portugal's aim was to sail around Africa's southern tip and on to India. Reaching India by sea would enable Portugal to take control of the very profitable trade in India's spices.

On 8 July 1497, da Gama set out with four Portuguese ships and 170 men along the route that Diaz had taken down the west coast of Africa. Rather than sticking close to the coast, da Gama sailed south from present-day Sierra Leone to reach the westerly winds of the South Atlantic Ocean. Diaz had discovered these winds a decade earlier and da Gama judged that they could blow his ships towards the bottom of Africa. It worked, but by the time the fleet reached the Cape it had travelled for more than three months over 8000 kilometres on the open ocean completely out of sight of land (see Source 1).

Da Gama's fleet then sailed up Africa's east coast to the Muslim trading port of Mozambique where he clashed violently with the local Muslims. Further up the coast, da Gama robbed Arab trading ships. The fleet stopped briefly at Mombasa, provoking more hostility. The next stop was Malindi. Here, da Gama gained help from an Arab guide. With this man's knowledge of the winds, the fleet reached Calicut in India in May 1498. When he was unable to persuade the Hindu king of Calicut to grant trading rights, da Gama kidnapped several locals and set sail for Portugal with a valuable cargo of spices. When he returned to Portugal in 1499, da Gama had lost two ships and over half of his crew had died of **scurvy**.

SOURCE 1 A map showing Portuguese voyages of discovery in the fifteenth century

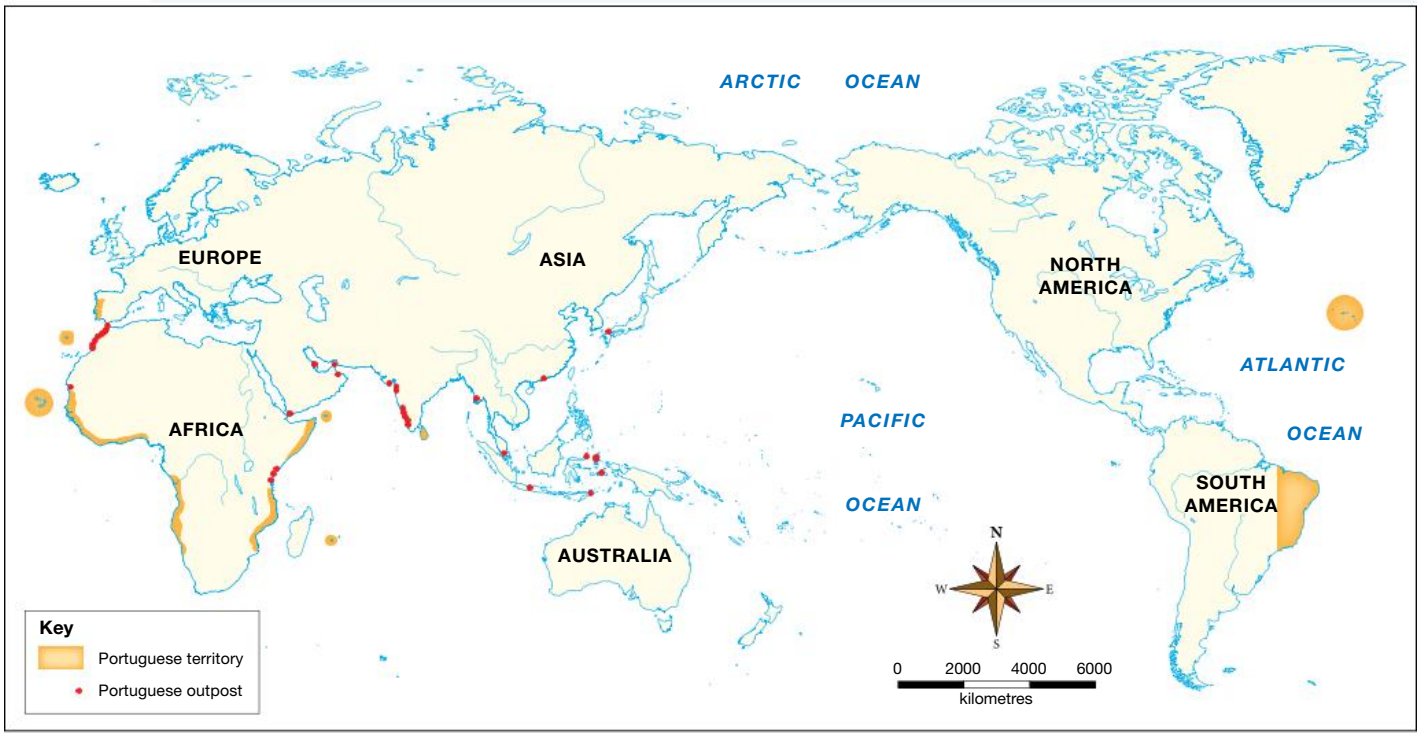


Source: Map drawn by Spatial Vision.

Da Gama's second voyage

In his subsequent voyages, da Gama showed how ruthless he could be. In 1502, he led a fleet of fifteen ships with 800 men to capture Calicut. After capturing several Arab trading ships, da Gama bombarded Calicut with cannon fire. He also captured several rice boats and cut off the hands, ears and noses of their crew members. In the Indian Ocean, he seized a Muslim ship returning from Mecca. After robbing the 400 passengers — including women and children — of their valuables, da Gama ordered his men to lock them in the ship's hold, where they all died when da Gama had the ship set on fire. Vasco da Gama received many rewards from Portugal's King Manuel I. In 1524, he was made governor of Portugal's Indian trading colonies but he died of malaria soon after arriving there.

SOURCE 2 The Portuguese Empire during the reign of King John III (1502–1557). In 1500, Portuguese navigator Pedro Alvares Cabal landed in Brazil and claimed it in the name of King Manuel I of Portugal.



Source: Map drawn by Spatial Vision.

SOURCE 3 A painting by Alfredo Roque Gameiro (1864–1935) depicting the arrival of Vasco da Gama in Calicut in 1498



myWorld History Atlas

Deepen and check your understanding of the topic with the following resources and auto-marked questions:

- **European exploration**

17.12.1 Activities

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

Check your understanding

1. What did Vasco da Gama's voyages achieve for Portugal?
2. Why did Portugal want trading posts along Africa's west coast and India?

Using historical sources as evidence

3. Refer to Source 2 and make a list of the modern-day places in which Portugal had colonies by about the mid-sixteenth century.
4. Look very closely at Source 3.
   (a) Describe what is happening in this scene.
   (b) What really happened when Gama was in Calicut?
   (c) Why should paintings not always be trusted as historical evidence for the events they depict?

17.12 Putting it all together

Identifying continuity and change

1. Using both the sources and information in this subtopic, explain why Vasco da Gama's voyages can be considered significant turning points in world history.

Determining historical significance

2. For centuries, Vasco da Gama was regarded as a hero in Portugal. Form small groups to discuss the following question: 'Should Vasco da Gama be regarded as a hero or as a brutal criminal?'

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Complete this digital doc: Worksheet 17.10: Vasco da Gama

17.13 Consequences of the discoveries

17.13.1 The clash of empires

European discoveries and colonisation had huge consequences for the Europeans and for the peoples they came to colonise or dominate.

Under the Treaty of Tordesillas, signed in 1494, Pope Alexander VI divided the rights to new lands between Spain and Portugal. The treaty gave Spain the right to explore and colonise all lands to the west of Cape Verde on the coast of Africa. Portugal was given the right to everything to the east, including Brazil. However, the French, English and Dutch would not let such a ruling stand in their way. All three established American colonies in the first decades of the seventeenth century. As Portugal's power declined, a four-way struggle developed between the Spanish, French, English and Dutch to dominate the New World.

The French in North America

Jacques Cartier led a series of French expeditions exploring Newfoundland and eastern Canada from 1534. The French found that there were riches to be gained from fish, timber and furs. They established their first North American settlement at Quebec in 1608 and forged a harmonious relationship with the Huron and Algonquin tribes who controlled the supply of furs. This relationship changed the economy of France's indigenous allies without threatening their way of life. However, it made the French the enemies of the powerful Iroquois of the Five Nations, the traditional enemies of the Algonquin and Huron. The Iroquois allied themselves with the English.

The British in North America

In 1607, the Virginia Company of London founded Britain's first successful colony in North America. By the end of the seventeenth century, Britain had a strip of colonies along the east coast of the modern-day United States. While searching for an imagined north-west passage to Asia in 1610, Henry Hudson discovered Hudson Bay (in modern-day Canada). Following this, Britain settled much of eastern Canada. Unlike the French, the English were mostly farmers and they soon made enemies of the tribes whose lands they took. In the seventeenth and early eighteenth centuries, Britain also founded colonies on several islands in the Caribbean Sea.

SOURCE 1 French and British settlements and areas of interest in North America before 1763



Source: Map drawn by Spatial Vision.

DID YOU KNOW?

For many years, early English and French explorers in North America thought they would find a 'north-west passage' through the dangerous American wilderness that would take them to India.

DID YOU KNOW?

The desire to convert non-Christians to Christianity was one among many motives for European exploration and empire-building. This became an even stronger motivation for Roman Catholics after the Protestant Reformation of the sixteenth century, which led to the Catholic Church losing its power in most of northern Europe.

The Dutch Empire

The Dutch East India Company was formed in 1602 to seize control of the eastern trade from Portugal. It established Batavia (modern-day Jakarta in Indonesia) as a trading base. Malacca was an important link along the trade route between India and China, and so the Dutch captured Malacca from the Portuguese in 1641 and took over the eastern trade. To re-supply their ships on the long voyage between Amsterdam and the east, the Dutch founded a colony at the Cape of Good Hope, the most southerly point in Africa, in 1652.

In 1606, 1623 and 1642, Dutch sailors made landings in Australia, but they saw the country as having no value for them. In 1621, the Dutch West India Company was formed to join in the enormously profitable Atlantic trade. By 1642, the Dutch captured many Portuguese forts on the West-African coast and took over transportation of African slaves to colonies in the Americas. From about 1650, the English and French joined in the slave trade as, to a lesser extent, did the Danes, Swedes and Germans. The Dutch also gained small colonies in the Americas.

Rivalry between Britain and France

After the 1650s, Dutch sea-power declined and there was increasing conflict between the French and the British in North America. In 1681, a French expedition sailed down the Mississippi River and claimed a vast area, which it called Louisiana. This stood in the way of future British expansion.

The two powers also had conflicting interests in India. By 1647 the British East India Company had 27 trading posts in India, and in 1665 it gained Bombay (Mumbai) from the Portuguese. France set up its *Compagnie des Indes* to expand French influence in India and it soon clashed with the British. The Seven Years' War (1756–63) between Britain and France would lead to the loss of New France in America and the decline of French influence in India.



17.13.1 Activities

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

Check your understanding

1. What rights were given to Spain and Portugal under the Treaty of Tordesillas?
2. At which country's expense did the Dutch expand up to the mid-seventeenth century?
3. While the Spanish and Portuguese colonised South America and Central America, which two European powers became rivals for control of North America?

Using historical sources as evidence

4. Examine Source 1. Why were Britain and France in conflict in North America?

17.13.2 Other consequences

The world changed in many ways during this age of exploration and colonisation.

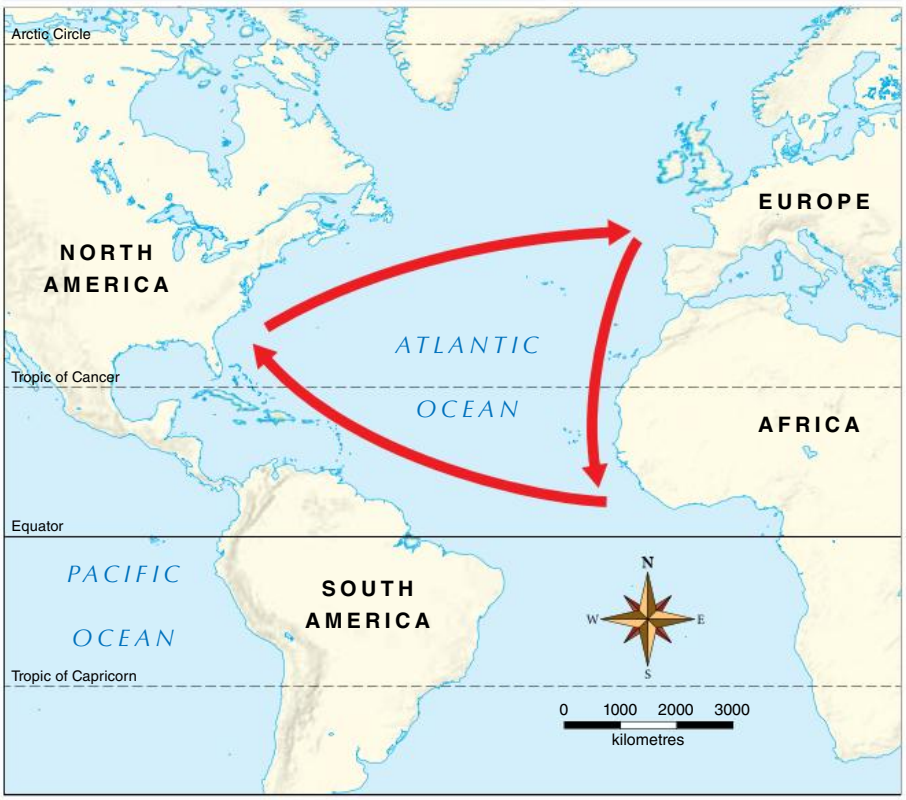
- Colonial powers suppressed indigenous peoples and fought each other over territory and trade. In such conflicts, the advantage was often held by those with the best firearms, such as cannons mounted on ships.
- Some European traders became wealthier than the land-owning nobility.
- Silver and gold flowed into Spain and beyond. Silver was mined in the Americas and was used to expand Europe's trade with Asia. One of the difficulties of trading with Asia had been the fact that Europe produced very little that Asia wanted to trade for spices and other luxuries.
- Missionaries spread Christianity among indigenous peoples.

- Millions of African slaves were captured in tribal wars. They were sold to European slave traders who shipped them to the Americas to work in mines and on sugar, tobacco and cotton plantations. While world population rose, the population of Africa fell.
- The impact on the indigenous peoples of the Americas was even worse. From 1500 to 1600, the combined population of Europe, Africa and Asia increased from 418 million to 545 million. In the same period, **Latin America**'s population fell from about 36 million to about 10 million. Many people were worked to death, but most died of diseases brought by the Europeans. This is because indigenous Americans had no immunity to diseases that had previously been unknown in the Americas.

DID YOU KNOW?

Europe's colonies brought great wealth into the hands of a few, but most people's lives changed very little. By 1750, only about 2 per cent of the world's people lived in cities.

SOURCE 2 A map showing the triangular trade in the Atlantic Ocean. European traders sailed from Europe to the west coast of Africa, where they sold European goods and bought African slaves. They then transported the slaves to the Americas. There they sold the slaves, loaded their ships with goods and took them to Europe.



Source: Map drawn by Spatial Vision.

The Columbian Exchange

Along with diseases, there was a massive transfer of other life forms between the Old World and the New World. Europe gained new plant products such as tobacco, beans, peanuts and potatoes from the Americas. Into the Americas they brought animals that had not existed there, including horses, cattle, pigs and sheep. Such exchanges along with exchanges of people, technologies, ideas and beliefs have been called the Columbian Exchange. The two centuries after Columbus's 1492 voyage transformed the lives of many people in both worlds.

17.13.2 Activities

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

Check your understanding

1. What advantages did colonial powers have over indigenous peoples?
2. How did the flow of silver and gold from the Americas help Europe to trade with Asia?

Using historical sources as evidence

3. Study Source 2 and explain why this trade route has been called the 'triangular trade'?

17.13 Putting it all together

Identifying continuity and change

1. Working in small groups, identify at least one consequence of the colonisation of the Americas and the Columbian Exchange that you believe had significant effects for the world right up to our own times. Provide evidence for your choices and share your view with the class.

Determining historical significance

2. Describe the historical significance of the colonisation of the Americas for the Native Americans.

learnON RESOURCES — ONLINE ONLY

Complete this digital doc: Worksheet 17.11: Consequences of the discoveries

17.14 SkillBuilder: Explaining different historical interpretations

online only

WHAT IS A HISTORICAL INTERPRETATION?

To explain a past event or change, historians use evidence from historical research to test the hypothesis, or an interpretation of the past.



Go online to access:

- an explanation of the skill (Tell me)
- a step-by-step process to develop the skill, with an example (Show me)
- an activity to allow you to practise the skill (Let me do it)
- questions to test your application of the skill (Applying skills).

17.15 Review

online only

This final subtopic provides a range of opportunities for you to review and respond through:
(i) revising and checking your historical knowledge
(ii) demonstrating your ability to apply historical concepts and skills.

Go online to access:

- a key chronology of events relevant to the topic
- a summary of the key knowledge presented in the topic
- a 'Big Questions' activity
- a multiple choice topic test
- short answer or extended writing responses.

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Try out these interactivities: A world in change timeline (int-2943), A world of expanding contacts timeline (int-2948)

Complete these digital docs: Worksheet 17.12: Age of Discovery word search, Worksheet 17.13: Summing up the Age of Discovery

17.14 Skillbuilder: Explaining different historical interpretations

17.14.1 Tell me

What is a historical interpretation?

To explain a past event or change, a historian forms a hypothesis (a possible theory to explain what happened and why it happened). The historian uses evidence from historical research to test the hypothesis. The hypothesis is then presented as an interpretation of the past. Through questioning interpretations, you will understand that they may be open to debate.

Why is it important to analyse and explain a historian's interpretation?

To explain an interpretation we need to analyse it. That means to see how its different parts contribute to its general idea. You now know that that there is almost always more than one way of interpreting any past event. This is because of gaps in evidence, because sources can be biased and because historians themselves bring different viewpoints or perspectives to most issues.

Differing interpretations in history are similar to what happens in a court of law. In courts, even though all members of a jury are presented with the same evidence, they can come to different conclusions. If we analyse a historian's interpretation and are then able to explain it we are in a better position to judge it and compare it with other interpretations.

It is not always easy to analyse and explain a historian's interpretation. Often the main argument will be developed over several pages along with a discussion of the evidence used for each supporting point. In the examples used here, the points that support the main argument are included but much of the specific evidence for them is not included.

17.14.2 Show me

How to explain a historian's interpretation

When you read a historian's interpretation, you need to:
1. identify the main point of the historian's argument
2. identify the points that are used to support the main argument.

An example

SOURCE 1 A historian's argument about the significance of the achievements of Spain and Portugal in their voyages of discovery and conquests, from C. H. Haring, *The Spanish Empire in America*, Harcourt, Brace & World, New York, 1963, pp. 1–2

One of the most … spectacular movements in the history of civilisation has been … the Expansion of Europe … [It] saw the rise and fall of great colonial empires …, the expansion of **maritime trade** into a world commerce, and the extension of Christian missionary propaganda to the four corners of the world …

In this process Spain and Portugal played the most dramatic role and pointed the way for other nations to follow. Their connection with the **New World** began with the initial voyage of Columbus, and for a century they **pre-empted** virtually all of the western hemisphere as well as the seas eastward to China and the Philippines. Before the seventeenth century they were the great … colonial powers. Not until after 1600 did the English, Dutch and French seriously challenge their **supremacy**. Portugal's imperial greatness was to be displayed chiefly in the **Orient**; Spain reserved to herself the greater part of the two American continents … Within three generations Spaniards discovered, subdued and colonised the most extensive territorial empire the world had ever seen …

To analyse and explain the interpretation in Source 1:
1. first look for the main point of the argument
2. then look for the supporting points or details used to support the argument.

The sentences or parts of sentences that state the main point have been highlighted below in blue; the main words that provide supporting details have been highlighted in yellow.

> One of the most … spectacular movements in the history of civilisation has been … the Expansion of Europe … [It] saw the rise and fall of great colonial empires …, the expansion of maritime trade into a world commerce, and the extension of Christian missionary propaganda to the four corners of the world …
>
> In this process Spain and Portugal played the most dramatic role and pointed the way for other nations to follow. Their connection with the New World began with the initial voyage of Columbus, and for a century they pre-empted virtually all of the western hemisphere as well as the seas eastward to China and the Philippines. Before the seventeenth century they were the great … colonial powers. Not until after 1600 did the English, Dutch and French seriously challenge their supremacy. Portugal's imperial greatness was to be displayed chiefly in the Orient; Spain reserved to herself the greater part of the two American continents … Within three generations Spaniards discovered, subdued and colonized the most extensive territorial empire the world had ever seen …

In this example we can say that:

- The main argument is: Spain and Portugal played the leading role in Europe's expansion.
- The supporting points are:
  - Spain conquered most of the Americas well before other colonisers.
  - Portugal was dominant in the seas towards Asia.
  - Spain created the world's biggest empire in the Americas.
  - The Dutch, English and French were not able to challenge them before 1600.

17.14.3 Let me do it

Using the example as a model, analyse and explain the interpretation in Source 3 on the next page.

Before you read Source 3, look at Source 2 to find the location and extent of the Inca empire.

SOURCE 2 A map showing the major Central and South American civilisations – Aztec, Maya and Inca – just before the time of the Spanish conquests



Source: Map drawn by Spatial Vision.

SOURCE 3 A historian's argument about the motives of the Spanish conquistadores for their conquests, their methods and the reasons for their success, from Niall Ferguson, *Civilization*, Penguin Books, London, 2011, pages 98–101

... landing in northern Ecuador in 1532, were fewer than 200 Spaniards accompanying the man who already claimed the title 'Governor of Peru' [Francisco Pizarro]. Their ambition was to conquer the Inca Empire for the King of Spain and to secure a large share of its reputed wealth for themselves....
By the time they reached the Peruvian highlands, Pizarro had just sixty horsemen and ninety footsoldiers at his command... The population of the empire they intended to **subjugate** was somewhere between 5 and 10 million.

On the conquistadores' side, however, was an invisible ally: the European diseases to which South Americans had no resistance – the smallpox, influenza, measles and typhus. At the same time, the Spaniards' horses, guns and crossbows were weapons far superior to anything in the Inca armoury; they gave the invaders a terrifying extra-terrestrial aspect. And the Inca themselves were divided. Since the death of Inca Huayna Capac, his sons Atahualpa and Huascar had been battling for the succession, while subject tribes scented a chance to throw off the Inca yoke. The Battle of Cajamarca (14 November 1532) was thus scarcely a battle at all. As Pizarro's brother Hernando described it, Atahualpa walked into a trap when he accepted the Spaniards' invitation to dinner:

'... I had arranged with the captain of the artillery that, when a sign was given, he should discharge his pieces, and that, on hearing the reports, all the troops should come forth at once. This was done, and as the Indians were unarmed they were defeated without danger to any Christians.'

In the words of the sixteenth-century Andean chronicler Waman Poma, the Spaniards killed the panic-stricken Indians 'like ants'....

1. Identify the main argument in Source 3.
2. Identify the points that the author of Source 3 has used to support that interpretation.

17.14 Activities

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

Using historical sources as evidence

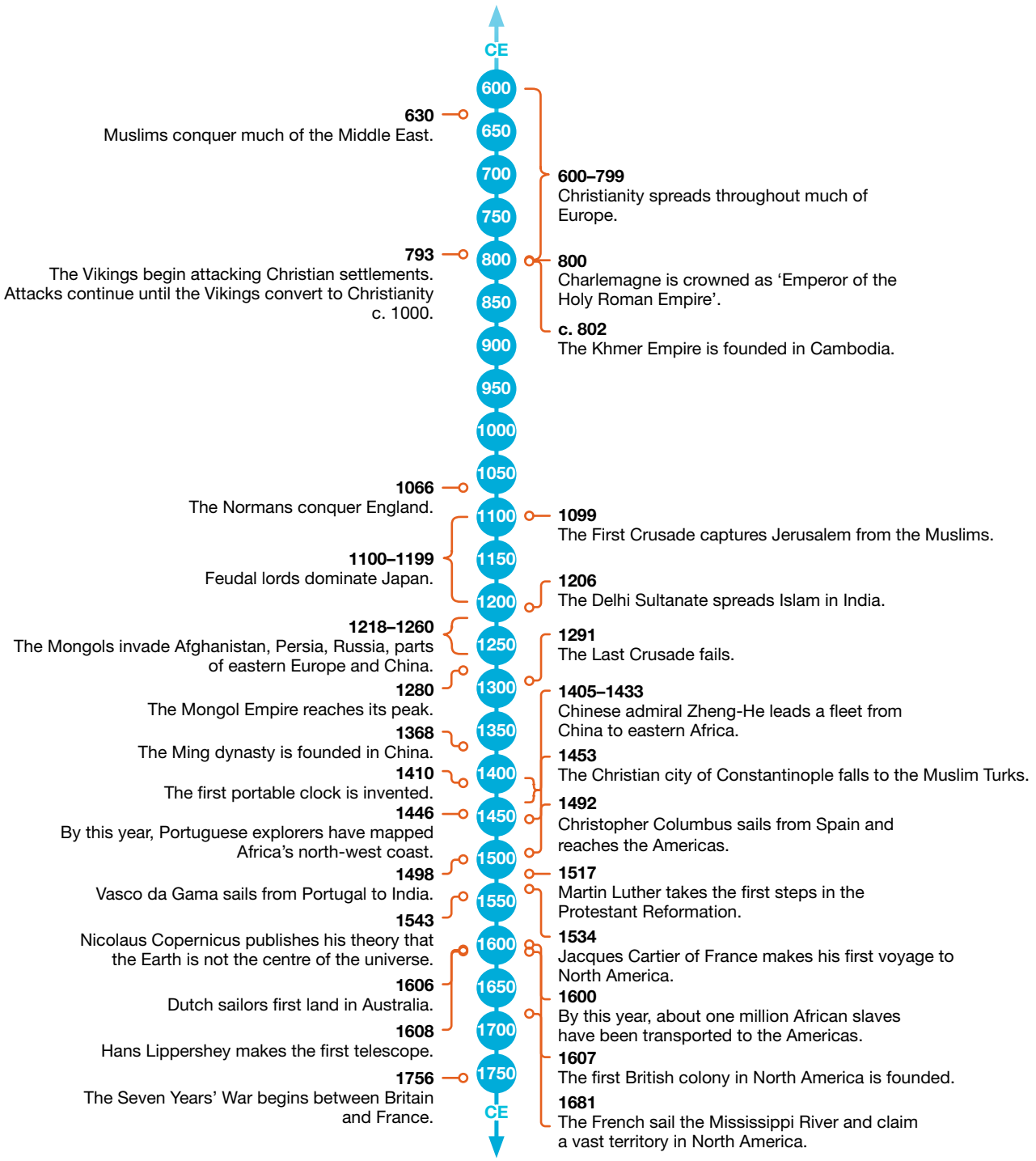
1. Explain how the interpretation in Source 3 differs from the interpretation in Source 1.
   (a) Do they differ about the facts?
   (b) Have they used different sources?
   (c) Do they have different perspectives? Or do they each focus on a different aspect of the Spanish conquests?
   Support your answer with examples and quotes from each source.

17.15 Review

In this topic we have looked at broad patterns of change from the end of the ancient period to the beginning of modern history. We have seen how major civilisations around the world came in contact with each other and how beliefs were often challenged and significantly changed. Among the key developments of this period were the transformation of the Roman world, the spread of Islam and Christianity and the development of feudalism. We have also seen how, late in this period the world was further transformed by new ways of thinking and by voyages of discovery that changed world trade and led to contact, conflict and colonisation.

17.15.1 Review

Chronology: Timeline from the ancient world to the modern world



Key knowledge: Summary

17.2 Examining the evidence

- Some societies in this period did not keep written records.
- Some sources have been lost and most people could not read or write so there are significant gaps in our evidence.
- Sources often provide the recorded evidence of only one section of a society and only one side in a conflict.
- Because sources can often be one-sided we need to look out for bias.

17.3 Peoples on the move

- Migrating nomads caused centuries of chaos in Europe and Asia.
- Invaders took over much of the former Roman Empire.
- The Byzantine Empire kept ancient Roman culture alive.
- The Persian and Byzantine empires were weakened by wars with each other.

17.4 Religions on the move

- In the Early Middle Ages, the rise of Islam created a powerful new civilisation.
- Islam expanded into three continents.
- Christianity spread gradually to dominate almost all of Europe by around 1000.

17.5 A different way of life

- Smaller, weaker states replaced the Roman Empire.
- Cities, learning and trade declined in early medieval Europe.
- Feudalism became the dominant social system.

17.6 Rulers, religion and the changing map of Europe

- By later medieval times, peasants were increasingly forced into serfdom.
- New technologies increased the destructiveness of wars.
- European rulers claimed to be chosen by god.
- Many Asian rulers claimed to be demigods.
- The Muslims were driven out of Spain but Muslim Turks came to control Europe's Balkan Peninsula.

17.7 Migrations, invasions and empires in Asia

- Japan became a feudal society.
- China suffered invasions by nomads but the Chinese Empire was restored under the Song dynasty.
- The Delhi Sultanate dominated northern India from 1206 until it was destroyed by Mongols in 1398.
- Indian traditions influenced much of South-East Asia.
- The Mongol Empire overwhelmed many civilisations in the thirteenth century.

17.8 Technology, populations, cities and trade

- Improved farming technologies enabled more food production so populations grew.
- Populations fell dramatically due to the Black Death in the mid-1300s.
- From the mid-1300s, populations, cites and trade all grew significantly.

17.9 Muslim traders and Africa

- Arab Muslims conquered coastal North Africa in the seventh century.
- By the thirteenth century, Arab Muslims had trading bases along the east coast of Africa and controlled trade between Africa, Arabia and India.
- Several powerful African kingdoms became wealthy through trade between the ninth and fifteenth centuries.

17.10 The emerging power of Western Europe

- Western Europe was changed between the fifteenth and eighteenth centuries by the Renaissance, Scientific Revolution and the Enlightenment.
- European power spread through explorers finding new sea routes, conquering new lands and founding colonies.

17.11 Portuguese and Spanish voyages of discovery

- The quest for huge profits and religious zeal motivated Portugal and Spain to take the African trade from the Muslims and find a sea route to India.
- The discovery of the Americas was an accidental result of Spain's quest to find a sea route to India.

17.12 Vasco da Gama opens the East

- Vasco da Gama commanded the first Portuguese voyage to India.
- His achievement led to Portuguese domination of the trade between East and West in spices and luxury goods.

17.13 Consequences of the discoveries

- The rising maritime powers of western Europe were the Dutch, French and English, who established American colonies in the seventeenth century.
- The Dutch took control of the eastern trade from Portugal.
- Imperial rivalry grew between the British, leading to war.
- Colonisation had enormous impacts, especially on subject peoples.

Key knowledge: multiple-choice topic test

1. Islam began in which of these places?
   a. North Africa
   b. Arabia
   c. India
   d. Central Asia
2. Medieval technological changes that increased food production included which of these?
   a. The three-field system
   b. The stump-jump plough
   c. Use of tractors
   d. Use of horses
3. What did serfdom mean?
   a. Peasants were free to work for whoever they chose.
   b. Peasants became landowners.
   c. Peasants could be bought and sold by landowners.
   d. Peasants were not free to leave the land on which they worked.
4. Which of the following technologies increased the destructiveness of wars in late medieval times?
   a. Stronger castle walls
   b. Development of tanks
   c. Use of canons
   d. Hand grenades
5. In 1066, England was conquered by which of the following?
   a. Saxons
   b. Romans
   c. Mongols
   d. Normans

6. The Byzantine Empire fell when which of these groups captured Constantinople in 1453?
   a. The Crusaders
   b. The Ottoman Turks
   c. The Venetians
   d. The Mongols
7. Which Chinese dynasty was founded in 1368?
   a. Yuan
   b. Qin
   c. Song
   d. Ming
8. Which of the following caused a big fall in population levels in the mid-fourteenth century?
   a. The Black Death
   b. A major war
   c. Declining food production
   d. Birth control
9. From the 1400s, long-distance sea voyages were helped by which of these inventions?
   a. Radar
   b. Steam power
   c. The mariner's astrolabe
   d. The telescope
10. In the fifteenth century, what was a caravel?
    a. An amusement ride in a circus
    b. A type of ocean-going ship
    c. A trader's caravan
    d. A new type of weapon
11. Which of these best describes the result of the Seven Years' War?
    a. The Americans gained independence.
    b. The Dutch took colonies from the Portuguese.
    c. The French gained control of North America.
    d. The French lost New France in North America.
12. The Columbian Exchange refers to:
    a. the exchange of plants, animals and people between the New World and Old World.
    b. the fact that Columbus was not looking for the Americas when he found them.
    c. the imperial rivalry between European powers.
    d. the stock exchange.

17.15.2 Respond

Using historical sources as evidence

1. A historical argument is a historian's explanation or interpretation supported by historical details. When you read a historian's argument, you need to identify the main point of the argument and identify the details that are used to support the main point. Analyse the arguments presented in Source 1 and Source 2 on the next page. They are both about the achievements of Christopher Columbus. Remember to identify the main argument in each source and then to identify the point or points that the historian has used to support that argument.
2. Explain how these two sources differ in their assessment of the significance of Columbus.

SOURCE 1 From S. E. Morison, *Christopher Columbus, Mariner*, Meridian Books, New York, 1983, pp. 9, 25.

America was discovered by Columbus purely by accident . . . we now honour Columbus for doing something he never intended to do, and never knew that he had done. Yet we are right in so honouring him, because no other sailor had the persistence, the knowledge and the sheer guts to sail thousands of miles into the unknown sea until he found land . . . Supposing there had been no America, no ship then built, however resolute her master and crew . . . could have made the ten-thousand-mile voyage from Spain to Japan.

SOURCE 2 From C. E. Bourne, *Spain in America*, *1450–1580,* Barnes & Noble, New York, 1962, pp. 74–75.

That the Portuguese should have lighted on (accidentally found) Brazil in their second expedition sent out to the East Indies . . . shows with almost complete certainty that if Christopher Columbus had never lived, the New World would have been discovered within a few years of the time of its actual discovery, as an inevitable sequel to the activities of Prince Henry the Navigator in promotin . . . exploration.

Identifying continuity and change

SOURCE 3 The Fra Mauro map was made in Venice between 1457 and 1459 by a Catholic monk, after whom it is named, and Andrea Bianco, a cartographer, at the request of King Alfonso V of Portugal. It was drawn on parchment and set in a timber frame. This circular map is two metres in diameter. The original was lost but this copy was completed by the cartographer. Unlike modern maps, the world is shown 'upside down', with North at the bottom.



SOURCE 4 The Da Ming Hun Yi Tu map was painted in China on 17 square metres of silk for a Ming emperor, possibly around 1389. It is the oldest surviving Chinese world map. Completed about 60 years earlier than the Fra Mauro map, it shows China at the centre of the known world with a squashed Europe and Africa at the left.



3. Look closely at the details in Source 3 and compare the areas shown with the same areas in a modern atlas.
   a. Identify the parts of the map that are most accurate and the parts that are least accurate.
   b. Explain the reasons for some parts being known to the map-maker while other parts were relatively unknown.
4. Look closely at the details in Source 4 and compare the areas shown with the same areas in a modern atlas.

a. Identify the parts of the map that are most accurate and the parts that are least accurate.
b. Explain the reasons for some parts being known to the map-maker while other parts were relatively unknown.

5. Explain how the voyages of discovery from the late fifteenth century changed what was known of world geography at the times of the creation of both of these maps.

Responding to the big questions

At the beginning of this topic several big questions were posed. Use the knowledge you have gained through your study of the subtopics to answer them:

1. What were the main causes of the big changes in the world during this period?
2. How did the way of life in societies change between ancient and modern times?
3. Why did contacts and conflicts occur between different peoples and what were the consequences?
4. What significant changes occurred in beliefs and values?
5. How did ideas about the world and the place of people in it change during this period?

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Try out these interactivities: A world in change timeline (int-2943), A world of expanding contacts timeline (int-2948)

Complete these digital docs: Worksheet 17.12 Age of Discovery word search, Worksheet 17.13: Summing up the Age of Discovery

TOPIC 18
Investigating medieval Europe

18.1 Overview

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

18.1.1 Links with our times

In this topic we will explore Europe from the sixth century CE to 1500. This period is referred to as the Middle Ages and can be broken down into three periods: the Early Middle Ages (c. 500–1100), the High Middle Ages (c. 1100–1300) and the Late Middle Ages (c. 1300–1500). People often associate kings, knights and castles with the Middle Ages; however, this period had many other defining features. This topic will explore the feudal system, which was the most widely adopted social order of the period, the increasing power and influence of the Catholic Church, and the peasantry, or poor farmers, who made up most of the population.

It is hard to imagine that our modern, technology-centred society could uphold any traditions from the Middle Ages (or medieval times, as they are also known). Australia, for example, was colonised 300 years after the end of the Middle Ages. Yet we have a monarch whose position dates back to the Middle Ages.

Many Australians follow the Christian or Islamic faiths. Both these major world religions expanded during the Middle Ages, and major conflicts involving these religions first emerged during this period. Modern nations such as France, Russia and England also emerged during the Middle Ages, and even the English language is a product of the Middle Ages; it did not exist before then.

Although we no longer have need of castles or knights on horseback, many traditions, events and entire nations today have their roots in the Middle Ages.

SOURCE 1 Illustration of pilgrims embarking on their journey in the Chaucer classic *The Canterbury Tales*.



SOURCE 2 A timeline of major events in medieval Europe





CE

700

750

800

800
The feudal system begins in the Frankish Empire under Charlemagne.

850

900

Late ninth century
First version of *Anglo-Saxon Chronicle* is written.

950

965
Denmark adopts Christianity.

966
Poland adopts Christianity.

988
Kiev Rus adopts Christianity.

1000

1000
Hungary adopts Christianity.

1050

1095
Pope Urban II launches the First Crusade.

1100

1099
Crusaders conquer Jerusalem.

1147
Second Crusade begins.

1150

1187
Turks reconquer Jerusalem.

1200

1189
Third Crusade begins.

1202
Fourth Crusade begins.



1250

1300

1350

1347
The Black Death begins in Europe.

1381
The Peasants' Revolt in England.

1400

1391
Geoffrey Chaucer writes *The Canterbury Tales*.

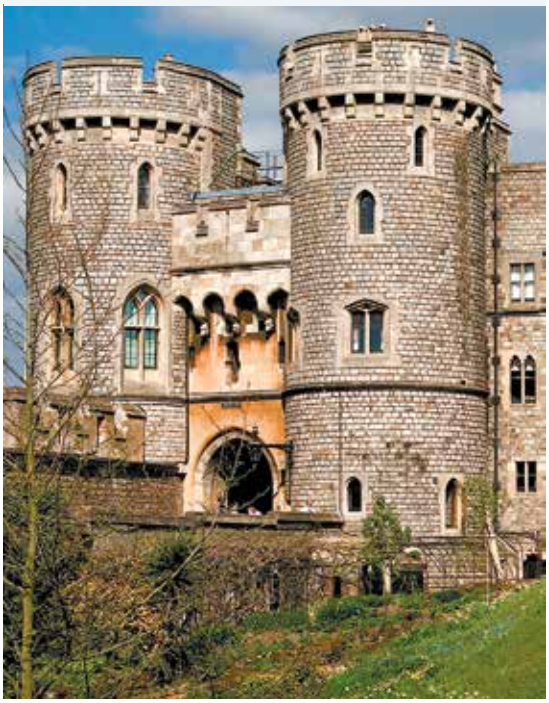
1450

1453
Constantinople falls to the Turks.

1500

CE

SOURCE 3 Windsor Castle dates back to the eleventh century. It is one of the homes of Australia's monarch, Queen Elizabeth II, whose position dates back to medieval times.



Big questions

As you work through this topic, look for information that will help you to answer these questions.

1. How was society organised during the Middle Ages?
2. How did society in the Middle Ages differ from our own?
3. What sorts of powers did rulers have during the Middle Ages?
4. What types of technology existed during the Middle Ages?
5. What was everyday life like during the Middle Ages?

Starter questions

1. What does the term 'Middle Ages' mean?
2. What sort of building is a castle? Describe what it looks like.
3. Think of a film you have seen that was set in the Middle Ages. What was the film about, and what impression did it give you of the Middle Ages?
4. When did the Late Middle Ages come to an end? How many years ago was this?
5. What are some of the conveniences we have today that people in the Middle Ages did not have?

INQUIRY SEQUENCE

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Watch this eLesson: Medieval Europe (c.590–1500) (eles-1824)

18.2 How do we know about medieval Europe?

18.2.1 Artwork and written sources

Artwork

How do we know about life in medieval Europe? There are many different types of evidence that provide historians with information. These include artwork, written sources and artefacts, monuments and buildings.

Illuminations like the one in Source 1 at right help us imagine what life was like. In the foreground, peasants can be seen engaged in various activities on a farm. Many illuminations show scenes of village life, with peasants tending their crops and livestock. For the illustrator, such a scene would have been commonplace, because 90 per cent or more of the medieval population were peasants.

SOURCE 1 Peasants working in the fields. From a French calendar illumination by the Limbourg Brothers, c. 1415.



Written sources

Many stories and poems have survived over the centuries and give us more information. One of the most famous examples is a collection of stories and poems by Geoffrey Chaucer. It is called *The Canterbury Tales*, and was written about 1391. This book examines medieval English society — even the titles of the tales show the types of jobs the people of medieval England had. For example, some stories are 'The Miller's Tale', 'The Knight's Tale', 'The **Reeve**'s Tale', 'The Monk's Tale', 'The **Franklin**'s Tale' and 'The Squire's Tale'.

Official records also help to give us information about the Middle Ages. For example, William the Conqueror carried out a stock-take of all property in England in the late eleventh century. This record is called the *Domesday Book*.

18.2.2 Artefacts, monuments and buildings

How do we know about life in medieval Europe? There are many different types of evidence that provide historians with information. These include artwork, written sources and artefacts, monuments and buildings.

Artefacts, monuments and buildings that have survived from the Middle Ages can be valuable sources of information. Artefacts include all types of items, such as coins, armour, weapons, utensils, tools and goblets. Artefacts made of durable metal like silver, gold and bronze are more common than garments and timber and iron materials, which tend to rust or rot away. To understand what such materials may have looked like, historians rely on written and pictorial records.

All sorts of buildings have survived from the Middle Ages: some cottages, churches, monasteries, **tithe barns**, castles and manor houses still exist. The cottage in Source 2 below is made of **thatch** and stone. Although it would have been frequently renovated (for example, thatch needs to be replaced every 20 to 30 years), it is a good example of a peasant's cottage from the fourteenth century. Compare this to Source 3, Dover Castle, which was clearly intended for a class of people far wealthier and more powerful than peasants. The history of its site goes back to pre-Roman times. However, its present appearance began to take shape under King Henry II in the late twelfth century. Castles like Dover help historians understand how such buildings were used both as military fortresses and homes for rich owners and their supporters. Comparing cottages and castles also gives us an idea about the class differences between the peasants and their rich and powerful rulers. Even buildings that are now ruins may give us clues about what life in the Middle Ages.

SOURCE 2 These reconstructed cottages date back to the fourteenth century.



SOURCE 3 Dover castle in Kent, England. It was built in the eleventh and twelfth centuries.



18.2 Activities

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

Check your understanding

1. How many years ago was *The Canterbury Tales* written? How do you think the English language has changed since then?
2. Use the **Source 2** timeline in subtopic 18.1 to list two other events that occurred in the same century as the one in which *The Canterbury Tales* was written.
3. What is another term, also starting with the letter 'M', that means 'of the Middle Ages'?
4. Under which English king did Dover Castle begin to take its present form?

Apply your understanding

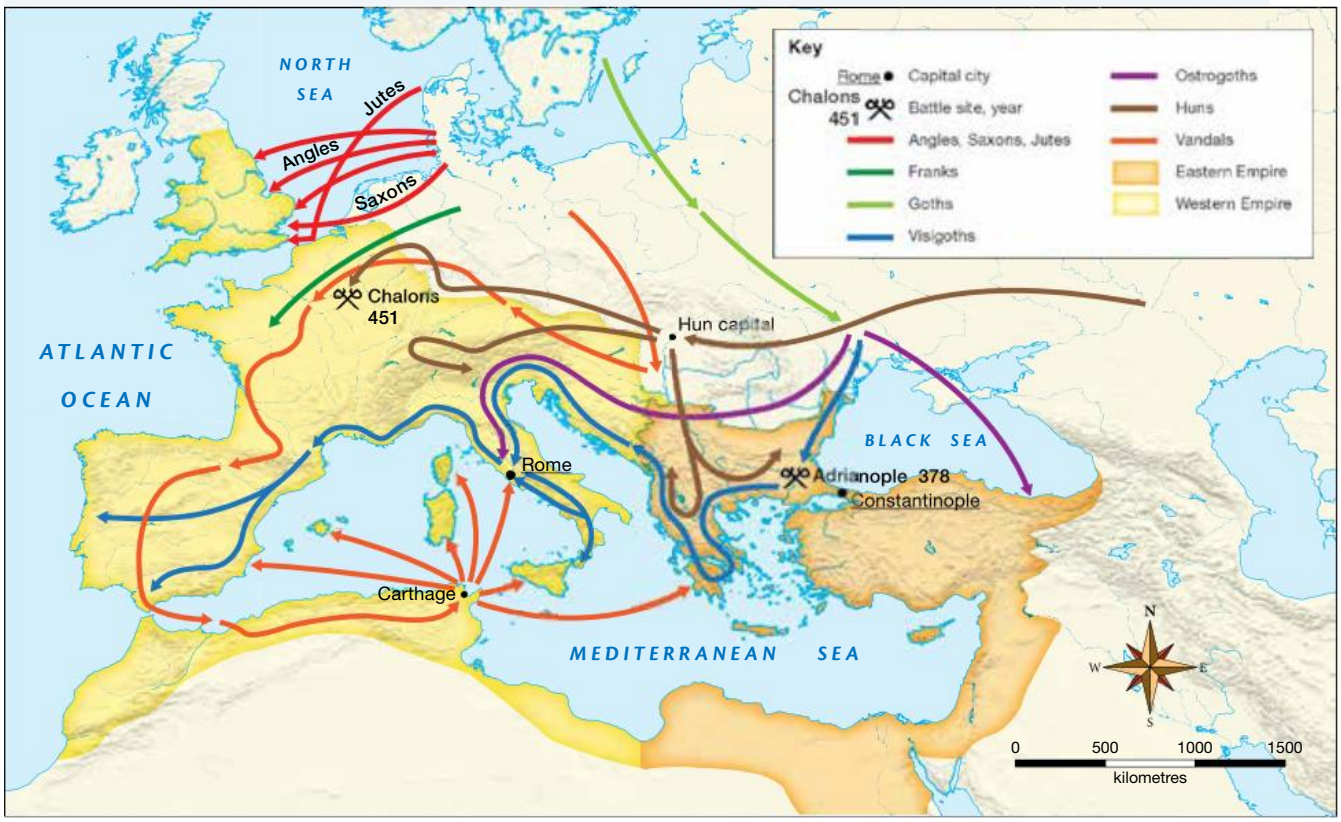
5. Examine **Source 1**.
   (a) Describe the work being performed by each of the peasants in this scene.
   (b) In what ways might the lives of these peasants have been different from the lives of the occupants of the castle in the background?
6. How do **Sources 1, 2** and **3** help us learn about what life in medieval Europe was like?
7. Many villages, like the one shown in **Source 3**, still exist in England today. What aspects would be different about them now?
8. **Sources 2** and **3** are both dwellings. Both come from the same country and from the same period. Why, then, are they so different from one another?

18.3 The impact of the 'barbarian' invasions

18.3.1 The Dark Ages

The term 'Dark Ages' is sometimes used to describe the Early Middle Ages; that is, the period in Europe from the fall of the Roman Empire in 476 CE to about 1000 CE. It was a time when some believed the

SOURCE 1 Map of the 'barbarian' invasions of the Roman Empire showing the major incursions from 100 to 500 CE.



'light' of Rome was extinguished and Europe was plunged into 'darkness' and chaos, until it began to advance its knowledge and learning in a time known as the Renaissance. Many historians and archaeologists now avoid use of the term 'Dark Ages' as they believe it downplays the significance of the period and undervalues the achievements of the societies of the time.

DID YOU KNOW?

The term 'Dark Ages' was originally used by the Italian scholar Petrarch in the 1330s. He was describing what he considered to be the poor quality of literature coming from Europe in the period following the fall of Rome.

The 'barbarians'

Romans called all those from beyond the borders of the empire 'barbarians', from a Greek word meaning foreigners. Barbarians were thought to be uncivilised because of their different culture and customs. For a number of reasons, these barbarians were still able to defeat and overthrow the Roman Empire.

18.3.2 The fall of Rome

Historians have various hypotheses to explain the fall of Rome:

- The empire was simply too big to survive.
- The Roman population was declining.
- The Roman legions increasingly enlisted 'barbarians', whose loyalty could no longer be taken for granted.
- The adoption of Christianity as the official religion of the empire blunted their desire to conquer.
- Infighting and civil war weakened the empire.

The collapse may have been due to a combination of these or other factors. Whatever the cause, the last Roman emperor, Romulus Augustulus, was **deposed** in 476 CE.

Not all of the Roman Empire was lost, though. In 395 CE the empire had split and the eastern part became known as the Byzantine Empire. Its capital was the city of Constantinople (modern-day Istanbul in Turkey). The Byzantine Empire lasted another thousand years until it was conquered by the Turks in 1453 CE.

Many kingdoms emerged to fill the vacuum left by the fall of the Western Roman Empire. At different times, Huns, Goths, Vandals and other groups that had challenged Rome established empires of their own. However, beset by internal divisions or invasions, most of these kingdoms did not last.

SOURCE 2 A map of Europe in 500 CE



myWorldHistoryAtlas

Deepen and check your understanding of the topic with the following resources and auto-marked questions:

› **Transformation of the Roman World**

Consequences

The Dark Ages were a time of great instability. The security provided by Roman control was gone. These were times of great violence. To educated people it seemed that ignorance and backwardness had triumphed over learning and order. Grand Roman buildings, roads and aqueducts were destroyed or abandoned. Migrations of peoples from various lands led to further conflict. Because few could speak or read Latin, the great Roman works of literature were no longer widely read, and many were lost.

Contributions

We now recognise, however, that important changes were taking place during this period, with new social systems and cultures emerging. Feudalism is an example of one such system. Many Roman customs and legal principles survived because the new rulers came to see the benefits such laws gave them and their people. Charlemagne was one ruler whose achievements were far greater than those of a mere warlord. As king of the **Franks**, he encouraged the arts and learning. Under his rule, monasteries became centres of learning. The English king Alfred the Great is another great ruler from this time. Some Early Middle Age societies, such as the Vikings, had political systems that had no place for kings or dictators; some historians see in these systems the beginnings of modern democratic principles.

Contrary to the views of Petrarch, great works of literature containing magnificent artwork were created in these years. The *Anglo-Saxon Chronicle*, which documents the early history of England, was written in the time of King Alfred. The beautifully illuminated *Book of Kells*, featuring the four Christian gospels written in Latin, was created during the eighth century; it is on public display in Dublin today.

SOURCE 3 Alfred the Great, as depicted in a twentieth-century stained glass window at St Bartholomew's Church.



SOURCE 4 An image from the *Book of Kells* showing Mary with the baby Jesus.



18.3 Activities

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

Check your understanding

1. What is meant by the term 'Dark Ages'?
2. Who or what was a 'barbarian'?
3. Outline three reasons why some consider the period from 500 CE to 1000 CE to be a 'dark age', and give three reasons why some believe this to be an inaccurate description.

Apply your understanding

4. The map in **Source 2** shows the kingdoms and empires that rose after the fall of the Roman Empire. Which of these kingdoms or empires appears to be the largest?
5. **Source 3** shows Alfred the Great holding two objects. What are these objects, and what might this depiction tell us about his accomplishments?
6. Examine **Source 4**. Artworks such as this, drawn by hand, would have taken a very long time to create. These books were created by monks who devoted their lives to this work. What conclusions can we draw about these monks? What does it tell us about the importance of religion to these people?

learnON RESOURCES — ONLINE ONLY

Complete this digital doc: Worksheet 18.1: The Dark Ages

18.4 Early medieval Christianity

18.4.1 The power of the Pope

Christianity stemmed from the Jewish religion in the first century CE. After becoming the official religion of the Roman Empire it spread throughout Europe. Following the fall of Rome, it became entrenched as the principal religion across Europe. For many reasons, cultures turned away from their traditional belief systems and adopted Christianity.

The Pope is the head of the Catholic Church. After the fall of the Western Roman Empire, the power and authority of the Pope increased; he became a unifying figure. Based in Rome, the Pope made a powerful ally in political disputes. Papal support gave a leader both political prestige and moral authority.

The Pope became far more powerful than any other Christian bishop for several reasons. He was able to claim authority based on St Peter's decision to lead the Christian Church from Rome. St Peter and St Paul, two early Christian leaders, were **martyred** in Rome, and this gave the city particular religious significance. Strategic political alliances with rulers such as Charlemagne also saw papal power and importance rise.

DID YOU KNOW?

Pope Leo I personally met the barbarian invader Attila the Hun in 452 CE outside the walls of Rome. Attila, known as the 'Scourge of God', had ravaged Europe, invaded Italy and was set on sacking the city. No-one knows what was said during the meeting, but Attila withdrew his forces and Rome was saved.

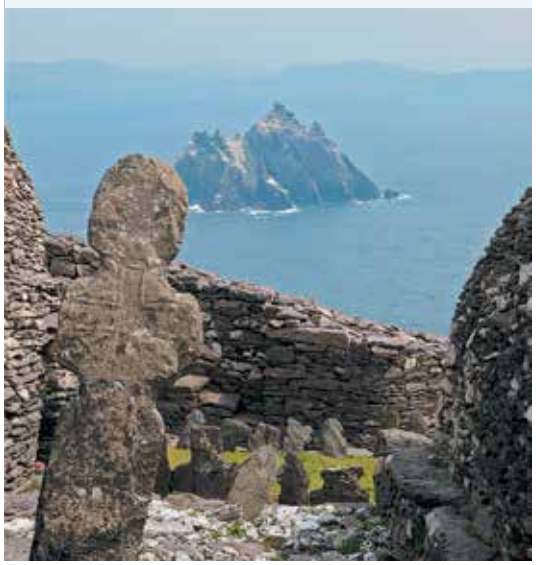
18.4.2 Monks and monasteries

An important feature of early Christianity was the role of monks and monasteries. A monk was a man who chose to withdraw from society in order to live according to strict Christian principles. Communities of

monks were formed, with rules governing every aspect of their lives in order to ensure their obedience to God. These communities of monks lived in monasteries. Many monasteries were built in isolated places, both for their protection and to free them from worldly distractions and influences.

Some monasteries, however, played important roles in the community. Many had schools attached to them. Some had markets where fairs were held. Justice and law was dispensed by the abbot in the towns that developed around the monasteries. People gave money to the monasteries in the belief that this would please God. Sometimes people were forced to pay taxes to the monastery for the use of their land or to sell produce in the markets. This made some monasteries very rich and powerful.

SOURCE 1 A stone cross on Skellig Michael in Ireland. The monastery, on a small island off the west coast of Ireland, was built in the seventh century.



SOURCE 2 A ninth-century monastery in Tatev, Armenia



18.4.3 Education, health and superstition

Education and health

The Church was one of the few sources of education during this period. Most schools were run by the Church; they represented the only educational opportunities for most people (see Source 3 opposite). Similarly, most hospitals were attached to monasteries. The Church was often the only place the poor could turn to for help or welfare.

Superstition

Despite its position of authority, there was still much ignorance in the Church and in society's perception of the Church. Medical knowledge was scant and often based on **superstition** rather than science. For example, the monks believed that a person could be saved from disease only through the intervention of God. Often they would pray to the saints or use **holy relics** to treat people rather than apply practical medicine.

SOURCE 3 A thirteenth-century illustration showing a boy being brought by his parents to a monastic school.



SOURCE 4 In this medieval illustration a sick man is cured through the power of prayer.



18.4 Activities

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

Check your understanding

1. Who or what were the following?
   (a) The Pope
   (b) Monks
   (c) Monasteries
2. Outline two important contributions of the Church to the lives of people in early medieval times.

Apply your understanding

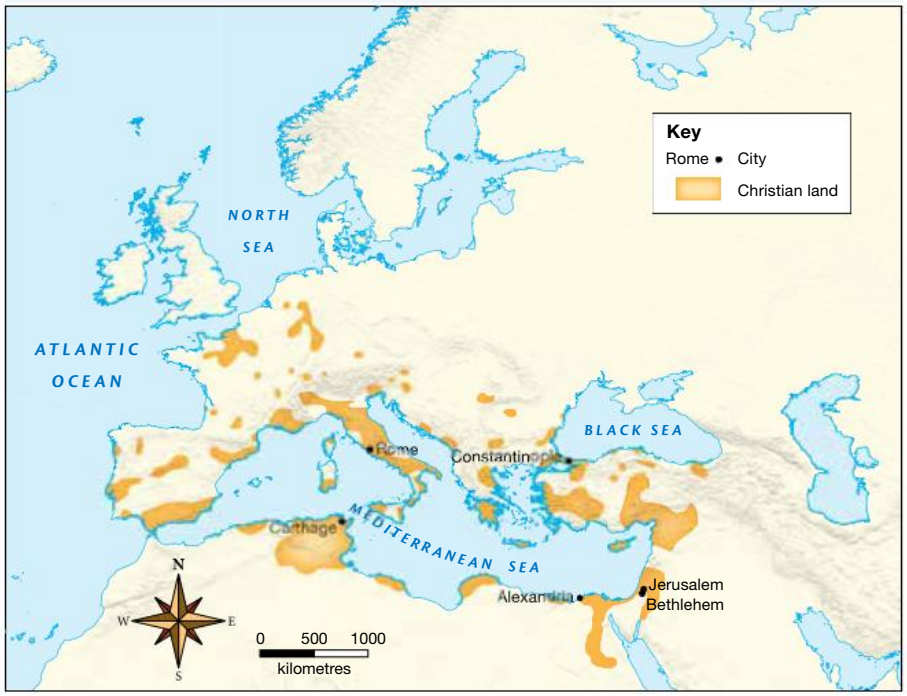
3. Look at **Source 2**. Apart from being a place to live, does this monastery look as though it had other purposes? Explain.
4. Examine **Sources 3** and **4**. What conclusions can you draw about the Church and its importance to people of the time?
5. Using software such as Google Earth, locate Skellig Michael in Ireland (see **Source 1**). Why might monks have chosen to construct a monastery in this location?
6. Using the internet and the library, investigate the importance of Christian relics. Can you find examples of religious relics that still exist today?

18.5 Spreading Christianity in the Early Middle Ages

18.5.1 Conversion of an empire

For many reasons, the Early Middle Ages proved to be fertile ground for two of the world's great religions – Christianity and Islam. How did these two religions grow so quickly? In this subtopic, we will explore the role **missionaries** played in the spread of Christianity.

SOURCE 1 Map showing the spread of Christianity in the Roman Empire by 400 CE



SOURCE 2 A map showing the spread of Christianity by 1000 CE as well as important medieval sites



The Roman Empire was the dominant power in Europe during the time of Jesus and in the first centuries of Christianity. Rome, the centre of the empire, also became the centre of the Church. When the apostle Peter (whom some historians consider to have been the first Pope) was executed in Rome, his tomb became an important site for Christian worship.

However, Christians also suffered **persecution** in Rome. Emperor Nero, for example, blamed the Great Fire of Rome in 64 CE on Christians, unleashing a brutal campaign of persecution. It was not until Emperor Constantine took control of Rome in 306 CE that the persecution of Christians ended. Constantine encouraged religious tolerance and himself converted to Christianity.

DID YOU KNOW?

Emperor Constantine's mother was Christian. It is said that on the eve of the Battle of the Milvian Bridge, she encouraged her son to pray to the god of the Christians and to paint the Christian symbol of the cross on the shield of every soldier. Constantine did as his mother asked. When the army of Constantine was victorious he began to worship the Christian god. He started the process of converting the empire to Christianity.

18.5.2 The work of missionaries

The spread of Christianity during the Early Middle Ages was in large part due to the work of missionaries. These were committed Christians, usually men, who took the message of Christianity to the **pagan** foreign tribes. They were usually most successful when they were able to convert the king, who would then ensure his followers converted. A notable example of this occurred when Clovis, king of the Franks, converted in 496 CE and began the task of converting the Frankish kingdom to Christianity.

SOURCE 3 Saint Patrick driving the snakes from Ireland



Many missionaries were declared to be **saints** by the Church in recognition of their efforts. Famous missionaries include:

- St Patrick, the patron saint of Ireland, who lived in the fifth century
- St David, who introduced Christianity to Wales in 550 CE
- St Columba, who began the conversion of the Picts in Scotland in 563 CE
- St Augustine, who converted King Ethelbert of Kent in 600 CE, leading to Christianity becoming the primary religion of England
- St Ansgar, who introduced Christianity to Sweden in 829 CE. Some historians argue that Christianity played an important role in ending the Viking raids.

DID YOU KNOW?

Many stories were told about the saints and their ability to perform **miracles**. For instance, it was said that there are no snakes in Ireland because St Patrick stood on a hill and used his staff to drive all the snakes into the sea. Although we now know this story to be untrue, at the time it was used to impress superstitious and uneducated people.

18.5 Activities

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

Check your understanding

1. Explain what is meant by the term 'missionary'.
2. Name three Christian missionaries, and state which people they converted to Christianity.
3. Why do you think it was important for a missionary to convert the king or ruler of a people?

Apply your understanding

4. Using **Sources 1** and **2**, briefly describe the spread of Christianity from its beginnings to 1000 CE.
5. You have read the story of St Patrick and the snakes of Ireland. Use the internet and your library to find another story of a saint performing a miracle. Explain how this story would persuade people to convert to Christianity.

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Deepen and check your understanding of the topic with the following resources and auto-marked questions:

- **Holy Roman Empire**
- **Medieval Christendom**

18.6 The feudal system

18.6.1 Feudalism

In 800 CE Charlemagne, king of the Franks, gave land to churchmen and wealthy families in return for their support in running the empire. This method of ordering society is called feudalism. Although Charlemagne's feudal system was based on practices that had existed for centuries, it is in this period that strong evidence first identifies a clear feudal system in Europe. It took hundreds of years for feudalism to spread. Some European countries never adopted the system, and some Asian societies, such as Japan, developed their own particular feudal system.

SOURCE 1 A statue of Charlemagne that stands in Paris. Charlemagne bears the traditional symbols of a medieval European king: **orb**, sceptre and crown.



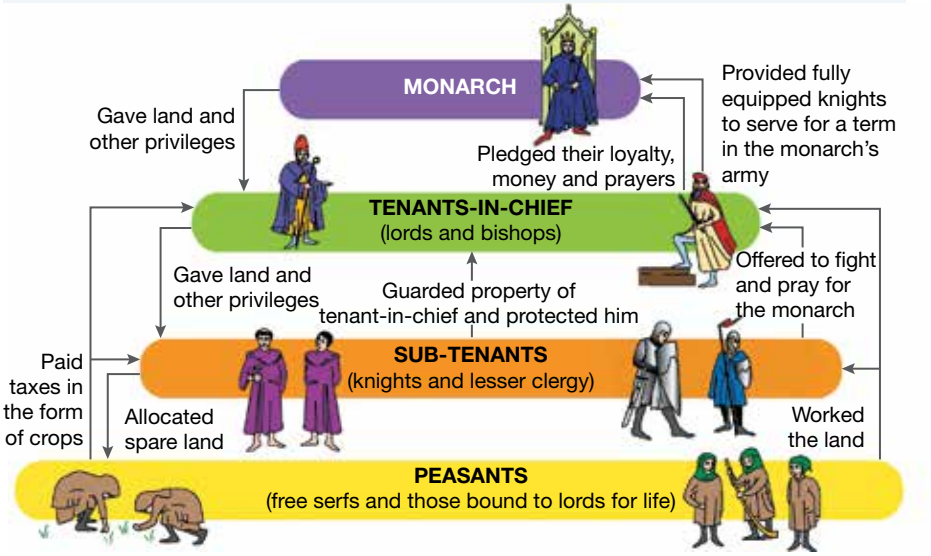
18.6.2 The feudal kingdom

There were few cities or towns in early medieval Europe. Most communities were based around small villages. Most people who lived in the villages were peasants – poor farmers who worked the surrounding land. Most of the wealth therefore came from the produce generated by the peasants, who were by far the biggest social class and made up about 90 per cent of the population.

Under **feudalism**, the monarch was the owner of all land in a kingdom. The next most powerful class consisted of feudal **lords**, who were the big landowning nobles. In return for the right to land and control over peasants who worked it, these nobles (or tenants-in-chief) were required to give the king

their loyalty, fight for him in wars and provide him with a proportion of taxes collected from the peasants. Below the nobles were the knights (or sub-tenants). In return for land, they gave loyalty to their lord, fought for him and provided him with taxes from their peasants.

SOURCE 2 How society in Europe was organised under the feudal system.



The monarch also gave land to the **clergy**. In western European countries such as England, the clergy swore loyalty to the Pope in Rome over their king. However, they also supported the feudal system by accepting the monarch and the lord as God's earthly representatives. Well-educated clerical advisers were often assigned to the king's service and helped keep social order.

SOURCE 3 Medieval farmers had nothing like the huge mechanical harvesters farmers use today to harvest wheat. They used curved blades called sickles and long-handled scythes. It was back-breaking work, as it took a long time to harvest a field of grain by hand.



SOURCE 4 An oath taken in 1127 by knights and clergy to serve William, Count of Flanders, at Bruges, Belgium. The bond between them was sealed when William touched each man with a **sceptre** at the end of the ceremony.

I promise by my faith that from this time forward I will be faithful to Count William and will maintain towards him my **homage** entirely against every man, in good faith and without deception.

18.6.3 Maintaining the social order

Feudalism was an effective way to tax the peasants and maintain social order. Sometimes, however, the monarch came into conflict with the clergy when his interests ran against those of the Pope. Lords might also band together and overthrow the monarch they had pledged to support.

Rebellion by the peasants could threaten both king and nobles, but it happened rarely. One of the most serious occasions was the Peasants' Revolt in England in 1381, when the king, Richard II, was himself besieged by armed peasants. However, neither this nor any other peasant revolt during the Middle Ages succeeded in overthrowing the Crown.

Towards the end of the Middle Ages, towns and cities based on trade began to grow. The rich merchants who ran them could afford to defy or ignore the king and his lords. They could even afford to hire their own knights to protect their interests.

18.6 Activities

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

Check your understanding

1. When is it believed that Charlemagne introduced the principles of the feudal system to his empire?
2. Under feudalism, who was the ruler and owner of the land?
3. Under feudalism, who were the tenants-in-chief?
4. Apart from the king, to whom did the clergy swear loyalty?
5. Which serious revolt broke out in England in 1381?
6. List three essential elements of a feudal society. These may be physical constructions, social classifications or ways of thinking.
7. How many years ago was feudalism introduced if it began about 800 CE?

Apply your understanding

8. The oath-taking ceremony described in **Source 4** seems very formal. Why would people have sworn an oath to their lord? Do similar oath-taking ceremonies occur in modern times? List some examples.
9. Using the diagram in **Source 2**, explain in a paragraph how the monarch received support from his subjects and what these subjects were given in return.
10. Use the internet and your library to make a list of four primary sources showing medieval farmers doing the kind of work shown in **Source 3**. It may be any kind of farming or domestic activity. Describe the activity and quote the source.
11. Charlemagne's sceptre, orb and crown are shown in **Source 1**. A monarch does not wear or carry around these objects all the time. Use the internet and your library to find out about the crowns, orb and sceptre used specifically by Australia's head of state, Elizabeth II.
    (a) When does she use these objects?
    (b) In the case of the sceptre and orb, does she hold them? Explain.
    (c) What materials were used in the making of her crowns, sceptre and orb?

learnON RESOURCES — ONLINE ONLY

Explore more with this weblink: The feudal system

18.7 Life on the manor

18.7.1 The manor

Quality of life in the Middle Ages depended largely on what position a person had in the feudal system. For the nobility, who had the luxury of wealth and servants, life was certainly more comfortable than for the peasants. Knights and barons enjoyed privileges befitting their rank; they could own several manors and lived off the taxes extracted from their peasants. The clergy led simple lives, forsaking possessions in the service of God. As the educated elite, they enjoyed the pursuit of scholarly learning in their monasteries. Although the clergy often engaged in the same kind of farm work as the peasants, many monasteries operated like manors, owning villages.

SOURCE 1 Life on a manor in the Middle Ages

A Lords often owned and operated grain mills. They kept a portion of all grain ground as tax. The lord lived in a castle or a manor house. The woods, and any game they contained, were the lord's property.

B The house of the steward — the lord's business manager — was surrounded by stables, barns, a bakehouse and a kitchen.

C Animals grazed on an open stretch of land called a common.

D The house of the bailiff, who collected taxes and ensured the steward's directions were carried out

E The house of the reeve, who supervised farm work carried out by serfs to ensure it was done properly

F Women were the property of their menfolk, and were married by about 14. They cooked, spun and weaved, and tended to the animals and the children.

G The three-field rotation system was introduced by the Anglo-Saxons. Crops were grown in two fields, with the third left to lie fallow (not used) so the soil could recover its nutrients. Fields being used were divided into strips, with different serfs working each strip. Crops were rotated to prevent the same nutrients in the soil always being used.

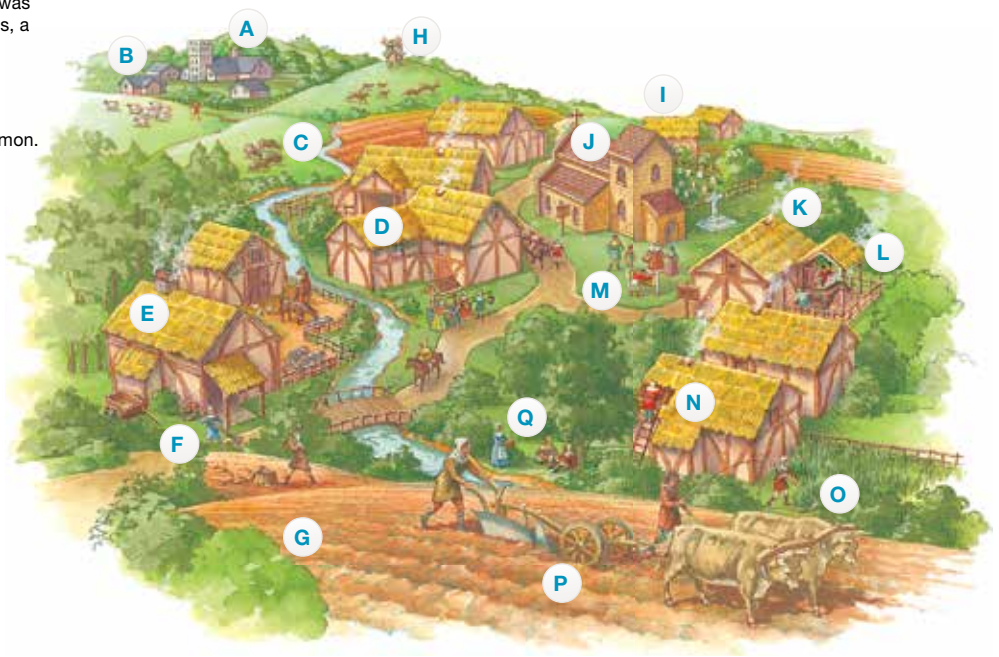
H The miller operated the mill, where grain such as wheat was ground into flour.

I Tithe barn, where peasants deposited one-tenth of all they produced for use by the church

J The church (and its grounds) was a central feature. People went to church regularly. It was also the place where they paid their tithes and often held their simple markets. The tithe was a tax given to the Church equal to one-tenth of what someone received, grew or raised.

K Serfs lived in simple wattle and daub huts with thatched roofs. A hole in the roof allowed smoke to escape from cooking fires. Windows had rough wooden shutters.

L As well as farming, some serfs also worked as blacksmiths and carpenters. They generally could not read or write, and had rough manners.



M A serf who had been punished by the reeve was placed in the pillory. This punishment instrument consisted of a wooden framework built on posts, with holes through which the victim's head and hands were placed and then locked.

N Thatchers wove thick bunches of straw, reeds and sticks together to form roofs of village houses.

O Scythes, sickles and rakes were used to harvest crops.

P A serf's most important tool was the heavy-wheeled plough.

Q Lunch for a serf might be coarse bread and vegetable soup, washed down with ale.

18.7.2 Men, women and children

Men

For the vast majority of peasant men, life was very hard. They endured a daily grind of farm work: clearing fields, harvesting, repairing buildings, sawing and chopping timber, and paying the tithe to the lord of the manor. Most men were uneducated and remained tied to the drudgery of peasant labour. Still, some boys managed to receive formal education in monasteries. This might provide them with the opportunity to become a parish priest or to work in the manor in a bookkeeping role such as a bailiff or a steward.

SOURCE 2 A modern artist's reconstruction of a typical house of a poor peasant family in medieval times.



Women

Medieval women, regardless of class, had few rights. Women from the nobility married as early as the age of twelve! Their marriage was arranged by the family. The aim was usually to gain political power or wealth for the girl's family. Her husband — and society in general — expected her to produce a male heir to continue the noble line of her husband. In an era of poor medical care, childbirth for women of any class was dangerous. It has been estimated that during the Middle Ages, one in five women died during childbirth. Although she looked after her husband's household and had some command over the servants, the noble woman could not own property, except as a widow.

SOURCE 3 Re-enactment of a medieval wedding in Bavaria, Germany



Peasant women had even fewer rights. Peasant families generally were reluctant to allow their girls to marry as young as the noble girls. This was because children were an important source of labour. Peasant women did much the same farm labour as the men. On top of that, they had household duties such as preparing food and weaving clothes, and looking after the children and small livestock.

Children

Childhood as a time of play or schooling was almost non-existent. Children were regarded as sources of labour on the farm. At first it was helping the women with household chores, but fairly soon they could be expected to be sent out to the fields. Peasant children were educated in how to harvest a field, fix a thatched roof or milk a cow.

It appears that in medieval Europe, the period of growth now called adolescence was ignored. Children were treated as adults from the age of ten, because by then they could participate in the farm work. Boys generally married a little older than girls — when they were about 14. 'Teenagers' were isolated; as they did not go to school, they had few opportunities to mix with other people their own age.

18.7 Activities

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

Check your understanding

1. To which social class did most people belong in medieval Europe?
2. Why were noble women's marriages arranged for them by their family?
3. What property rights did a noble woman have compared with her husband?
4. Why did peasant children in medieval times have little opportunity to play?
5. List some of the jobs a child was expected to do.

Apply your understanding

6. Make a list of the work you can see people doing in **Source 1**.
7. Of the jobs you have listed, which ones would women and children have been able to do?
8. Examine **Source 1** and explain the roles of the reeve, steward and bailiff. Do you think women would have been allowed to do these jobs in medieval times? Explain.

18.8 The miller and the watermill

18.8.1 Millers, flour and mills

We have seen that, apart from nobles and the clergy, most people in medieval Europe were poor peasants who tilled the soil on estates that were owned by lords, knights and the Church. However, not all of the common people worked on the land. Some were skilled artisans such as carpenters, stone masons and blacksmiths. In fact, many surnames come from skilled trades that have existed for centuries. For example, you may know someone whose last name is Mason, Carpenter, Smith or Miller. Millers were among the most important of the medieval skilled craftsmen.

Millers were men who ground grain into flour so that people could bake bread and cakes. Bread, in particular, has made up much of the food consumed by peasants throughout history. In the Early Middle Ages, men and horses turned the heavy stones that were used to grind grain into flour. But by the eighth century, a new technology had developed to make the miller's work easier and to create flour much more efficiently. This new invention was the watermill. By 1085 CE, a survey ordered by King William I (also known as William the Conqueror) showed there were 5682 watermills operating in England.

SOURCE 1 From the prologue to *The Canterbury Tales* by Geoffrey Chaucer (c. 1391). This passage is written in Middle English, which is what the English language looked like in the Late Middle Ages. The same passage, and a little more, is translated into modern English prose and appears in **Source 2**.

The Miller was a stout carl, for the nones;
Ful big he was of braun, and eek of bones;
That proved wel, for over-al ther he cam,
At wrestling he wolde have alwey the ram.

SOURCE 2 A modern translation as well as other descriptions of the miller from *The Canterbury Tales*.

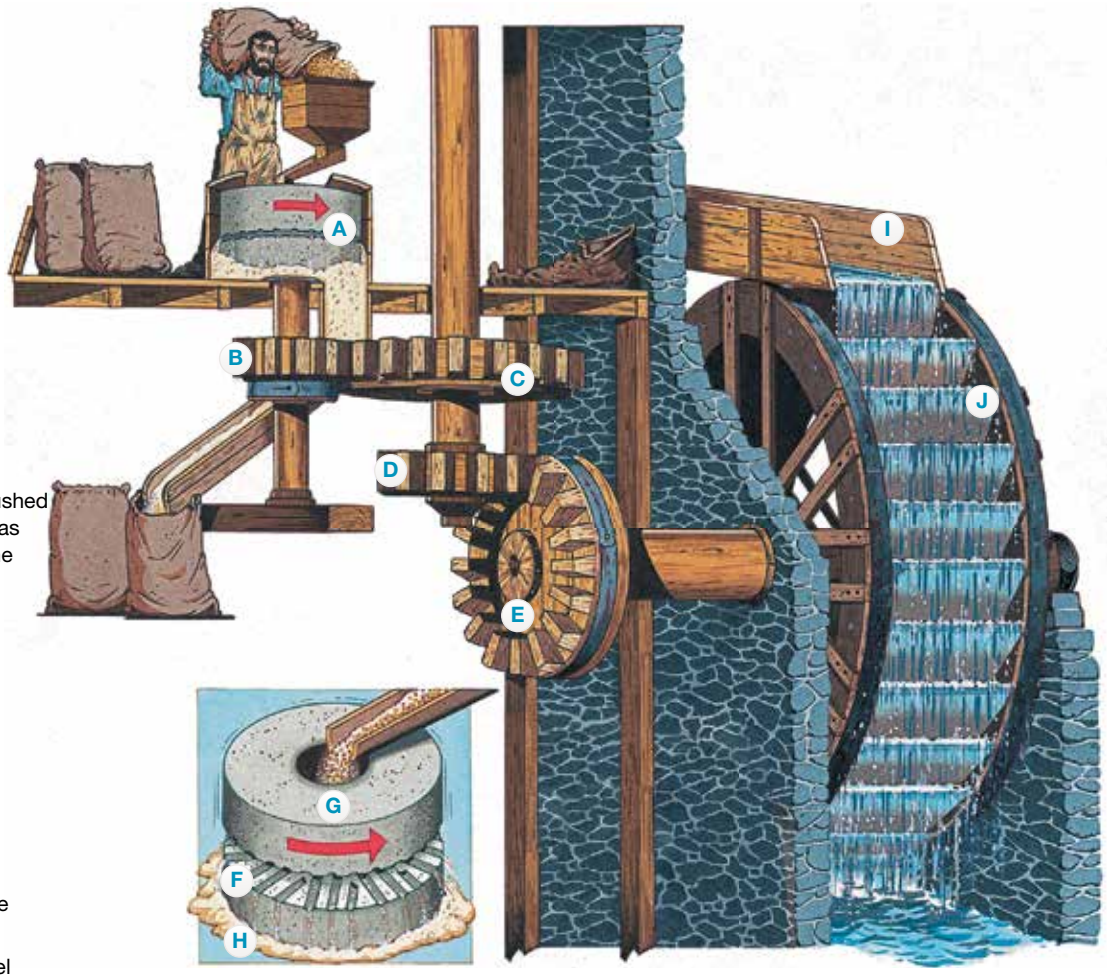
The miller was a burly fellow on this occasion. He had big muscles, and thick bones too. That proved handy because wherever he went he always won the prize ram at wrestling matches. He was short-shouldered and broad — a thickset brute. There was no door he couldn't heave off its hinges or break by running at it with his head. His beard was as red as any sow or fox, and broad, as though it were a spade. On the top of his nose he had a wart. A tuft of hairs, red as the bristle of a sow's ears, grew from it. His nostrils were black and wide. He bore a sword and **buckler** at his side. His mouth was as big as a great furnace.

18.8.2 Operating the watermill

A watermill had to be located beside a stream so that water from the stream could be diverted into a channel called a leat. The rim of the water wheel was designed to catch the water that was flowing through the leat so that the water wheel was always turning. The power generated by the water wheel was transferred through a series of toothed wheels. The last of these wheels turned the millstones that ground the grain (see Source 3 on the next page). The millstones could turn at speeds of up to 120 times a minute, much faster than they could ever have been turned by people or even the strongest horses. The watermill could be stopped by closing a sluicegate to block the flow of the water.

Peasants would bring th-eir harvested grain to the mill, which was usually owned by the lord of the manor. As can be seen in Source 3 on the next page, the miller would lift great bags of grain on his powerful shoulders and empty them into a wooden container, which fed the grain between the turning millstones. After it was ground into flour, it would pour down into bags. In at least a few places in England, the watermill continued to be used until the early twentieth century.

SOURCE 3 A cross-section of a watermill, showing how it works.



18.8 Activities

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

Check your understanding

1. What is the main purpose of a mill?
2. What did you have to do to get a watermill working and how did you stop it?
3. How do we know that the mill was a common machine throughout England in the time of William the Conqueror?

Apply your understanding

4. How would the invention of the watermill have helped increase grain production in the Middle Ages?
5. What evidence is there in **Sources 1, 2** and **3** that the miller tended to be a strong man?
6. What else do **Sources 1** and **2** tell us about the miller, apart from the fact he was a strong man?
7. Using the cross-section shown in **Source 3**, write a description of how the watermill worked by explaining the role of the chutes and wheels.

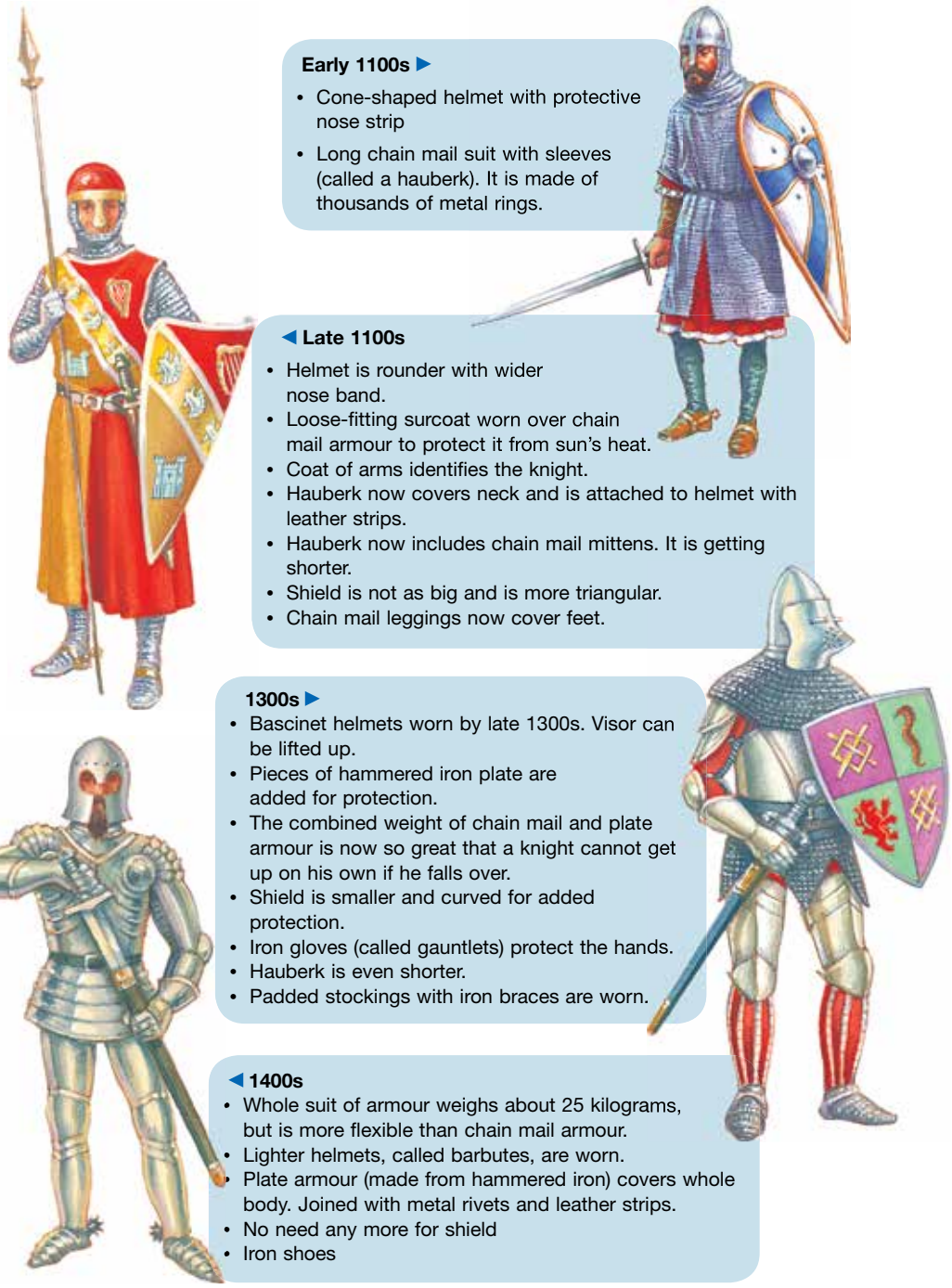
18.9 The knight

18.9.1 Knighthood

One of the most iconic images of the Middle Ages is that of the mounted warrior called the knight.

Why did the knight not appear until the Middle Ages? To move around on horseback in the middle of a battle, two important developments were needed: the **stirrup** and a heavier breed of horse capable of carrying a man in full armour. These developments emerged in the Early Middle Ages. The Battle of Hastings, fought in 1066 between Norman knights and English infantry, is one of the earliest recorded military engagements involving knights on horseback.

SOURCE 1 The development of the knight's armour



Early 1100s ▶
- Cone-shaped helmet with protective nose strip
- Long chain mail suit with sleeves (called a hauberk). It is made of thousands of metal rings.

◀ Late 1100s
- Helmet is rounder with wider nose band.
- Loose-fitting surcoat worn over chain mail armour to protect it from sun's heat.
- Coat of arms identifies the knight.
- Hauberk now covers neck and is attached to helmet with leather strips.
- Hauberk now includes chain mail mittens. It is getting shorter.
- Shield is not as big and is more triangular.
- Chain mail leggings now cover feet.

1300s ▶
- Bascinet helmets worn by late 1300s. Visor can be lifted up.
- Pieces of hammered iron plate are added for protection.
- The combined weight of chain mail and plate armour is now so great that a knight cannot get up on his own if he falls over.
- Shield is smaller and curved for added protection.
- Iron gloves (called gauntlets) protect the hands.
- Hauberk is even shorter.
- Padded stockings with iron braces are worn.

◀ 1400s
- Whole suit of armour weighs about 25 kilograms, but is more flexible than chain mail armour.
- Lighter helmets, called barbutes, are worn.
- Plate armour (made from hammered iron) covers whole body. Joined with metal rivets and leather strips.
- No need any more for shield
- Iron shoes

The knights at Hastings fought for their lord, William, **Duke** of **Normandy**. This feudal service to the lord or the king was an important aspect of knighthood. Generally, knights were wealthy themselves, as it was expensive to breed warhorses and own good armour. Some knights were poor, but these were monks who served the Church. The Church could afford to pay for their horses and armour.

18.9.2 Weapons and armour

As Source 2 shows, a heavily armed warrior on horseback was meant to terrorise and destroy foot soldiers. The decapitated head at the bottom right of the panel demonstrates the effectiveness of a charging knight.

The knight used an arsenal of heavy iron weapons. Swords, **maces** and battle axes were common. However, the **lance** appears to have been the favoured weapon; it helped to put distance between the knight and the infantry soldier he was fighting. As a last resort, the knight's wooden shield could be used as a weapon — swiping at someone with its rim could cause severe wounds.

SOURCE 2 A scene from the Bayeux Tapestry, dating from the late eleventh century. Norman knights on horseback are seen here attacking their English enemies at the Battle of Hastings in 1066.



The armour was both heavy and awkward. The coats of mail worn by the fighters in Source 2, for example, could weigh over fifteen kilograms. It was no easy task wearing such a cumbersome outfit on horseback while fighting furiously in battle.

Jousting tournaments

In films and other popular media, knights are often seen charging at each other in sporting events called **jousts**. This type of sporting event actually did happen. It was no doubt a useful method of training. Unlike Roman gladiators, knights in jousts did not fight to the death. The lances were padded, but swords and other weapons were not, so it was still a violent sport with many accidental fatalities.

SOURCE 3 The body armour of today. Modern riot squad police also often carry a perspex shield as protection from missiles such as rocks or home-made fire-bombs.



18.9.3 The fall of the knight

By the end of the Middle Ages, the knight's effectiveness as a warrior had diminished. By then, professional armies were forming. These were often made up of peasants who were properly trained to bring down a knight off his horse. Also, the development of firearms by the late Middle Ages proved too much for the knight's armour. And so the days of the knight were over.

18.9 Activities

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

Check your understanding

1. The knight could not have existed without two important developments. What were they?
2. Which individuals or institutions did the knight serve?
3. What was jousting?
4. Why did the knight's usefulness in battle decline at the end of the Middle Ages?

Apply your understanding

5. Using **Source 1**, write a paragraph describing how the knight's weapons and armour changed between the early 1100s and the 1400s. List at least four things that changed (this might include changes in function, appearance or shape).
6. Why do you think the shield disappeared as armour by the 1400s?
7. Why do you think weapons and armour changed over time? Think of things like protection and comfort.
8. Describe in a paragraph what is happening in **Source 2**. How would this source help the historian find out about the arms and armour of the medieval knight of the eleventh century?
9. Examine **Source 3**. In what ways are the riot squad police of today like the medieval knights? Modern armies, for the most part, do not use armour like the riot squad police. Can you guess why?
10. You are a medieval sports journalist. Write a three-paragraph report suitable for reading by a medieval audience. You should use the internet and your library to research the organisation and rules of jousting.

18.10 Medieval warfare

18.10.1 Medieval weapons

Many destructive wars were fought during the Middle Ages. However, nothing like today's firepower existed in medieval times. The destruction wreaked by two atomic bombs dropped on the Japanese cities of Hiroshima and Nagasaki show what modern technology is capable of. In medieval Europe, wars were fought literally through clash of arms — with swords and axes and maces. Arrows and rocks, rather than bullets, were the main missiles. Still, even in the Middle Ages, there were instances of large-scale massacres. The knights shown in Source 2 on the next page slaughtered thousands of Turks when they took the city of Antioch. Later in this topic, you will read about the Tartars using **trebuchets** like the one shown in Source 1 to fling disease-ravaged bodies over the walls of the city of Caffa. This allowed them to kill many people with sickness.

SOURCE 1 The trebuchet was a kind of giant slingshot designed for hurling rocks at enemy armies and fortresses. Sometimes other missiles were used, including dead animals and slain enemies, with the twin aims of demoralising the enemy and spreading disease among the besieged population.



SOURCE 2 A medieval illumination showing the siege of Antioch in 1098. The knights in this illumination resemble the soldiers from two centuries after the event depicted. In some ways, this would be like depicting a soldier from colonial Australia as a modern Australian infantry soldier. Medieval artists were not historians, and they often painted historical scenes as if the event was happening in their own time.



The invention of gunpowder, originally from China, changed the way battles were fought. In Europe, guns and cannons were developed from the early fourteenth century. Medieval guns were at first ineffectual, being very slow to load, inaccurate and liable to blow up. Archers with longbows and crossbows were more effective. But by the end of the fifteenth century, gun technology had improved.

18.10.2 Blood on the battlefield

Medieval battles would have been terrifying experiences. Anyone observing a battle from a short distance would have heard yelling, screaming and the clash of steel on shields. This would have been noisy in the thick of battle, but from a distance it would not have been very loud. This is because modern **artillery** did not exist to create ear-splitting noise.

Fighting hand-to hand, medieval armies tended to battle in tightly-grouped formations. One side would push against the other. Infantry stabbed and slashed each other with swords, axes, **pikes**, maces and even farming tools. It was the job of mounted knights to charge such formations and try to break them up, as depicted in Source 2 in subtopic 18.9.

The bloodshed was horrific. Limbs and heads were chopped off, and brains and guts were strewn across the battlefield. The tight formations meant that soldiers were likely to stumble over the dead and the dying. By the end of the battle, which did not usually last more than an hour, the battlefield was covered with gore and blood. The ground would be littered with the bodies of both men and horses.

SOURCE 3 From a chronicle describing the Battle of Bannockburn in 1314, when the Scottish rebel leader Robert the Bruce defeated the English, who sought to control Scotland. Robert became King Robert I of Scotland.

The two hosts [English and Scottish armies] came together, and the great steeds of the [English] knights dashed into the Scottish pikes as into a thick wood; there arose a great and horrible crash from rending [splitting] lances and dying horses, and they stood locked together …

SOURCE 4 From *The History of the Art of War in the Middle Ages* by C. Oman, published in 1924. The battle described here is between Swiss and German infantry.

The two bristling lines of pikes crossed, and the leading files were thrust upon each other's weapons by the irresistible pressure from behind. Often the whole front rank of each **phalanx** went down in the first onset, but their comrades stepped forward over their bodies to continue the fight.

For those who died, there were no war cemeteries and no pensions for their wives and children. Nor were there any entitlements for disabled veterans. A beggar's bowl was often the only means of survival for the medieval common soldier who was crippled fighting for his lord or king.

18.10 Activities

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

Check your understanding

1. Why were guns not as popular as longbows and crossbows during the Middle Ages?
2. List three weapons used by fighters in a medieval battle.
3. Name one way a medieval battle differed from a modern-day battle.
4. What often happened to soldiers who were permanently injured during battle?

Apply your understanding

5. Study **Sources 2, 3** and **4**. What can you tell from each of these sources about:
   (a) the effectiveness of pikes in battles
   (b) the risks to horses in battle
   (c) the tight formations in which medieval battles were fought
   (d) the reasons for high casualties in the front ranks?
6. Using the internet or your library, research the trebuchet, as shown in **Source 1**. Described how it operated and whom or what it could be used against.
7. Design a poster, web page or PowerPoint presentation that explains the most important weapons used in the Middle Ages.

learnON RESOURCES — ONLINE ONLY

Complete this digital doc: Worksheet 18.2: Stand up and fight

18.11 Castles

18.11.1 Building a castle

During medieval times, castles were built to protect the monarch or lord's land. They had many features, such as high walls, that made it very difficult for enemies to invade. However, if conquered, castles could then be used by invaders to help control the land they had taken. Castle walls were so effective in the Middle Ages that they were even built around some towns and cities.

Building a castle

The first castles appeared in the eleventh century. They were usually made from timber and sat on a high mound called a **motte**, which was surrounded by a ditch. If the castle was near a river, the ditch could be filled with water to create a **moat**. The innermost tower was called the **keep**. **Palisades** and walls called baileys protected the keep. By the end of the eleventh century, timber was replaced with more durable material such as stone or brick.

SOURCE 1 The ruins of Corfe Castle, in Dorset, England. The square tower is a Norman keep. The destruction was the result of cannon fire during the English Civil War in the mid-seventeenth century.



The easiest place to build a castle was on flat ground. However, castles were often built on hills or cliffs. High positions enabled castle occupants to look out over and control the surrounding countryside. Such positions were also easier to defend because attackers had to advance uphill. There were also great advantages in building castles on islands in rivers or lakes. Castles were built along the Rhine River in Germany to force merchants transporting goods along the river to pay taxes. Such positions also ensured a supply of water to fill a castle's moat and for drinking during long sieges.

18.11.2 Attacking a castle

Attacking a castle was no easy task. As their design became more sophisticated, more features were added. For example, **concentric curtain walls** meant that attackers who broke through one wall were faced with another and were trapped in the space between them. Marienburg Castle in modern-day Poland had five curtain walls. Drawbridges could be lifted above the moat, blocking access to the main gate. All manner of missiles could be launched at attackers, including arrows and rocks. Even boiling oil could be tipped through 'murderholes' in the roof of the gatehouse surrounding the main entrance. In turn, attackers responded by using siege engines, including battering rams and hide-covered siege-towers on wheels. It was not unusual for a siege to last many months. Defenders kept an ample supply of food in the castle keep and sunk wells in the inner courtyard to ensure a protected water supply.

SOURCE 2 A castle under siege



A The gatehouse was heavily defended. If attackers got in, defenders could shower them with rocks, red-hot sand or boiling water through a hole in the ceiling (called a murderhole).

B A battering ram made of a huge, often reinforced timber beam would be driven against a castle gate or lower wall to try to break through.

C Battlements lined the top of castle walls.

D A castle was often surrounded by a ditch, sometimes filled with sharpened stakes (palisade) or water.

E Sometimes castle walls sloped outwards at the base. This added strength to the walls and reduced the effectiveness of battering rams.

F Missiles could be dropped on attackers through holes in the floor of the battlements known as machicolations

G The trebuchet, introduced to Europe from the Arab world, was a type of counterweighted catapult. It was used to hurl huge rocks weighing up to 90 kg against castle walls, and to toss rotting animal bodies over the walls.

H The ballista was a giant crossbow that fired flaming bolts over castle walls.

I A mangonel was a type of catapult used to hurl smaller objects (e.g. heads, smaller rocks or piles of dung) over castle walls.

18.11.3 A lord's home is his castle

The castle may have been a fortress, but it was also a home. A castle was usually owned by a lord or the Church. It had all the requirements of a fortress, such as troop quarters, stables and an armoury. However, if owned by a lord, it also had facilities for the comfort of his family.

By the end of the Middle Ages, castles were no longer as effective or desirable. The feudal system, which until then had encouraged the lord to show his strength by having a castle, was fading. Also, developments in the cannon meant that castle walls could no longer protect against invading armies.

18.11 Activities

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

Check your understanding

1. Give two reasons why castles were built.
2. What were early castles built of?
3. Why were castles often built on a steep hill?
4. Why did some castles have a series of concentric curtain walls surrounding the keep?
5. What was a 'murderhole' used for?

Apply your understanding

6. Study **Source 2**. Which features of the castle and its defenders would be most effective in holding back the attack? Which methods of attack appear to be most effective? Give reasons for your answers.
7. In **Source 2**, how likely do you think it is that the attackers will succeed in breaking into the castle? Why?
8. How does **Source 1** support the idea that castles eventually went out of fashion as military fortresses?

9. If you were a medieval lord, why might you need to build a castle?
10. List the features seen in **Source 1** that supports the accuracy of the castle illustrated by a modern artist in **Source 2**.
11. Use the internet or your library to research a medieval castle of your choice. Write a description of the castle, including some of its defensive features, who built it and why, and whether it ever had to fend off an attack. You may also list any non-military features of the castle — for example, as a palace, chapel or dungeon.

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Complete this digital doc: Worksheet 18.3: My home is my castle

Explore more with these weblinks: Parts of a castle, Attack and defend

18.12 The power of the medieval church

18.12.1 Medieval church

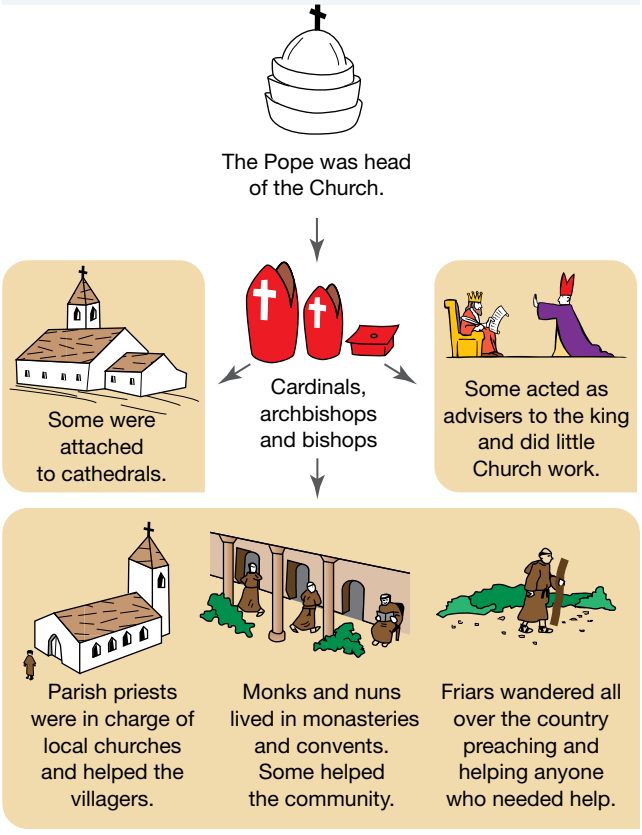
The Roman Catholic Church was the one common institution found throughout western Europe. Its rituals were similar across the continent. It even used a common language, Latin, although no-one other than the clergy spoke this old Roman language any longer. Everyone was expected to live according to Church law and attend **Mass**. The **sermons** of the priest, often delivered in the **vernacular** language rather than Latin, reminded parishioners of their Christian responsibilities.

The authority of the Church

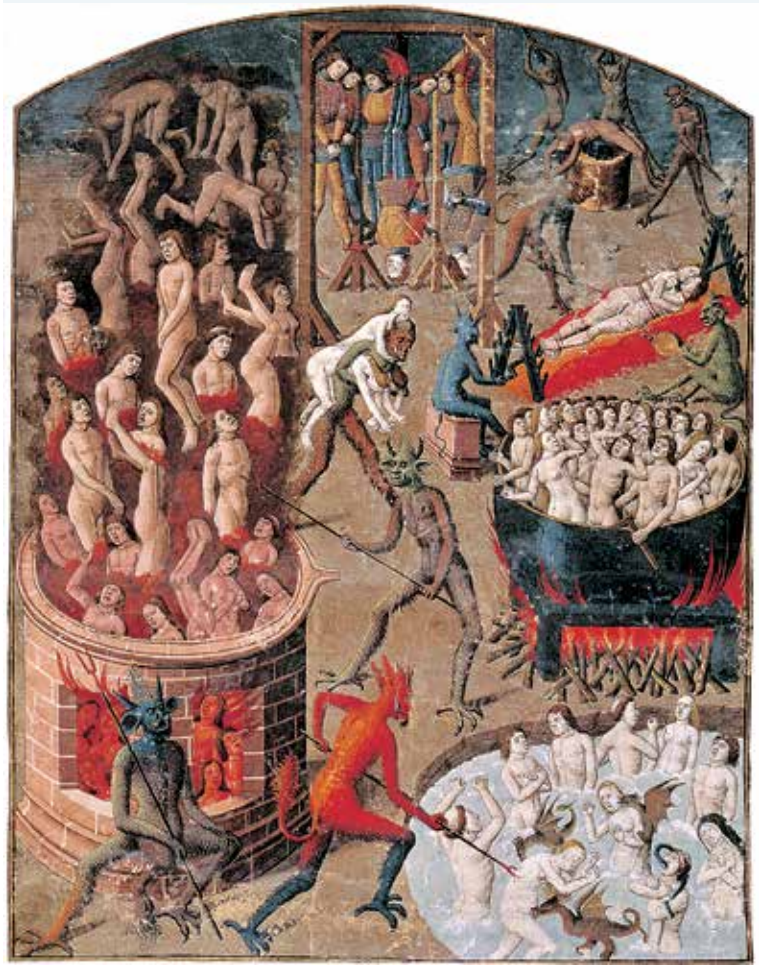
The head of the Roman Catholic Church was the Pope. As God's representative on Earth, he was very powerful. His **cardinals**, **archbishops** and **bishops** supported the Pope's **edicts**, advised lords and kings, and had key government positions. Below this upper class of clergy were the parish priests, nuns and monks, and friars. These lesser clergy took the Church's message to the people in the villages. They also collected the taxes on which the Church's wealth depended. At the village level, this tax was called a tithe. The tithe required that 10 per cent of a person's income, or of what they produced, such as grain, eggs and livestock, should be paid to the Church.

Anyone who was believed to be acting against the interests of the Church could be excommunicated. This meant they could no longer attend Mass and receive the Christian **sacraments**. Worse, they were told they would go straight to hell. The Church made sure that the fear of hell, with its fires and devils, was instilled in everyone.

SOURCE 1 A diagram showing the organisation of the Church and the duties of the clergy within it.



SOURCE 2 A medieval painting depicting what happens to people when they go to hell.



SOURCE 3 Canterbury Cathedral, in Kent, England. This is a typical example of Gothic architecture, which can be identified by the pointed arches and highly decorative style.



18.12.2 Churches

The parish church

Almost every village had a parish church. Often it was both the largest building and the only one built of stone or brick. The parish church was built using peasant labour. Although unpaid for their efforts, the parishioners would have felt a sense of achievement and communal ownership. The church walls, and sometimes the stained glass windows, depicted scenes from the Bible, especially the life of Jesus. This helped teach Bible stories to the mostly illiterate congregation. In an age before clocks, the bells in the church tower helped people keep track of the time of day.

The church was not only a place of worship. It was also a community centre, a fairground and a school for those studying for the priesthood.

The bishop's church — the cathedral

Many European cities today have at least one **cathedral**. Some of the greatest cathedrals were built in the Middle Ages.

The word 'cathedral' comes from the Greek word *kathedra*, meaning seat. This refers to the bishop's seat or throne in the back of the church. It is from here that the bishop ran his diocese (which, in turn, was divided into parishes).

The bishop's church was very important. This was reflected in its size and magnificence. The cathedral towered over the other buildings in the town. Many cathedrals took more than a hundred years to build and were completed long after their architects had died.

18.12 Activities

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

Check your understanding

1. Which religious institution dominated western Europe during the Middle Ages?
2. What language was used in the medieval Mass?
3. Who is head of the Roman Catholic Church?
4. Who did most of the work in building the parish church?
5. What is the origin of the word 'cathedral' and what does it mean?

Apply your understanding

6. Write a paragraph describing what is happening in **Source 2**. What effect did a picture like this have on the villagers?
7. Canterbury Cathedral (**Source 3**) dominates the city's skyline even today. How do you think the cathedral would have impressed the ordinary people of Canterbury in the fifteenth century?
8. Using the internet and your library, find out why an enormous amount of medieval music was church music. Explain what this shows about the influence of the medieval church.

18.13 Monasteries and convents

18.13.1 Closed communities

Parish priests, monks, nuns and friars played important roles in spreading the faith. They took the Christian message to the remotest villages. This was important, because until then Christianity was practised mostly in the towns, even though most people lived in the country.

Monks lived in small closed communities called monasteries. Only males could join. A monastery included a church, a chapter house (the monks' meeting place), dormitories or cells (where the monks slept), a hospice (where the sick and aged were cared for), a refectory (eating hall), a library, and the **abbot**'s quarters. The abbot had complete authority, and strict rules had to be observed. These rules covered daily activities such as religious services, social work, manual labour and copying manuscripts.

Nuns lived in similarly closed communities called **convents**. Girls and women could join a convent, where they too had to observe strict rules. The chief nun was called the **abbess**. Some monasteries and convents were called **abbeys**.

Monasteries and convents spread throughout Europe in the Middle Ages in part because they were efficient instruments for upholding feudal order. A lord granted land to a monastic order because monks and nuns helped him maintain social control over a population that was widely dispersed across the countryside. Some monasteries owned their own villages, whose serfs worked their fields.

SOURCE 1 Cluny Abbey in Burgundy, France. Its church was the largest in the world until the early seventeenth century, when St Peter's Basilica in Rome was rebuilt.



18.13.2 The monastic orders

The origins, rules and practices of monastic orders varied widely. Monasteries of the Cistercian order relied solely on the labour of their own monks. This limited labour force drove the Cistercians to move into new agricultural areas, such as raising sheep on a large scale. Such efforts gained them considerable wealth. The monks themselves, however, in accordance with their order's rule, remained poor.

Some orders did not live in small communities. The Franciscans and Dominicans, for example, sent their members out into the community as friars. They moved among the people as missionaries. The Franciscans tried to live as Jesus had lived — as poor preachers serving the needy. The Benedictines were one of the earliest monastic orders. They established many of the rules and customs followed by nuns, monks and friars.

The Church was almost the sole source of literacy during the Middle Ages. Before the printing press was invented, every book had to be handwritten. Among the tasks performed by monks was the writing and copying (and often decorating) of books by hand. Some of the first universities in Europe began as monasteries. The architecture of such ancient schools of learning as Oxford University in England is based on the layout of a monastery. Even a comparatively recently established school such as Sydney University, with its Great Hall and cloisters, has architecture based on the monastic model.

SOURCE 2 *The Death of St Francis*, a painting by the fifteenth-century Italian artist Giotto. St Francis was the founder of the Franciscan order of friars. This painting shows some of them mourning his death.



SOURCE 3 The pointed, fanned arches of the Great **Cloister** at Canterbury Cathedral in Kent, England. Canterbury Cathedral had an attached monastery run by Benedictine monks.



18.13 Activities

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

Check your understanding

1. What are the communities called where monks live?
2. What are the communities called where nuns live?
3. How did monks and nuns help to support the feudal system?

4. Upon whose labour did the Cistercian monks depend?
5. Which monastic order did much to establish the rules followed by monks and nuns?
6. Which modern educational institution has its origins in the medieval monastery?

Apply your understanding

7. The friars in **Source 2** are dressed in coarse woollen garments called habits. Many still dress this way today. Why do you think they would have chosen such simple dress?
8. **Sources 1** and **3** are images of two Benedictine monasteries. Use the library and the internet to find out about the Benedictine order: its origins, rules and influence (**Sources 1** and **3** indicate that the Benedictines were influential at least in England and France), and its work in the community.
9. Cluny Abbey, shown in **Source 1**, was the largest monastery in Europe during the Middle Ages. At its height in the twelfth century, it had about 300 monks (most monasteries had about 30). What impression do you think such a structure would have had on peasant communities living in villages?

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Complete this digital doc: Worksheet 18.4: The Church's power — for better or worse

18.14 The Crusades

18.14.1 Introduction

The Crusades were a series of wars fought throughout Europe and the Middle East between the eleventh and thirteenth centuries. In these wars, Christians fought against non-Christians and **heretics**. The Crusades generally centred on the Holy Land and the main enemy of the Crusaders were the Muslim Turks. The term *Crusader* comes from the Latin word *Crux*, which referred to the Christian cross. However, evidence suggests Crusaders only began calling themselves this as late as the thirteenth century.

18.14.2 The First Crusade

Jerusalem is a very important city for Christians, **Muslims** and Jews. The Holy Sepulchre in Jerusalem is believed to be the site of Jesus' tomb. When the Muslim Turks took control of Jerusalem in 1071, they began to harass and even kill visiting Christian **pilgrims**.

In Constantinople, Emperor Alexius I appealed to Pope Urban II to help him fight his Muslim enemies. In 1095, the Pope called upon Christians to fight the Turks and reclaim Jerusalem.

SOURCE 1 Extract from call to arms by Pope Urban II at Clermont, France, in 1095

If you choose the right path, you will be forgiven for all your sins. This path is to make war upon the Turk … Let those who are going to fight for Christianity put the form of the Cross upon their garments … God will be gracious to those who undertake this expedition: those who die will go straight to heaven …

There were various reasons why Christians responded to the Pope's call. These included the chance to gain wealth, power, land and knighthood. They were also promised eternal life in heaven.

The First Crusade was two expeditions. One, known as the Peasants' Crusade, was led by Walter the Penniless. It was a violent rabble beginning with a murder of Jews in Germany. It left a trail of destruction all the way to Constantinople. Being poorly organised, it was wiped out by the Turks after it had set out from that city. The second expedition was led by knights. It successfully defeated the Turks, and took city after city throughout the **Holy Land**, including Nicaea, Antioch and, finally, Jerusalem.

The **Crusader** victory did not last. The Turks fought back and the Crusaders alliance with the Byzantine emperor dissolved because each distrusted the other.

SOURCE 2 A map of the Crusades in the Holy Land



SOURCE 4 From an account of one of the Crusaders who took part in the capture of Jerusalem in 1099

With drawn swords our people ran through the city; nor did they spare anyone, not even those pleading for mercy. If you had been there, your feet would have stained up to the ankles in blood. What more shall I tell? Not one of them was allowed to live. They did not spare the women or children. The horses waded in blood up to their knees, nay up to the bridle. It was a just and wonderful judgment of God.

SOURCE 3 The siege of Nicaea in 1097, from a thirteenth-century French manuscript, *The History of Outremer*. Outremer was the name by which the parts of the Holy Land captured by the Crusaders became known.



18.14.3 More crusades

The Crusades continued over the next two centuries. The Second Crusade (1147–1149) began because the Turks had taken the town of Edessa. This crusade did not succeed; the Turks defeated the Crusaders at Damascus.

In 1187, the Kurdish leader of the Turks, Saladin, conquered Jerusalem. This inspired the Third Crusade (1189–1192). A lack of unity among Crusader leaders prevented a victory for them, although they were successful in capturing the city of Acre. Despite their defeat, Saladin allowed Christians to visit the Holy Sepulchre in Jerusalem.

The Fourth Crusade (1202–1204) started out against the Turks, but ended up as a **pillage** of Christian cities, including Constantinople. The driving issue was commercial rivalry rather than religion.

There were more Crusades in which control of land was lost and won. Jerusalem was recovered by the Christians for a brief time, and the Turks took Acre in 1291. It is generally agreed that the Crusades came to an end when the Turks took Constantinople in 1453 as part of the Ottoman Empire.

SOURCE 5 The Crusades, 1096–1204 CE



DID YOU KNOW?

Crusaders were often from monasteries. One monastic order was the Knights of St John the Hospitaller. Their cross-shaped symbol is now the logo of the St John Ambulance Society.

18.14 Activities

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

Check your understanding

1. Against whom were the Crusades organised?
2. What does the term *Crusader* stand for?
3. What happened to the Peasants' Crusade?
4. Which cities did the First Crusade capture?
5. Who was the Kurdish leader of the Turks during the Third Crusade?
6. Who controlled the city of Constantinople at the end of the Crusades?

Apply your understanding

7. Read **Source 1**. What do you believe is the aim of Pope Urban's speech?
8. Which sources show evidence of the brutality of the Crusades? What sort of brutal acts were committed by the Crusaders?
9. The Crusaders in **Source 3** are using a trebuchet to throw their enemies' heads over the walls of the besieged city. Why do you think they are doing this?
10. How reliable do you think **Source 4** is in telling us about the behaviour of the Crusaders?
11. Identify the events associated with the Crusades that took place in each of the cities on the map shown in **Source 2**. Also say in which year or during which crusade the event took place. Use the library or the internet for your research.

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Deepen and check your understanding of the topic with the following resources and auto-marked questions:

- **The Crusades**

18.15 The Age of Faith

18.15.1 Christianity and Islam

Since the September 11 terrorist attacks in 2001, there has been increased tension between **the West** and nations where Islam is the major religion. However, this conflict is not new. Stressed relations between Christians and Muslims have existed for hundreds of years. In fact, significant conflict between these two religions has existed since the Early Middle Ages.

Generally speaking, religion does not strongly influence governments today. Many countries around the world are secular, which means they are neutral in regards to religion. It was different in the Middle Ages. In Europe, the Christian Church had great influence over rulers. The situation was similar in the Islamic world. Countries were ruled by Muslim leaders called **caliphs**. With religion dominating so much of private and public life, it is not surprising that some historians have called the Middle Ages 'the Age of **Faith**'.

SOURCE 1 Map showing the Muslim world, c. 1000 CE



18.15.2 Developing relations

The conflict between Christians and Muslims is most often assumed to have begun with the First Crusade at the end of the eleventh century. But Muslim Arabs had conquered much of Spain as early as 711 CE. This was a major Muslim inroad into Christian Europe, and wherever the Christian West and the Muslim East met, there was conflict. Christians enslaved Muslim prisoners-of-war and Muslims enslaved Christian prisoners-of-war.

Religion in Spain

Spain is a good example of how relations developed between the Christian West and the Muslim East. Muslim Arabs ruled much of Spain for about 700 years. Throughout that period, there was a great exchange of culture between not only the Muslim occupiers and the Christians, but also the Jews, who were a sizable minority in Spain. Even after the Christians reconquered Spain, much of the rich Muslim culture remained. In fact, Muslim music,

SOURCE 2 Details of the Alhambra, a magnificent fortress and palace built by the Islamic rulers of Granada in the mid-fourteenth century.



architecture and many other fields continued to flourish, even after Muslims were forcibly converted to Catholicism. For example, an instrument that would eventually develop into the Spanish guitar was invented by Muslim Arabs. The famous Spanish dance music, flamenco, is also thought to have Middle Eastern influences.

SOURCE 3 Amad ibn Muammad al-Yammani, a Muslim traveller, commenting on music he had heard while recovering from an illness in the Spanish city of Malaga during the eleventh century.

The people are absolutely dominated by their passion for music. One night I awoke … to … a breath of sound, tranquil and lovely. I felt that my soul understood this music, and would find repose [peace] in it … [It] began increasing slowly in volume. I was drawn to it and disposed to listen … I found myself forgetting my misery in the emotional enjoyment, which almost caused me to imagine that the walls and floor were floating around me.

But just as the Christians tried to subject conquered peoples to their faith, so did the Muslims subject countries they had conquered to Islam. In Muslim Spain, Christians and Jews were tolerated but they suffered discrimination and were made to pay special taxes because their religions were regarded as inferior. When Christians eventually reconquered Spain, they would be much less tolerant. They ruthlessly persecuted Muslims and Jews.

SOURCE 4 The interior of the Great Mosque in Cordoba, Spain



There may have been some appreciation of the refined culture of the Arabic Muslims in Spain. However, as conflict developed between the Christian north and the Muslim south in Spain, new waves of invaders arrived. The Arabic leaders brought in North African Berber fighters (called **Moors** by the Christians). The Berbers were a harsher, less tolerant group. An example of their intolerance was the destruction of a splendid palace in Cordoba called Medina Azahara.

18.15.3 Shared learning

While much of the learning of ancient Greece and Rome had been lost in the West during the Early Middle Ages, it was kept alive by Muslim scholars. One of the greatest libraries in history was established in Muslim Baghdad in 832 CE. Islamic societies built hospitals for the sick, and their scholars led the world in studies of medicine, sciences and mathematics. The Crusades gave European Christians the opportunity to gain an insight into the learning of the Islamic East. As in Spain, Europeans became influenced by Islamic culture, including poetry and architecture. European scholars were no doubt impressed by Muslim schools as it was about this time that the great universities of Europe were established. The challenge posed by Islamic learning was at least partly responsible for this development.

And did the Islamic East have anything to learn from Europe? As it turns out, the Europeans, who appeared rough and barbaric to the Muslims, had little to offer at this point in history. Their contribution to government, learning and invention lay far in the future.

SOURCE 5 From Usamah ibn-Mequidh, a twelfth-century Arab writer and soldier. Muslims referred to Crusaders as 'Franks' because many Crusaders came from the part of Europe that was once the Frankish Empire (near modern-day France and Germany).

When I come to tell stories about the Franks [Crusaders] I cannot help but glorify and praise Allah (exalted is He!), for I see them as animals possessing the virtues of courage and fighting, but nothing else; just as pack animals have only the virtues of strength and carrying loads.

DID YOU KNOW?

The Muslim world also adopted and further developed ancient technologies. An example is the astrolabe, an instrument invented by a Greek scholar about 150 BCE to locate and predict the positions of the Moon, the planets, the Sun and other stars. Medieval Muslim scholars made improvements to the astrolabe that enabled it to be used for navigation at sea and to find the direction of Mecca, the holy city in the Arab empire that Muslims were required to face during prayer.

18.15 Activities

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

Check your understanding

1. Why have some historians called the Middle Ages the Age of Faith?
2. Who conquered much of Spain in 711 CE?
3. List two elements or products of Spanish culture today which are Middle Eastern in origin.
4. Which two groups in Muslim Spain were discriminated against with taxation?
5. Who were the Moors?
6. How did Muslim schools influence European education in the Middle Ages?
7. How much did the Muslims learn from European culture in the Middle Ages? Explain.

Apply your understanding

8. Read **Source 3**. What impression does Amad ibn Muammad al-Yammani have of the Islamic music he hears?
9. Read **Source 5**.
   (a) What positive things does Usamah ibn-Mequidh have to say about the Crusaders?
   (b) What negative things does he have to say?
   (c) Why do you think Usamah ibn-Mequidh would make such negative remarks about the Crusaders?
10. Examine **Source 2**. What features of this section of the Alhambra justify its reputation as a magnificent example of medieval Islamic architecture?
11. Use the internet or your library to find out more about the Great Mosque at Cordoba. When was it originally built and by whom? What are some of its impressive features? Given that the Christians eventually drove the Muslims out of Spain, is the building still used as a mosque today? Explain.

18.16 Towns and trades

18.16.1 Decline of feudalism

By about the eleventh century, Europe was a relatively peaceful place. People felt free to risk living beyond the security of the manor. In time, a network of towns sprang up, particularly along trade routes. These towns became the focus for the rise of a new social group — a **middle class** of merchants.

Personal loyalty to a lord in exchange for a **fief** was a basic principle of feudalism. As barbarian raids stopped, as food stocks increased, and as money rather than personal services began to be given to lords in exchange for rights and privileges, the feudal system began to break down.

People began to drift away from the manors to start new lives in towns, many of which had developed near castles. Some people learned new skills such as spinning, weaving, baking, leather work, music, acting, ale brewing, armour construction, ropemaking, butchery, banking, cloth dying and stonemasonry.

Life in the towns

As towns grew, large walls were built around them. Near these walls were the cramped homes of the poor — mostly wooden and many storeys high. Most houses were coated with a highly flammable paint made of pitch and linseed oil. Pitch was a black, tarry substance used to seal cracks in buildings and boats. The homes of the wealthy were in the town's centre.

The town's lanes were crooked and narrow. They were lit only by people's lanterns and candles, and had no footpaths. They became smelly, rat-infested rubbish dumps, splattered with food scraps, bones and sewage. Open drains stank with cloth dyes and the blood of slaughtered animals. Townspeople tramped through this muck to reach the town's central marketplace. It bustled with the activity of traders, musicians, actors, jugglers, pickpockets and beggars.

18.16.2 Rise of the merchant class

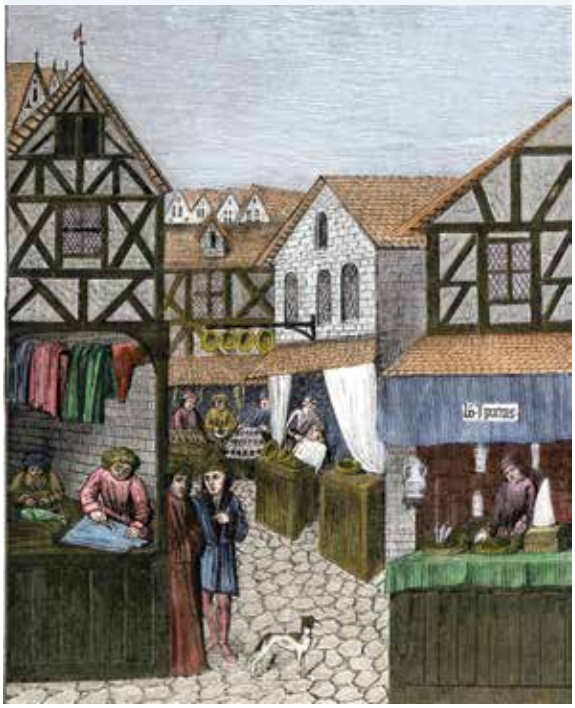
Adventurous European merchants began looking for more distant markets. They travelled to Asia, northern Africa and the Middle East with goods such as iron, timber and copper. They returned with exotic silks, furs, spices, gold and precious stones. They visited trade fairs in Europe, where both goods and ideas were exchanged. It is thought, for example, that the windmill was first heard of from traders from Iran, and soap from traders from China.

Long-distance trading was risky. There were robbers and sea pirates. As well, merchants had to deal with clever money lenders. To protect themselves and their profits, merchants often formed partnerships and shared responsibilities. This led to the formation of companies, which in turn created new jobs.

SOURCE 1 Medieval illustration of stonemasons, who were highly respected craftspeople.



SOURCE 2 As shown in this medieval painting, businesspeople usually sold their goods from the ground floor of their home. Family, servants and apprentices lived on the upper floors.



By the latter part of the Middle Ages, this new merchant class had become a very powerful force in medieval society.

SOURCE 3 A young boy's experience on entering the marketplace in the English town of Shrewsbury in 1241. This extract is from *Falls the Shadow*, a novel by Sharon Penman, Penguin, 1989, p. 132.

Church bells pealed out the hour … Men wandered the streets shouting 'hot meat pies' and 'good ale' … itinerant [wandering] pedlars hawked [tried to sell] their goods, offering nails, ribbons, potions to restore health … People gathered in front of the cramped, unshuttered shops, arguing prices at the tops of their voices. Heavy carts creaked down the streets … Dogs darted underfoot, and pigs [shuffled] about in the debris dumped in the centre gutter.

Growth of apprenticeships

The demand for skilled workers was growing. Apprenticeships began to be set up to train young people in particular trades. Most were seven-year agreements, and were strictly controlled by guilds.

Guilds

The standard of work in each skilled craft was also controlled by its **guild**. These associations were formed by artisans to protect their interests, settle disputes between employers and skilled workers, and to set wages and prices. In some ways they were like modern trade unions; however, unlike trade unions, guild members included employers.

Merchants also had guilds. The most powerful merchant association was the Hanseatic League, which controlled many trading ports around the Baltic Sea, and trading outposts as far away as Russia, Italy and England. The Hanseatic League was so powerful during the fourteenth and fifteenth centuries that it minted its own money and wrote its own laws. In the fourteenth century, it even waged war against the King of Denmark.

18.16 Activities

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

Check your understanding

1. List the factors that led to the decline of feudalism.
2. Explain what the growth of trade and skilled crafts had to do with the growth of towns.
3. Medieval towns were frequently destroyed by fire. What information in this subtopic helps to explain why this happened?
4. Describe the major roles of guilds.
5. What was the Hanseatic League?

Apply your understanding

6. Describe the medieval trades that you can see in **Sources 1** and **2**.
7. Read **Source 3** (a secondary source):
   (a) Describe features of medieval towns that would have made them dirty, noisy and unhealthy.
   (b) What would you need to know about this source in order to judge its reliability?
8. Use the sources and information in this subtopic to sketch a typical street scene in a medieval town. Do this either by hand or using a computer drawing program. Label features of your sketch that can be found in this subtopic.
9. If you had been a young town dweller in the Middle Ages, to what trade would you like to have been apprenticed? Give reasons for your choice.

18.17 The Black Death

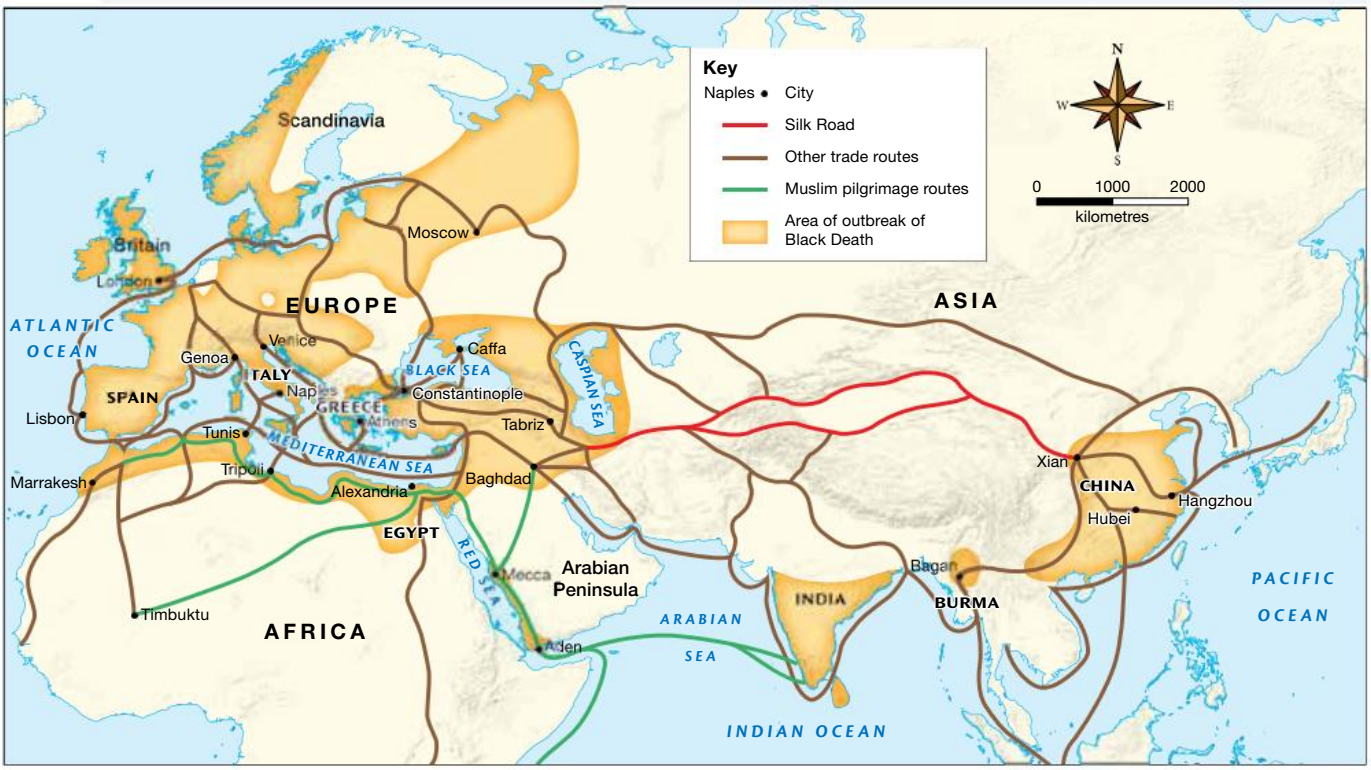
18.17.1 Origins of the Black Death

In 1347 something terrible happened across three continents — something that changed the course of history. This event is known as the Black Death or the **plague**. The Black Death was a disease that spread across the known world and wiped out whole towns and villages. In Europe alone, between 1347 and 1352, one-third of the population may have died as a result of this **pestilence**.

What was the nature of the Black Death? Where did it come from, and how did it spread? And how did it change the course of history?

It is believed that the Black Death originated in Mongolia in the early fourteenth century. It spread along trade routes and via military expeditions. In 1346 the Tartars, a people descended from the Mongols, were besieging the Black Sea port city of Caffa, a trading colony of the Italian city of Genoa. Then the Tartar troops started to fall sick and die. Weakened by disease, they used trebuchets to hurl infected dead bodies over the walls of Caffa in an attempt to inflict the same pestilence on the city's inhabitants. Some historians and medical scientists cite this event as possibly the first instance in history of **biological warfare**. Some people escaped from Caffa on ships for Italy. They may have escaped the Tartars, but not the Black Death, as it accompanied them on their ships. At least one such ship is recorded as having reached the Italian port of Messina, with dead or dying crew on board. This was probably not the only way the Black Death reached Europe, but it is the best documented. The Black Death spread right across Europe and North Africa.

SOURCE 1 The spread of the Black Death across three continents.



18.17.2 What was the Black Death?

The Black Death had three variations. Its most common form was bubonic plague, named for the buboes (stinking, pus-filled swellings) that appeared on the victim's body (see Sources 2 and 3 on the next page). The second form was pneumonic plague, which affected the respiratory system, and the third was

septicemic plague, which affected the blood. Fever and vomiting were common symptoms. In its final stages, victims' skin turned purple-black and their nervous system was affected. This slurred their speech and they staggered about in convulsions. Observers called this phase the *danse macabre* — 'the dance of death'. The source of the disease was bacteria found on the fleas of black rats. Such rats were common on ships and in towns such as Messina. In the unhygienic conditions of medieval Europe, plague-ridden rats bred rapidly and the fleas were able to move to other animals and to people.

SOURCE 2 Plague victims in Perugia, Italy — from a sixteenth-century manuscript.



SOURCE 3 From *The Decameron*, a collection of stories by Giovanni Boccaccio, probably written between 1349 and 1353, when the plague was ravaging his country, Italy, along with the rest of Europe. Boccaccio's stories are told by characters who have fled the plague to isolate themselves in a villa in the countryside. In real life, those who took such action — and Boccaccio was one of them — did sometimes survive. But only the rich had this option.

… [The] deadly pestilence … showed its first signs in men and women alike by means of swellings either in the groin [area between the belly and thigh] or under the armpits, some of which grew to the size of an ordinary apple and others to the size of an egg (more or less), and the people called them [buboes]. And from the two parts of the body already mentioned, in very little time, the … deadly [buboes] began to spread indiscriminately over every part of the body; then, after this, the symptoms of the illness changed to black or livid [bluish] spots appearing on the arms and thighs, and on every part of the body — sometimes there were large ones and other times a number of little ones scattered all around … [Almost] all died after the third day of the appearance of the previously described symptoms (some sooner, others later), and most of them died without fever or any other side effects.

18.17.3 Medieval treatments for the Black Death

The details of the Black Death were not understood during the Middle Ages. Doctors knew nothing about the cause of the plague or how to treat it. All sorts of treatments were offered. They believed that stench was a cause of the disease, and offered patients sweet-smelling flowers and potpourri to smell. Some believe this is the source of the children's nursery rhyme 'Ring around a rosie, a pocketful of posies, a-tishoo a-tishoo, we all fall down'. Other doctors lanced buboes to draw out 'bad blood'. But this helped only to spread the disease.

As if doctors' remedies were not bad enough, panic and superstition made things even worse. Many believed that the plague was God's punishment for their sins, like the plagues described in the Bible that had ravaged Egypt in the time of Moses. One extreme response was made by a group called the Flagellants. They travelled from town to town publicly whipping themselves in the hope of receiving God's forgiveness for their sins and deliverance from the pestilence. However, with the blood from their whipped backs flowing freely, all this did was help spread the disease. Pope Clement VI ordered that these groups be disbanded. Clement, incidentally, may have come closest to an effective method of

SOURCE 4 A doctor dressed up to fight the Black Death



protection from **contagion**. His adviser, Guy de Chauliac, sat the Pope between bonfires for many days so he could breathe the purified air. Given that fleas dislike such heat, this may have helped save the Pope's life.

Of all the remedies attempted during the period of the Black Death, cleanliness and hygiene were generally the treatments that were overlooked. This is because no-one connected the plague to the rats, which carried the pestilent fleas. Few bathed regularly or changed their clothes, and people continued to live in dirty, cramped cottages, often with their livestock. No-one thought of clearing the dung heaps in the middle of manor-house courtyards, and people continued to use the streets as dumps for their household waste. Such conditions attracted the flea-ridden rats. As the rats bred and died in the squalor of medieval towns and villages, the fleas continued to infect the human population. And so, more than any other factor, it was the living conditions in medieval times that encouraged the spread of the deadly catastrophe that was the Black Death.

Inevitably, minority groups were blamed for spreading the plague. Some thought **lepers** were to blame, and many of them were hunted down and murdered. Jews were accused of deliberately poisoning wells. Despite the fact that the plague did not distinguish between Jews and Christians, thousands of Jews were murdered. Many were burned alive.

SOURCE 5 Minority groups, including the Jews, were blamed for the Black Death and were persecuted, as shown in this sixteenth-century illustration.



DID YOU KNOW?

One of the most recent pandemics of bubonic plague occurred about 1900. It originated in China, and spread to Australia, among other places. This time, however, medical and other authorities knew how to respond. Exterminators were sent into Sydney's Rocks area, which was a slum in those days, to wipe out rats. Suspected plague carriers were taken to the Quarantine Station at Manly. The disease was thus contained.

18.17.4 Effects of the Black Death

Within four years, at least a third of Europe's population had perished. Many villages were deserted and never repopulated. It would take another 200 years for the population of Europe to reach the size it had been in 1347. A **catastrophe** on such a scale must have had a major effect on society and the economy.

The feudal system itself was weakened as a result of the Black Death. With a shortage of workers, serfs began to demand wages and lower rents for their labour, and freemen, who were already paid, demanded higher wages. In some cases in England, workers' wages tripled during the time of the Black Death.

The power of the Church was weakened too. Partly, it lost respect in failing to protect the people through prayer. But also the clergy lost many of its own members. Monasteries were closed communities and some lost almost all their educated monks. There were few priests left to perform Mass and conduct weddings and funerals. The Church desperately needed new clergy and was forced to accept novices with no education.

Farming changed. With fewer peasants to work the fields, grain production went into decline in England and other European countries. Farmers turned increasingly to livestock such as sheep that required fewer workers on the land.

18.17 Activities

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

Check your understanding

1. When did the Black Death arrive in Europe and when did it end?
2. What is another name for the Black Death?
3. How did the Black Death enter the Black Sea city of Caffa?
4. What are buboes?
5. Why did medieval doctors offer patients sweet-smelling flowers and pot-pourri to smell as a cure for the Black Death?
6. Who were the Flagellants?
7. List three effects the Black Death had on medieval society.

Apply your understanding

8. Using **Source 1**, explain in a short paragraph how the Black Death spread across Europe, Asia and Africa.
9. Which places in Europe, according to **Source 1**, did not suffer from the Black Death? Use a modern atlas to find out what physical features exist in those areas that may have prevented the Black Death from reaching them.
10. Imagine you are the doctor in **Source 4**. Explain why you are dressed in such outlandish clothes.
11. How does **Source 3** support **Source 2** as evidence?
12. Use the internet and the library to find out about the siege of Caffa in 1346.
    (a) Who were the Tartars and why were they besieging the city?
    (b) Who ruled the city?
    (c) How long was the siege?
    (d) Did the Tartars succeed in conquering it?
    (e) Did the plague have anything to do with how successful they were in their siege of the city?
13. Why do many historians believe the Black Death changed the course of history?

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Deepen and check your understanding of the topic with the following resources and auto-marked questions:

› **Black Death**

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18.18 The Peasants' Revolt

18.18.1 What caused the revolt?

It has already been mentioned in this topic that there was a serious revolt among the peasants in England in 1381. Along with the Black Death and the growth of the merchant class in the towns, this event did much to weaken the feudal system. What made the revolt so serious was its scale: there are no reliable figures on how many peasants were involved (50 000 is sometimes suggested), but the uprising caused such dread

among the powerful that the king himself sought refuge for fear of his life.

The trigger for the revolt was the **Poll Tax** of 1380, the third such tax imposed in four years. The Poll Tax was intended to restore a treasury that had been drained by the costs of fighting the French in the Hundred Years' War. Price increases causing hunger and shortages led to despair and anger in the population.

SOURCE 1 Late fourteenth-century miniature showing King Richard II coming to meet men rebelling against unfair taxes and lack of freedom during the 1381 Peasants' Revolt.



The long-term causes of the revolt went back to the Black Death. We learned that one of the results of the Black Death was a labour shortage that allowed the peasants to demand higher pay. Traditionally, peasants had been tied to the manor. Now, with a vastly reduced population, they left their villages in search of better pay and conditions in other manors. In 1351 a law called the Statute of Labourers was passed. It aimed to put a stop to peasants' free movement around the countryside and to cap their wages at 1346 levels. Naturally, peasants greatly resented this law. Many risked punishment by ignoring it. Tensions grew, but the Poll Tax of 1380 turned the peasants' anger into open rebellion.

The outbreak

The Poll Tax returns of 1380 showed that very little of the tax had been collected, so the tax collectors were sent out again. They were instructed not only to collect the tax — in some cases for a second time — but to extract payment for those who didn't turn up. This caused outrage among the peasants. At the village of Fobbing in Essex, one collector and his men were beaten up and driven out. When the Chief Justice was sent to sort out the villagers, he too was driven out.

What happened next was made possible only by the free movement of peasants around the countryside. Word about what had happened in Fobbing spread across Essex and Kent. Peasants from across both counties gathered together into one angry mob. Manor houses were burned down, tax and debt records were destroyed and some wealthy landowners were killed or humiliated by being forced to be the servants of their new masters, the peasant rebels. The city of Canterbury was seized by the rebels. With the Archbishop of Canterbury absent in London, they appointed a poor monk as the new archbishop and attacked rich visitors.

The peasant revolt was not entirely a disorganised mob. Several of their number came forward as leaders — in particular, Wat Tyler, Jack Straw and a parish priest, John Ball. Tyler was able to exercise some control over what would otherwise have been a mob without direction. John Ball preached against the leaders of his own Church because he felt that they were helping the lords to **exploit** the poor.

18.18.2 The march on London

The rebels then set out for London to appeal directly to the king, Richard II, at the time only a boy of 14. Evidently the King's Council were taken by surprise, because there were few guards to defend the city. With the rebels in the city, along with many sympathisers among the Londoners themselves, fear spread

among the ruling classes. Property was damaged, and some merchants were killed. Wat Tyler probably ensured that the rebels for the most part remained peaceful.

Meetings with the king

The king agreed to meet with the rebels. The King's Council wanted to avoid meeting them inside the city, with its flammable timber buildings, narrow streets and lack of guards. So they met outside the city gates at a place called Mile End. The king declared that he agreed to their demands, pardoning the rebels, abolishing the Poll Tax and reducing land rents. A group of peasants, however, were not satisfied. They attacked the Tower of London, capturing and beheading three people — the Archbishop of Canterbury, the king's Treasurer and John Legge, who had created the Poll Tax. The rebels impaled their heads on stakes and paraded them around the city in triumph. Richard hid himself away, fearing a similar fate.

SOURCE 2 The death of Wat Tyler as Richard II addresses the crowd; illumination from a medieval manuscript.



The following day Richard met the rebels again outside the city, this time at Smithfield. In the course of the negotiations, a fight broke out involving Wat Tyler. He was struck with a sword by the Lord Mayor. Afterwards he was beheaded, and his head ended up on a stake too. The king again agreed to the rebels' demands and, with their leader dead, they dispersed. The king's promises were soon revoked, however. Richard claimed they had been made under threat, and so were not lawful. John Ball was hung, drawn and quartered. The four parts of his body were displayed in other towns as a warning against continuing the rebellion. Jack Straw was beheaded too. His head accompanied Wat Tyler's, displayed on London Bridge. And so the Peasants' Revolt came to a violent end.

SOURCE 3 From a chronicle written at the time of Wat Tyler's death

> [one of the King's retinue] … said aloud [to Wat Tyler] that he knew him for the greatest thief and robber in all Kent … and for these words [Tyler] tried to strike him with his dagger … [The] Mayor of London, William Walworth, reasoned with … [Tyler] … and arrested him. And because he arrested him … [Wat] stabbed the Mayor with his dagger in the stomach in great wrath. But, as it pleased God, the Mayor was wearing armour and took no harm, but like a hardy and vigorous man drew his cutlass [a sword with a curved blade], and struck back at … [Tyler], and gave him a deep cut on the neck, and then gave a cut on the head. And during this scuffle one of the King's household drew his sword, and ran [Wat] two or three times through the body, mortally wounding him … [He] fell to the ground half-dead. And when the commons [peasant rebels] saw him fall, they began to bend their bows and shoot, wherefore the King himself spurred his horse, and rode out to them, commanding them that they should all come to him to Clerkenwell Fields … Wat Tyler] had been carried … to the hospital for poor folks … And the Mayor went thither and found him, and had him carried out to the middle of Smithfield … and there beheaded. And thus ended his [Wat Tyler's] wretched life. But the Mayor had his head set on a pole and borne before him to the King … [who] thanked the Mayor greatly for what he had done.

18.18.3 Results of the Peasants' Revolt

Despite being brutally crushed, the revolt had struck fear into the hearts of the privileged classes, particularly the lords and bishops. The rebels' demands were not met, yet the Poll Tax was not pursued again. Nor did the king's government try to continue controlling the wages landowners paid their peasants. Above all, this brief taste of freedom helped to weaken the feudal system, which was becoming increasingly outdated.

DID YOU KNOW?

In modern times, British prime minister Margaret Thatcher's government tried to introduce a Poll Tax in 1990. Like the Poll Tax of 1380, it also caused widespread anger and riots, and had to be dropped. Many believe it led to Thatcher's downfall a year later.

18.18 Activities

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

Check your understanding

1. Briefly outline two causes of the Peasants' Revolt.
2. Which city did the rebels take over before setting out for London?
3. Who were the leaders of the Peasants' Revolt?
4. How old was King Richard at the time of the revolt?
5. What happened to the rebel leaders in the end?

Apply your understanding

6. In what ways does **Source 2** support **Source 1** as evidence for what occurred during the second meeting between the king and the rebels?
7. What view do you think **Source 2** takes of rebel leader Wat Tyler? Whose side do you think the author of this chronicle takes?
8. Use the internet and the library to list other peasant revolts in Europe up to and including the sixteenth century. What conclusions can you draw about such revolts? Do you think the peasants were a real threat to the ruling classes to which the lords belonged?
9. How many years elapsed between the Poll Tax of 1380 and the more modern version in 1990?
10. After reading this subtopic, how would you define a revolt?

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Complete this digital doc: Worksheet 18.6: The Peasants' Revolt

Explore more with this weblink: Peasants' Revolt

18.19 Joan of Arc

18.19.1 The life of Joan of Arc

In 1430 Joan of Arc was publicly burnt at the stake. Her crime? Listening to, and obeying, what she said were the voices of saints. Yet these same 'voices' helped this uneducated teenage girl bring about the coronation of a French king. Some 500 years later, in 1920, the Catholic Church declared her a saint.

Jehanne d'Arc (or Joan of Arc as we call her today) was born in 1412 in the small French village of Domrémy. Her simple life as the obedient daughter of a peasant farmer changed when she was 13. She began, she said, to see visions of saints and hear their voices. One day, they told her to drive the English armies from France and take France's **dauphin**, Charles VII, to the city of Rheims to be crowned as king.

It was three years before Joan decided to leave home and carry out the instructions she had been given. At first, her story was not believed. Eventually, she convinced the governor of the neighbouring town that she had to talk to Charles VII. Travelling there in men's clothing, she was taken to his castle by six men.

Supporters of Charles VII may have wanted to believe this strange young woman. The so-called **Hundred Years' War** had made them weary of fighting. But Charles VII wanted to be sure. He asked members of the Church Council to question her. They reported they '… had found nothing in her that was not of the Catholic faith and entirely consistent with reason'.

Joan soon had the army she wanted. A series of amazing military successes followed, which turned her into a folk hero. On 17 July 1429, her dream came true: she stood beside Charles VII in the Rheims Cathedral when he was crowned King of France.

SOURCE 1 A painting, c. 1485, depicting Joan of Arc



SOURCE 2 In this scene from Luc Besson's 1999 film *Joan of Arc: The Messenger*, Joan inspires her troops to victory.



18.19.2 A fiery death

Once he was king, Charles VII lost interest in Joan. Nevertheless, she continued to lead her army. In May 1430, she was captured and was soon a prisoner of the English. She was held captive in Rouen for eight months, living on little more than bread and water. The English hated her, but they also wanted to damage

the reputation of the new French king. They decided they could do this by proving Joan was a witch. When that failed, they tried to prove that she had gone against the Church by listening to 'voices', which, she said, told her to wear male clothing.

Joan's trial lasted over three months. No-one defended her. Yet this girl who had never been to school remained fearless and clear-headed in the face of constant questions. She finally gave in when threatened with being burned alive, and said she would stop wearing men's clothes. But she was tricked into putting them back on. That was all the authorities needed: she was declared a heretic.

SOURCE 3 Extract from the court transcript, in which Joan is being questioned

Joan: I know well enough. I recognise them [the saints] by their voices, as they revealed themselves to me; I know nothing but by the revelation and order of God.
Q: What part of their heads do you see?
Joan: The face.
Q: These saints who show themselves to you, have they any hair?
Joan: It is well to know they have.
Q: Is there anything between their crowns and their hair?
Joan: No.
Q: Is their hair long and hanging down?
Joan: I know nothing about it. I do not know if they have arms or other members. They speak very well and in very good language; I hear them very well.
Q: How do they speak if they have no members?
Joan: I refer me to God. The voice is beautiful, sweet and low; it speaks in the French tongue.
Q: Does not Saint Margaret speak English?
Joan: Why should she speak English when she is not on the English side?

SOURCE 4 On 30 May 1431, Joan was tied on top of a pile of wood in the market square of Rouen, and burnt alive. She was 19 years old. Her last word was 'Jesus'.



18.19 Activities

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

Check your understanding

1. What sort of family background did Joan have?
2. According to Joan, what did the voices tell her to do about:
   (a) the English armies which occupied parts of France
   (b) the dauphin, Charles VII?
3. What conclusions did the Church Council make when they questioned her?
4. How did Joan become a folk hero?
5. Why did the English burn Joan at the stake?

Apply your understanding

6. We know that Joan appealed to God. What evidence is there in **Source 4** that her English executioners also appealed to God — in other words, justified burning her at the stake in the name of God?
7. In **Source 3**, how can you tell that the questioner in the court was against Joan?
8. In real life, Joan did not have the benefit of anything like a defence lawyer. Using **Source 3** as a guide, prepare a series of questions you would ask Joan at her trial in her defence.
9. Examine **Source 2**. Do you think the armour shown is an accurate representation of a knight's armour in the fifteenth century? You may need to refer back to subtopic 18.9 The Knight for more information.
10. Examine **Source 2**. What do you think is the purpose of the pointed stakes in the background?
11. How many years after she was burned at the stake was Joan made a saint by the Catholic Church? As a class, discuss why so much time might have passed.
12. One of the few ways European women in medieval times could get a man to listen to them was to claim that God or the saints had told them something about the future.
    (a) What does this tell you about the public role of women in medieval times, and the beliefs of the time?
    (b) Does this information change your opinion of Joan? Why or why not? Do you think Joan a saint who really heard holy voices, a confused young woman or a clever political activist?

18.20 SkillBuilder: Interpreting medieval art as sources

18.20.1 What are works of art?

Works of art may be one type of primary source. Throughout this topic we have examined various primary sources: artworks, monuments, buildings and written sources. Artworks include paintings, sculptures, bas reliefs and mosaics. Art styles changed significantly throughout the Middle Ages, and differed from kingdom to kingdom.

SOURCE 1 A French illustration depicting nuns looking after the sick.



Why is analysing artwork useful?

Artwork can tell us a great deal about a particular period or event. It may also tell us what ideas, beliefs or activities people felt were important enough to express in artwork. For example, an elaborately carved altarpiece in a church tells us that much attention was given to expressing the Christian faith during the Middle Ages.

18.20.2 How to analyse a work of art

A useful way to approach the task of analysing a work of art is remembering to use 'the three Cs' — content, context and comment.

Content

The content is what the artwork actually shows. Look at it very carefully and make sure you note all the details. For example, you might need to look for particular symbols or gestures. Think about how you would describe the image to someone who has not seen it; that way you can be sure you have looked at it thoroughly.

Context

Context refers to what was happening at the time the artwork was created — the historical background. Try to find out about the origin and purpose of the artwork: who created it, and why? Is it a primary or a secondary source? Knowing this can reveal as much as the artwork itself.

Comment

You should question the value of every source. Why is it useful? Does it give you raw information or does it show only a particular point of view? Are there any limitations to the source — that is, is there anything the illustration cannot tell you? Do you think it is a reliable source? Why or why not?

Remember, the origin and purpose of any historical source will always influence its value and limitations.

If you ask these questions each time you analyse an artwork, you'll be on your way to becoming an effective historian.

Analysing artwork — an example

The detail from the Mariacki altar in Source 2 was created by an artist called Wit Stwosz. The artist and his team were commissioned to create this altarpiece for the Church of Our Lady in Krakow, Poland. During the Middle Ages, artists were frequently employed to create artworks with religious themes. This altarpiece shows various saints, the ascension of the Virgin Mary into Heaven and scenes from the life of Jesus. At the time of its creation in the Late Middle Ages, it was the largest altarpiece in the world.

Content: One of the scenes on this altarpiece shows the arrest of Jesus. Except for the central figure of Jesus, the figures have the sort of attire that would have been familiar to the artist. In short, they are dressed like people from late fifteenth-century Europe, not like people from the time of Jesus in the Roman Empire almost 1500 years earlier. The soldier does not look like a Roman soldier of the first century CE. He is a knight of the Late Middle Ages. The buildings in the background are also from the late fifteenth century. Before modern times, and before the science of archaeology, little was known of how people in past societies dressed, or how artefacts looked. So if an artist created a scene from a past era, he showed the clothes and objects as they were in his own time and place.

SOURCE 2 A detail from the Mariacki altar in the Church of Our Lady in Krakow, Poland, showing the arrest of Jesus. It was carved by Wit Stwosz in the late fifteenth century.



Context: The Church was a powerful and important institution in medieval Europe. A lot of expense went into embellishing churches with works of art such as this. Artists were commissioned to undertake such projects and employed people to help them in their task.

Comment: Can we trust this image? We can clearly trust that it represents how important religious artworks were to the Church in The Middle Ages. We cannot trust that it is an accurate image of how things looked at the time of Jesus. However, as students of the Middle Ages, we can trust that the artist used models from his own time to create these images. Thus we can say that, for the most part, it is an accurate image of how people looked in late medieval Europe. It shows knights' armour, head-dresses, coats, belts and other attire common to the time and place where the artist lived and worked.

Using 'the three Cs' to ask questions about and analyse a piece of art helps deepen our understanding of not just the artwork itself, but also the era in which it was created. The questions in section 18.20.3 guide you in practising this important historical skill. You will find that the types of questions that you answer in this exercise can be used for any medieval artwork — in fact, they can be used to analyse artwork from any era. Keep them in mind whenever you are looking at history through artwork.

18.20.3 Developing my skills

Look at Source 1 and first analyse it by completing the questions below.

a. Describe what is happening in the artwork.
b. What impression is the artist trying to make about the subject of the artwork (the nuns)?
c. What are the figures doing?
d. Can you identify the different roles among the figures?
e. What sort of problems in dealing with historical sources do your answers to the above questions highlight?

You have learnt some of the history behind Source 2 and the sort of information it presents. This helped assess its usefulness as a source. You should now be able to think about the effectiveness of Source 1 as a historical source by answering the following questions.

a. It is fairly certain that Source 1 was created under the direction of Church authorities. Perhaps members of the clergy created it. How might that influence the way the nuns are presented?
b. If this was the only source available on the role of nuns in the medieval Church, what conclusions might you draw? Would all your findings be correct?
c. Why must historians be careful when looking at sources such as this?

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Complete this digital doc: Worksheet 18.7: Analysing illustrations

18.21 The heritage of medieval Europe

18.21.1 Introduction

Most modern European nations did not exist before the Middle Ages. France and Germany, Poland and Hungary, Sweden and Denmark, Russia and Spain: all of these nations have their origins in the Middle Ages. Many of their languages too developed in this period. The English language first emerged after the Angles and Saxons invaded Britain in the fifth century CE, but it was only after the French-speaking Normans invaded England in 1066 that the English language, with many words of French origin added to it, began to take the form with which we are now familiar.

The Byzantine Empire

Some European nations had origins in the ancient Greek and Roman world. But the traditions they developed belong to the Middle Ages. For example, Greece has its roots, including its language, in ancient times. However, much of what is today traditional in Greece belongs to the culture of the Byzantine Empire. The Byzantine Empire was an important power in the Middle Ages. Although it inherited Roman culture, transplanting it to the eastern Mediterranean world, it replaced the old Roman language, Latin, with Greek and adopted the Orthodox Christian faith.

18.21.2 New nations emerge through Christianity

Many of the modern nations of Europe emerged at more or less the time they adopted the Christian faith. What is now Russia, Ukraine and Belarus, but was then a single state called Kiev Rus, adopted Orthodox Christianity in 988 CE. The centre of Orthodox Christianity was the Byzantine capital, Constantinople. The Byzantine emperor was the head of the Orthodox Church. We have already seen that the centre of the Roman Catholic Church, which dominated western Europe, was Rome, and its head was the Pope. Most western and northern European countries adopted the Roman Catholic faith around the same period — at the end of the early Middle Ages. Christianity came to Denmark in 965, to Poland in 966, to Hungary in 1000 and to Sweden in 1164 (although one Swedish monarch had been baptised as early as 1000). Christianity was adopted in England somewhat earlier. It first reached English shores in 597, and had spread across the whole country within a century.

SOURCE 1 Photo showing the market square in Trier, Germany, with a copy of the cross (granted c. 958) indicating that the town had a right to hold a market there.



Why rulers adopted Christianity

The Christian faith attracted many rulers in the later part of the Early Middle Ages. Firstly, its spiritual message had a universal appeal. Now that rulers were aware of cultures other than their own, the old local gods may have seemed limited compared with the Christian faith, which embraced the whole world. Secondly, the clergy were an educated elite. They were often the only people who could read and write, so could offer the ruler valuable support. Finally, the Church was a truly international institution with influence that stretched across many lands. In short, adopting Christianity added to a nation's influence in the Middle Ages. To be Christian was in the interests of any ruler.

18.21.3 Feudalism and the modern world

As a system of government, feudalism could not survive beyond the Middle Ages. Its existence depended on the inequality between a large class of peasants and a small class of wealthy, powerful families. The centre of government was a king who often enjoyed absolute authority. In Australia there is no class of peasant farmers and no nobility, so it would be impossible for feudalism to exist here. Even so, our Head of State is an English monarch. Although we have a constitution that allows us to vote for a new government headed by a prime minister, that same **constitution** still acknowledges the role of an English monarch whose office originated hundreds of years ago in the Middle Ages.

SOURCE 2 A meeting room of the European Parliament, a body created to represent the common interests of European nations. Almost all its member states and candidate states have their origins in the Middle Ages.



18.21 Activities

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

Check your understanding

1. When did the English language first emerge?
2. How did the Norman invasion influence the English language?
3. What was the main language and religion of the Byzantine Empire?
4. Draw up a timeline and place on it the approximate dates when the following nations adopted the Christian faith: Poland, Hungary, Denmark, Sweden, England and Russia.

Apply your understanding

5. Why do you think St Mary's Cathedral in Sydney was built in the Gothic style, which was an architectural style of the Late Middle Ages?
6. Find out which countries are member states and candidate states of the European Parliament. How many of these states first emerged in the Middle Ages? Try to find out *when* they emerged as nations, too.

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Complete this digital doc: Worksheet 18.8: The legacy of medieval Christendom

18.22 Review

18.22.1 Review

In this topic we have looked at changes in Europe during the Middle Ages. Some of these changes, we have learned, were to do with the way society and government was organised. We learned that the monarch's position was the most powerful in the social and political order called feudalism. Most people belonged to the peasant class. We also learned that the Church became very powerful and influential during this period. The feudal system lasted for centuries, but towards the end came under pressure as a result of social changes brought about by the Black Death and the growth of towns and a middle class of merchants.

18.23 Activities

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

Multiple choice quiz online only

Short answer quiz

1. List the main social groups in the feudal system.
2. What was the job of the miller in a village?
3. What is a trebuchet?
4. Who is the head of the Roman Catholic Church?
5. What is an illumination?
6. Who lives in a monastery?
7. Against whom did the Crusaders set off to fight in the Holy Land from 1095?
8. What is another name for the Black Death?
9. What was the Hanseatic League?
10. What is the name of the tax that led to the Peasants' Revolt in England in 1381?

Apply your understanding

11. **Sources 1** and **2** on the next page show everyday activities in medieval Europe. One of them is a domestic scene; the other shows a group of tradesmen at work. Prepare a PowerPoint presentation to show various activities in medieval Europe. Use primary sources, and include captions such as those with **Sources 1** and **2**. After your slides, conclude with a statement about what the pictures tell us about life in medieval Europe.

SOURCE 1 Illustration from a medieval manuscript showing a group of women at home



SOURCE 2 Illustration from a fifteenth-century manuscript showing a group of blacksmiths at their forge



Analysis and use of sources

12. Use the three Cs in the subtopic 18.20 SkillBuilder to analyse **Source 1**. How can we tell that these women are members of the wealthy nobility and not of the peasant class?
13. Use the three Cs from the SkillBuilder to analyse **Source 2**. Where would these tradesmen fit in the feudal system?
14. Use the three Cs from the SkillBuilder to analyse **Source 3**. Describe the various features of the city.

SOURCE 3 A medieval woodcut showing the city of Genoa, Italy. This artwork was created in the fifteenth century.



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Go online to access additional end of topic resources such as interactivities and printable worksheets.

Try out these interactivities: Medieval Europe timeline (int-2945)

Medieval Europe word search (int-4086)

Complete these digital docs: Worksheet 18.9: Wordsearch, Worksheet 18.10: Summing up, Worksheet 18.11: Reflection

Back to the big questions

At the beginning of this topic several big questions were posed. Use the knowledge you have gained to answer these questions.

1. How was society organised during the Middle Ages?
2. How did society in the Middle Ages differ from our own?
3. What sorts of powers did rulers have during the Middle Ages?
4. What types of technology existed during the Middle Ages?
5. What was everyday life like during the Middle Ages?

TOPIC 19
Investigating the Black Death in Asia, Europe and Africa

19.1 Overview

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

19.1.1 Links with our times

In 1997, eighteen people in Hong Kong were infected with a form of influenza unknown in human beings. Six of them died. Their disease was identified as a type of flu previously found only in poultry such as chickens, ducks and geese. It was the first time this type of flu had crossed from birds to humans, and it became known as 'bird flu' or 'avian flu'. In 2005 this strain of flu was discovered in migratory birds in China and Central Asia. The newly appointed United Nations Coordinator for Avian and Human Influenza warned that the spread of this form of the disease could kill anywhere from 5 to 150 million people worldwide. The very mobile nature of migratory birds increased the level of fear and panic at the time. Fortunately, the worst predictions were not realised — but why would we panic about such a disease?

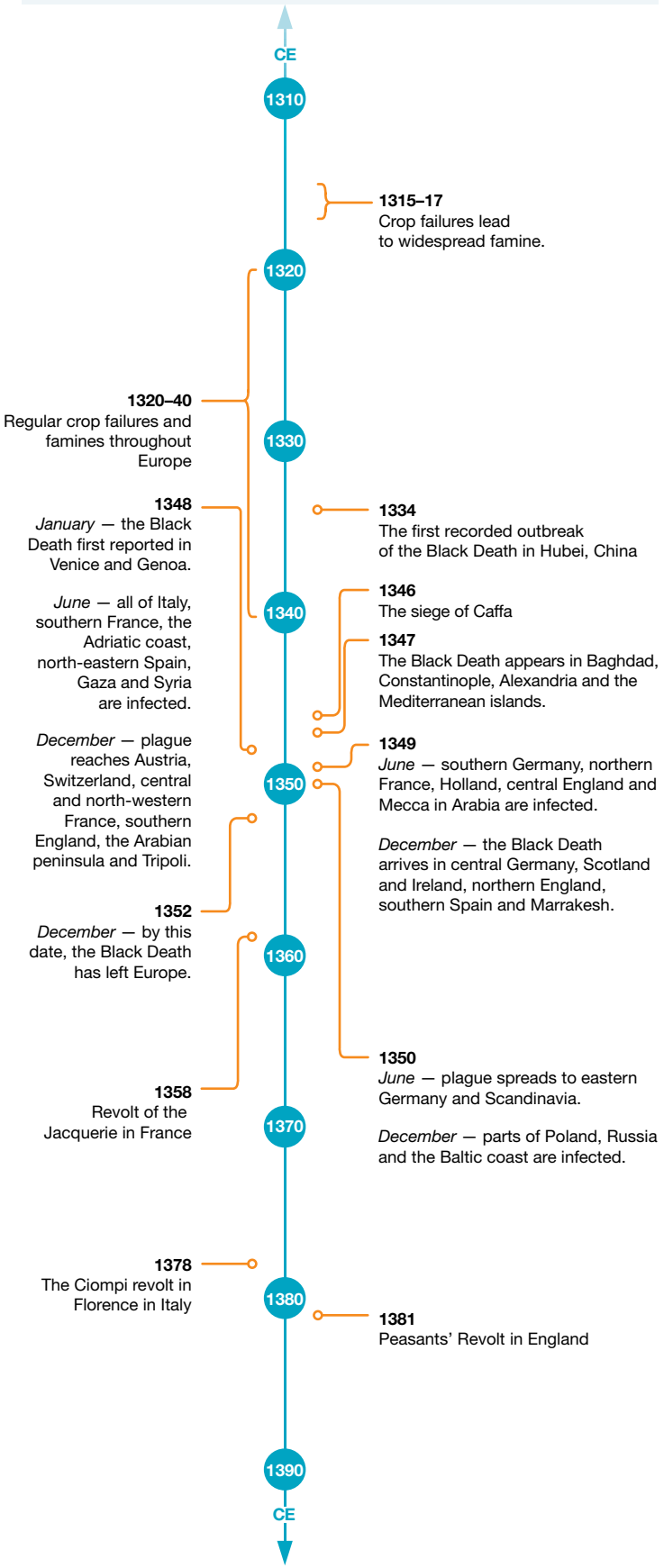
SOURCE 1 This painting by early sixteenth-century painter Matthias Grunewald conveys some of the horror of the Black Death that devastated Europe, Asia and North Africa.



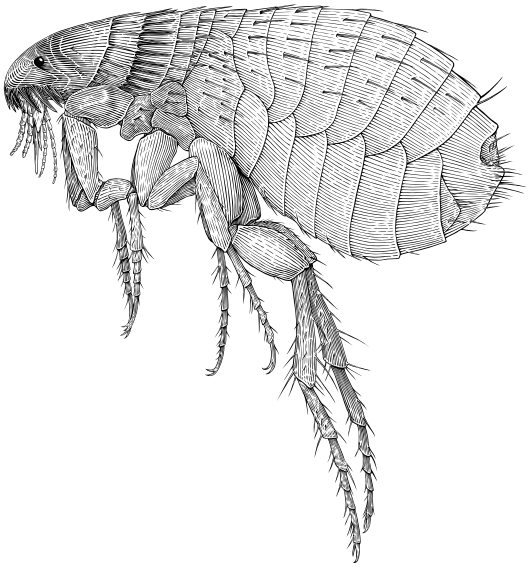
Two examples, one from recent history and one from medieval history, can help us answer this question. Between 1918 and 1920 an extremely infectious type of influenza known as the Spanish Flu spread from the United States to virtually all parts of the world, killing over 50 million people. When an infectious disease spreads across a significant part of the world and causes illness in large numbers of people, it is known as a *pandemic*. More people died of the Spanish Flu than had been killed in World War I.

Although it happened many hundreds of years ago, the horror of the Black Death pandemic of the fourteenth century still has a strong influence on us. Millions of people died a horrible death from this disease and were completely powerless to prevent or treat it. When new illnesses suddenly arise, with no apparent treatment, it is not surprising that our historical experiences lead us to fear the possible consequences.

SOURCE 2 A timeline of the Black Death in Asia, Europe and North Africa in the fourteenth century.



SOURCE 3 The bacteria that caused the Black Death were transmitted by fleas living on the bodies of black rats.



Big questions

As you work through this topic, look for information that will help you to answer these questions:

1. What was the Black Death, and how did it cause the death of so many people?
2. How did fourteenth-century living conditions and the state of medical knowledge leave the population defenceless against serious disease?
3. Why did the Black Death break out when it did, and where did it spread?
4. How did people attempt to deal with the disease?
5. What were the consequences of the Black Death in Europe and other parts of the world?

Starter questions

1. Can you think of any recent health scares that have caused concern in different parts of the world?
2. What is a pandemic? Do you think HIV/AIDS is considered a modern pandemic?
3. Why is it possible for disease today to spread rapidly to all parts of the world?
4. What do you think would be the consequences today if we suffered from a pandemic that killed one-third of the world's population?

INQUIRY SEQUENCE

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Watch this eLesson: The Black Death — a 14th century plague (eles-1831)

19.2 How do we know about the Black Death?

19.2.1 Written sources and contemporary art

The Black Death was a catastrophic event that had a huge impact on all the countries it passed through. There are many types of primary and secondary sources that help historians understand this event, particularly its effects in Europe. For example, there are a large number of written accounts of how the plague affected people, and many artists also recorded their own observations in paintings and woodcuts.

Many written accounts of the Black Death survive to this day. In monasteries throughout Europe, monks took on the responsibility of recording in various **chronicles** the events occurring around them.

Individual writers such as Geoffrey the Baker or the monk Henry Knighton recorded the impact of the plague in England. In Italy, Agnolo di Tura described in detail the effect of the plague on the people of the city of Siena.

SOURCE 1 From Agnolo di Tura's *Description of the Black Death*, 1348

> The victims died almost immediately. They would swell beneath the armpits and in the groin, and fall over while talking. None could be found to bury the dead for money or friendship. Members of a household brought their dead to a ditch as best they could, without priest, without divine offices. In many places in Siena great pits were dug and piled deep with the multitude of dead. And they died by the hundreds, both day and night, and all were thrown in those ditches and covered with earth. And as soon as those ditches were filled, more were dug.

The Italian writer Giovanni Boccaccio used the Black Death as a basis for his fictional work *Decameron* (see Source 2),

SOURCE 2 Boccaccio's *Decameron* was written between 1349 and 1351 and contains descriptions of the effects of the Black Death on the population of the Italian city of Florence. This edition was printed in the sixteenth century.


IL
DECAMERON
DI MESSER
GIOVANNI BOCCACCI
Cittadino Fiorentino.
Ricorretto in Roma, et Emendato secondo
l'ordine del Sacro Conc. di Trento,
Et riscontrato in Firenze con Testi Antichi & alla sua
vera lezione ridotto da' Deputati di loro Alt. Ser.
NVOVAMENTE STAMPATO.
IN FIORENZA
Nella Stamperia de i Giunti
MDLXXIII.

and the poet Petrarch used his poetry to express his personal feelings about the huge loss of life caused by the disease.

Medieval church parishes kept written records of baptisms, marriages and deaths. Although the huge numbers killed by the Black Death often meant that priests or monks could not keep their records completely up-to-date, some quite accurate details of the deaths in particular parishes still survive.

Contemporary artists

Just as writers were keen to record the events happening around them, artists produced drawings and paintings showing many aspects of the Black Death. As well as illustrating the symptoms of the disease in their artworks, artists were inspired to explore themes of death and destruction. The *danse macabre* (or 'dance of death') was a theme explored by many artists in the years following the Black Death (see Source 3). It demonstrated that life was fragile and that death would eventually affect everyone, no matter how rich or important a person might be.

SOURCE 3 The *danse macabre* was an artistic theme inspired by the effects of the Black Death.



19.2.2 Medical science

We do not know as much about how the plague affected Asia and Africa; however, advances in medical science in recent times have helped us to understand the nature and spread of the disease that savaged so much of the known world in the fourteenth century.

At the time of the Black Death, no-one had any idea of the actual causes of disease. It wasn't until the nineteenth century that medical science was able to identify disease-causing bacteria. By comparing the descriptions and drawings of the disease as provided by medieval writers and artists, medical scientists have been able to compare these symptoms with those of known diseases. This has allowed them to develop an explanation as to what caused the Black Death.

19.2.3 Archaeological evidence

Many medieval villages lost almost all their inhabitants during the Black Death. Many villages were left completely deserted at the time, while others were abandoned by the small number of surviving inhabitants in the years following the plague. These people found that the village could not function with its reduced population, and so they moved to other locations. Modern aerial photography can show us where these deserted medieval villages were once located (see Source 4).

SOURCE 4 The medieval village of Bingham's Melcombe in England was abandoned shortly after the Black Death. The location can be seen in this aerial photograph. The fourteenth-century church still survives.



19.2 Activities

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

Check your understanding

1. What sources exist to help historians to understand the Black Death?
2. What was the *danse macabre*?
3. In which century was the cause of the Black Death identified?
4. How were scientists able to identify the disease-causing bacteria?
5. What impact did the Black Death have on villages?

Apply your understanding

6. Although Boccaccio's *Decameron* (see **Source 2**) is a work of fiction, it can still provide useful historical information. How can works of fiction help us to find out about the past?
7. Read **Source 1**. What does this source reveal about the symptoms of the plague?
8. How can archaeological evidence such as that in **Source 4** help us to understand the effects of the Black Death?
9. Explain the basic idea behind artworks associated with the *danse macabre* as shown in **Source 3**.
10. Why might church parish records of deaths caused by the Black Death not always be a reliable source of information about the impact of the disease?
11. Why would it be unlikely that primary sources could provide reliable information about the spread of the plague?

19.3 What was the Black Death?

19.3.1 Introduction — the Black Death

During the time the terrible disease known as the Black Death was killing so many people in all parts of the known world, no-one actually knew what caused it. Today we understand that the bite of a flea that lived on black rats helped spread the disease. However, this was completely unknown in the fourteenth century.

SOURCE 1 The appearance of black or purple blotches on the skin is thought to be the origin of the name 'Black Death'.



Why 'Black Death'?

There are a number of theories about the origin of the English name 'Black Death'. The most popular of these comes from the appearance of the disease in its final stages. At this time, small black or purple blotches appeared on the skin of those suffering from the disease, and this may have contributed to the name. In French, the disease was known as *morte bleue* ('Blue Death'). The Latin name *pestis atra* ('terrible plague') was widely used by educated writers of the time.

Three diseases in one

The Black Death appears to have been a combination of three related diseases, all of which had different symptoms and different ways of being transmitted to humans. The first of these was the bubonic plague. This was so named because of the 'buboes' that appeared on the victims' bodies. These buboes were pus-filled swellings of the **lymph nodes** in the groin, under the armpits and on the neck. This disease was not necessarily fatal by itself and recovery was possible. A far more severe form of the disease was the pulmonary or pneumonic plague. This form attacked the lungs and was always fatal.

The third form was septicaemic plague, which aggressively attacked the bloodstream. In this form the bacteria multiplied so fast that the person would die within hours of infection, with bleeding into the skin causing purple–black blotches to appear.

19.3.2 Origins and spread of the plague

Origins

Bubonic plague appears to be **endemic** to certain parts of the world, including western Arabia, Kurdistan, northern India and the Gobi Desert. It usually lies **dormant**, but at different times in history it has broken out in the form of major **pandemics**. In the sixth and seventh centuries CE it spread from Arabia, reaching Egypt in 542 and then spreading through Europe. It eventually reached Ireland in 664. In the 1890s, a pandemic that began in Yunnan Province in China spread to northern India, killing over six million people. In 1900 it arrived in Australia and killed over 550 people. Recent scientific research has suggested that the medieval pandemic known as the Black Death may have originated near Lake Issyk-Kul, in north-eastern Kyrgyzstan, in Central Asia. From there it spread into China, India and the Middle East and Europe.

How did it spread?

In 1894 scientists identified a bacterium known by the scientific name of *Yersinia pestis*. This is now understood to be the cause of all three forms of the plague. These bacteria were transmitted by a number of different types of flea. One such flea was commonly found living on the bodies of black rats. Wherever the rats thrived, the fleas had the opportunity to bite other animals and humans, usually infecting them with the bubonic or septicaemic form of the disease. Fleas could bite many people.

Pneumonic plague was the most contagious form of the disease because it infected the lungs. This would cause severe coughing, which would spray the bacteria out into the air. The disease could be breathed in by anyone close by, who would then be infected.

SOURCE 2 The bubonic plague was so named because of the appearance of 'buboes', which were swellings of the lymph nodes.



SOURCE 3 The bacteria that caused the Black Death were transmitted by fleas living on the bodies of black rats.



SOURCE 4 Rat-catchers in Sydney in 1900 attempting to control the spread of bubonic plague



DID YOU KNOW?

When a flea became infected with the plague bacteria, the bacteria would multiply quickly and block the flea's feeding tube. This would make the flea very hungry. It would try to feed on the blood of a host (an animal or human) but could not swallow the blood because of the blocked feeding tube. The blood mixed with the bacteria would be **regurgitated** and enter the host through the open wound, leading to a new infection.

19.3 Activities

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

Check your understanding

1. Explain the three forms of the Black Death, including how each was transmitted and how the body was affected in each case.
2. (a) What does it mean if a disease is *endemic*?
   (b) Identify two parts of the world in which bubonic plague appears to be endemic.
   (c) Why do these parts of the world not suffer from the plague all the time?

Apply your understanding

3. Examine **Source 1** and explain why the Black Death may have been given that name.
4. Using **Source 2**, explain what buboes are and how they affect the body.
5. How does **Source 3** help us to understand the role of the flea in transmitting the plague from person to person?
6. What information would the rat-catchers in **Source 4** have had that was not available to the people of the Middle Ages?
7. Using the internet and your library, prepare a brief report on the bubonic plague outbreak that occurred in Australia in 1900. Which areas were the worst affected, and what steps were taken to deal with the disease?

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Complete this digital doc: Worksheet 19.1: What was the Black Death?

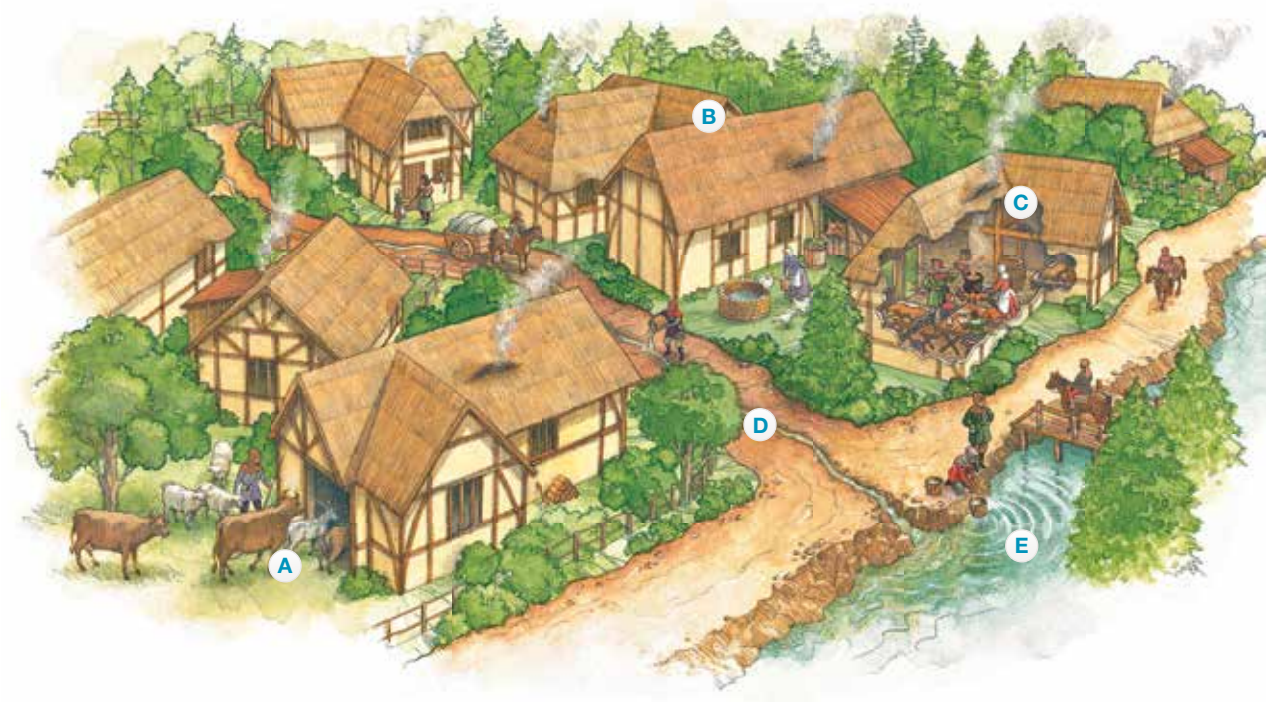
19.4 Living conditions and medical science

19.4.1 Living conditions in medieval cities

The High Middle Ages (c. 1100–1300 CE) in Europe was a period of rapid population growth and relative prosperity. It saw the expansion of towns and cities. Many of these were filthy and overcrowded, providing ideal conditions for the spread of disease.

Medieval cities such as London, Paris and Florence grew very rapidly during the thirteenth and fourteenth centuries, with little thought given to proper planning or healthy living conditions. Most houses were small, containing only one or two rooms. Privacy was not a particularly high priority, and even members of reasonably well-off families would all sleep in the same room. Amongst the poor, it was not unusual for as many as a dozen people to all sleep on the floor together. In country villages, they would often be joined by their livestock. If someone became ill, it was physically impossible to isolate them from other members of the family. So if one member of the family became sick, it was likely that all would catch the same illness.

SOURCE 1 Medieval houses and towns were generally very unhealthy places to live.



A The presence of domestic animals and straw on the floor allowed rats and other vermin to flourish.

B Houses were close together, allowing for the easy spread of disease.

C Houses were very small, providing little opportunity to isolate sick family members.

D A drain down the middle of the street was the only way to remove waste and rubbish.

E Rivers and streams that were used for drinking water often became contaminated.

Hygiene and sanitation

In a small village, the removal of rubbish and human waste was relatively simple, but in an overcrowded town it became a more difficult problem. The streets were narrow, usually with a drain running down the middle that was meant to carry waste away. However, these drains regularly filled up and so the waste remained. Often the drains fed into the same rivers and streams from which people drew their drinking water. While breathing in foul air or drinking contaminated water could not spread the Black Death, cases of gastric diseases such as **dysentery** and diarrhoea were common. If the body was weakened because of such diseases, the plague could take hold more easily, and death was likely to occur much sooner.

Life expectancy

Although the average life expectancy in Australia today is about 82 years, most people did not live this long in medieval times. Death from infectious disease was common and children were the most likely victims. Close to a quarter of all babies died within the first year of life. Less than half of all children would reach the age of ten. Those who passed the age of ten had a reasonable chance of reaching adulthood and perhaps living to around forty years of age. Only a small minority lived to what we would regard as old age.

19.4.2 Medical science in the Middle Ages

The High Middle Ages (c. 1100–1300 CE) in Europe was a period of rapid population growth and relative prosperity. It saw the expansion of towns and cities. Medical science at the time was totally inadequate and unprepared for the plague that was to come.

Medical knowledge at the time was based largely on ancient knowledge and had not advanced much for a thousand years. Doctors relied largely on the theories of ancient physicians such as Hippocrates and Galen. In the fourth century BCE, the Greek physician Hippocrates was one of the first to determine that illness was not a result of a curse from the gods. He promoted the idea that illness and disease were part of nature and could be influenced

by factors such as diet and a person's living habits. Nevertheless, he was completely unaware of microscopic organisms as a cause of disease. The Greek physician and philosopher Galen lived in Rome in the second century CE. Because human dissections were illegal under Roman law, Galen carried out anatomical dissections on various animals. He proposed theories on the operation of the brain and the nervous system, as well as on the circulation of the blood throughout the body. Although many of his theories were later proved to be incorrect, they were the definitive word on medical science in Europe. Medieval doctors refused to accept any idea that was not consistent with Galen's theories and so were not willing to accept any new evidence relating to the causes or spread of disease.

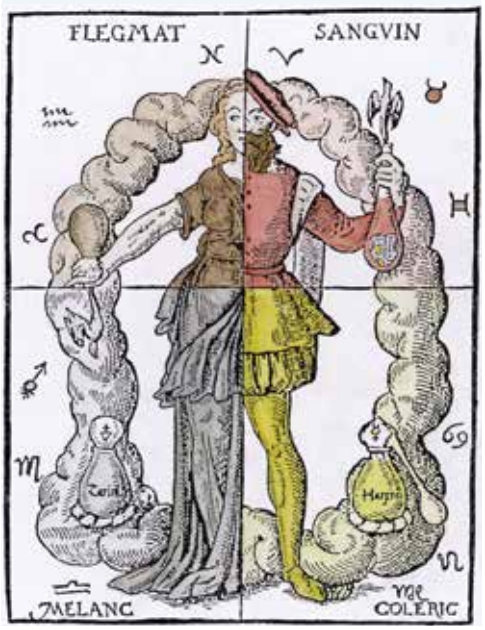
Treating the sick

The treatment of illness and disease in the Middle Ages was based more on superstition and ignorance than on any genuine medical knowledge. Medieval doctors believed that the body contained four 'humours' or aspects that influenced a person's state of health (see Source 2). These humours were black bile, yellow bile, phlegm and blood.

While they were in balance, the body would be healthy. Illness occurred when these humours were out of balance in the body. In these circumstances, one common cure was to drain blood from the body through a process of bloodletting (see Source 3). Applying leeches to the body to suck the blood was an alternative method of restoring the body's balance (see Source 4).

Herbal medicines were also popular, but often contained poisons, and so were sometimes more dangerous than the disease. Surgery was usually carried out by barbers, and was rarely successful. Amputations of injured or diseased limbs were the most common form of surgery. Because of the strong religious beliefs of the time, most people believed that prayer was the most effective way of dealing with serious illness.

SOURCE 2 This sixteenth-century diagram illustrates the four humours that medieval doctors believed determined the health of the body.



SOURCE 3 Bloodletting, as shown in this artwork, involved the draining of a measured amount of blood from a vein believed to be connected to the diseased organ in the body.



SOURCE 4 In this illustration from Boccaccio's *Decameron*, doctors apply leeches to a royal or aristocratic patient.



DID YOU KNOW?

Modern anaesthetics were unknown in medieval times, so the patient was wide awake during surgery. One mixture used to try and dull the pain was known as 'dwale' and it consisted of lettuce juice, gall from a castrated boar and assorted herbs such as bryony, henbane and hemlock. All these plants were poisonous and could have killed the patient. Cuts and wounds from surgery were treated by cautery. This was a process of applying hot irons to the wound to seal it and prevent further loss of blood.

19.4.3 Life suddenly gets harder

The growth in population throughout Europe in the twelfth and thirteenth centuries quickly led to most of the best farming land being overworked. By the beginning of the fourteenth century, the quantity and quality of crops were in decline. This raised the threat of famine. To make matters worse, there appears to have been a change in weather patterns early in the fourteenth century, with the winter of 1306/07 the coldest experienced in over 300 years. As the colder and wetter weather took hold, farming conditions became worse, with the years 1315 to 1317 bringing crop failures and widespread famine. The 1320s and 1330s saw frequent famine conditions continue as the weather and overworked soils brought regular crop failures. By the 1340s the standard of health of much of the European population was very poor, with little resistance to serious disease. It was to this ravaged population that the Black Death was to bring unprecedented death and destruction.

19.4 Activities

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

Check your understanding

1. Explain the contributions made by Hippocrates and Galen to medieval medical knowledge.
2. Why had there been no significant advances in medical knowledge in Europe for over a thousand years?
3. Of all babies born in medieval times, approximately what proportion could expect to reach adulthood?
4. How did most people in the Middle Ages attempt to deal with illness?
5. What happened in the first half of the fourteenth century in Europe to make people more susceptible to disease?

Apply your understanding

6. Using **Source 1**, list three reasons why people living in medieval times were at greater risk of disease than we are today.
7. Explain the purpose of the medical treatments depicted in **Sources 3** and **4**.
8. (a) How do we know the patient in **Source 4** was an important person?
   (b) From the reactions of the three other people in **Source 4**, what can you identify as one of the patient's symptoms?
9. Each of the four humours depicted in **Source 2** was associated with a number of other natural and human characteristics. Using resources from your library and the internet, find out the following:
   (a) What were the names of each of the humours?
   (b) What elements in nature was each humour associated with?
   (c) How were the humours believed to have influenced a person's personality and mood?
10. Imagine that you are a medieval barber. Design an illustrated sign for your shop advertising all of the services you provide, including various types of amputations.

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Complete this digital doc: Worksheet 19.2: Lifestyle and conditions help the Black Death

19.5 Religious beliefs

19.5.1 The importance of religion

Religious beliefs, and particularly the Roman Catholic Church, were central to medieval European life. When good things happened, people believed they were being rewarded for their good deeds, and illness and disease were seen as a punishment from God.

Most people were illiterate and very superstitious, and they relied heavily on priests for education and guidance on events that happened around them. Those who did not follow the Christian religion were viewed with suspicion and even hatred. If something bad happened, people looked to the Bible for an explanation and often believed they were being punished for their sins.

SOURCE 1 The Four Horsemen of the Apocalypse, shown in this twelfth-century manuscript, represented famine, plague, war and death. They were seen as a sign of God's punishment and that the end of the world was near.



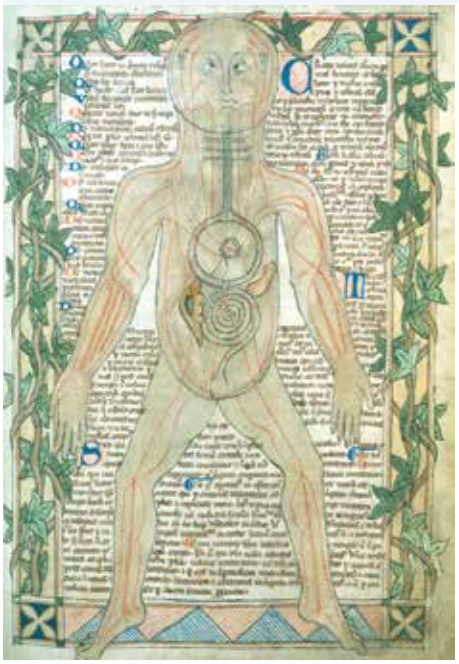
DID YOU KNOW?

Superstitious minds looked everywhere for a cause of the Black Death. Astrologers said that the alignment of the planets Saturn, Jupiter and Mars in the house of Aquarius in 1345 was to blame. An alignment of Saturn and Jupiter was supposed to bring death and disaster, while an alignment of Mars and Jupiter was said to cause disease. The alignment of all three planets could only mean a huge catastrophe was imminent.

19.5.2 Religion and medical science

Because the Church controlled every aspect of education, the training received by medieval doctors had to be in accordance with religious teachings. All medical education carried out in universities was strictly in line with the beliefs of ancient physicians such as Hippocrates and Galen. No new research was permitted because it was believed that the ancient teachings were complete and could not be contradicted. In 1300, Pope Boniface VIII prohibited the cutting up of corpses, so any attempt to study human anatomy was virtually impossible. This meant that even the most educated doctors had very little knowledge of human anatomy, making treatment of sickness difficult and any form of surgery almost impossible.

SOURCE 2 This late thirteenth-century illustration of the human body was meant to display the flow of blood through the body.



Doctors and priests

It is clear that in medieval Europe, medicine took second place to religion. Priests were considered to be more important than doctors in the treatment of the sick. When dealing with an ill person, the priest always took the lead — the doctor was permitted to assist only once the praying was finished. If the patient was an important

or wealthy person, the doctor might wait while a whole group of churchmen offered up prayers before being granted access. If the disease was working quickly, the doctor might not even get to examine the patient until after they died. It is not surprising then that doctors were powerless to deal with a pandemic such as the Black Death.

SOURCE 3 Prayer for the sick was considered to be more important than medical science.



19.5.3 Religious conflict

By the beginning of the fourteenth century, virtually all of western Europe was Roman Catholic. The Arabic conquests during the seventh century and onwards, and the later expansion of the Ottoman Empire, meant that most of the Middle East and North Africa followed Islam. Christians and Muslims looked at each other with suspicion, largely as a result of the Crusades and of the efforts of Spanish Christians to recapture Spain from Muslim control. Since both religions viewed illness as a form of divine punishment, the people of each religion blamed the other for the Black Death when it ravaged their people. Christians also treated Jews very poorly as they blamed the Jews for the death of Christ. When the Black Death struck, evidence suggests that European Christians blamed it on the Jews.

SOURCE 4 An excerpt from Henry Knighton's *Chronicon*, an account written during the fourteenth century.

> The Scots, hearing of the cruel plague of the English, declared that it had befallen them through the revenging hand of God … And thus the Scots, believing that the English were overwhelmed by the terrible vengeance of God, gathered … with the intention of invading the whole realm of England. The fierce mortality came upon them, and the sudden cruelty of a monstrous death winnowed [came upon] the Scots.

19.5 Activities

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

Check your understanding

1. What was the attitude of the medieval Church towards medical science?
2. Why was there suspicion between Christians and Muslims during the Middle Ages?

Apply your understanding

3. Examine **Source 1**. What does this tell us about the medieval explanation for events such as famine and plague?
4. Identify two inaccuracies in the diagram of the body shown in **Source 2**. What prevented medieval doctors from finding out more about the human body?
5. In what ways could the activity depicted in **Source 3** actually hinder medical treatment for illness?
6. From the information in **Source 4**, what do you think was the attitude of the Scots towards the English? How did their religious beliefs influence their actions?

19.6 Trade and the spread of disease

19.6.1 Settlements and trade

The early fourteenth century was a time of rapid expansion of trade between Europe, North Africa and Asia. Wherever people traded, black rats and their disease-carrying fleas followed. Disease that had previously been confined to an area in Central Asia soon spread to populations that had no immunity to its ravages.

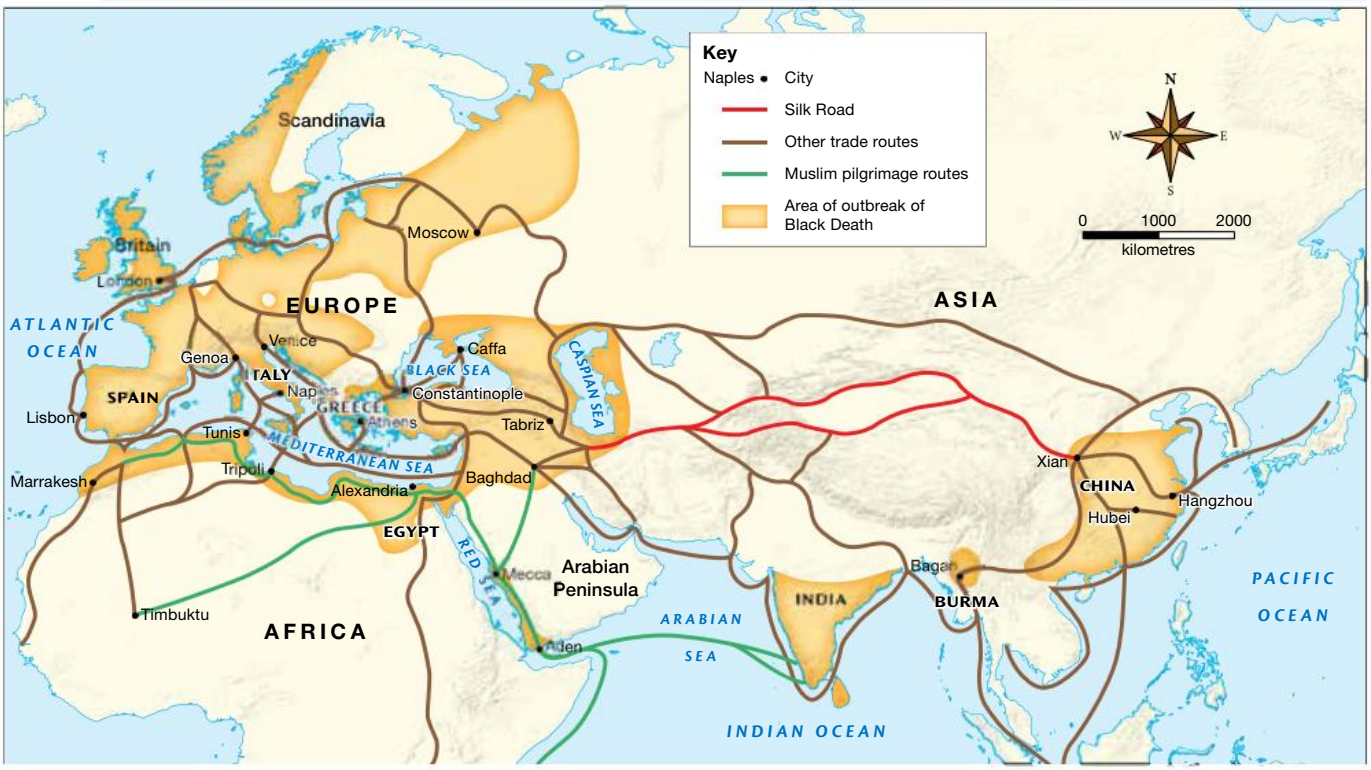
Human settlement in the fourteenth century

As we have learned, the early medieval era was a period in which many nomadic groups moved through Europe and Asia, invading new land. Through the Middle Ages, most of these nomadic groups gradually settled in the lands they had conquered, establishing permanent villages and towns as the centres of agricultural activity. Warriors such as the Franks, Magyars and Goths became farmers, while seafaring raiders such as the Vikings and Danes came to use their ships for peaceful trade. By the fourteenth century, most of Europe, southern and eastern Asia and much of northern Africa was subject to permanent human settlement. Only in the northern and central regions of Asia and in sub-Saharan Africa was the nomadic lifestyle still prevalent.

The growth of trade

Settled civilisations in Europe, and Asian empires such as those in India and China were quick to realise the benefits of peaceful trade. Networks of overland trade roads developed throughout Europe and Asia, connecting the rapidly growing towns and leading to the growth of some towns as major trading centres. These towns would regularly hold fairs to allow merchants to display and sell their wares. Major commercial city-states such as Genoa and Venice sent ships throughout the Mediterranean and to western and northern European ports. Trade between Europe and Asia expanded rapidly along the Silk Road, with China and many other centres through central Asia coming into regular contact with European merchants.

SOURCE 1 Permanent human settlement led to the growth of towns and expansion of trade, which allowed the Black Death to spread more easily.



19.6.2 Outbreak in Asia

Written reports indicate that outbreaks of the Black Death may have occurred in China in the 1320s and 1330s. The province of Hubei in central China is considered by many to be the location of the first major outbreak in 1334. It was here that the Black Death first appeared in its most deadly form. In the fourteenth century, China was largely ruled by the Mongols, who had strong links to Central Asia, so they may have brought the disease with them to China. At the same time trade between China and a number of European states was increasing from access along the Silk Road. The potential was always there for the Black Death to be carried to Europe, either by European traders returning from the east or by the Central Asian Tartar warriors (Mongols) who were continuing their attacks in eastern Europe.

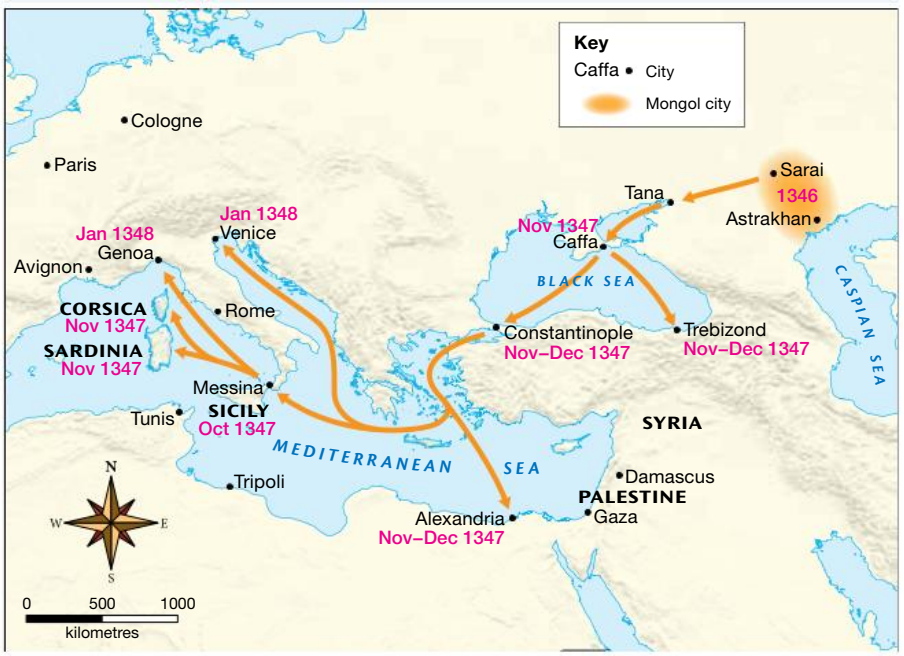
The siege of Caffa

In the thirteenth century, the Italian trading city of Genoa had taken control of Caffa, on the Crimean Peninsula, in modern-day Ukraine. Caffa was a major shipping port for trade throughout the Black Sea. In 1346 the Tartars attacked the city. They were supported by Genoa's bitter rivals, the Venetians, who had previously controlled Caffa. As they laid siege to the city, the Tartars began to fall sick from a serious disease and large numbers died in a very short time. Unable to maintain the siege, the Tartars began to withdraw; but before they did, they began catapulting the diseased bodies of their dead over the walls and into the city (see Source 2). The Genoans who escaped from Caffa soon found they were carrying the deadly disease. Venetian traders who had been present during the siege were also infected and both groups carried the Black Death deep into the heart of Europe (see Source 3).

SOURCE 2 When the Tartars attacked Caffa, they used trebuchets like the one shown in this illustration to catapult infected bodies over the city walls.



SOURCE 3 Merchants and soldiers returning from Caffa in late 1347 soon spread the Black Death to the Middle East, North Africa and Italy.



How important was Caffa in the spread of the Black Death?

Trade links between Asia and Europe were developing so strongly during the fourteenth century that Caffa was probably not the only source of the Black Death

coming to Europe, as Messina first recorded the plague shortly before the siege of Caffa. Nevertheless, the rapid spread to places that engaged in trade with Caffa suggests that it was very important in hastening the infection into Europe, the Middle East and North Africa. During the last few months of 1347, the disease was carried to Constantinople, the southern shores of the Black Sea, Alexandria in Egypt and the islands of Sicily, Corsica and Sardinia in the Mediterranean. Most of this spread appears to have originated in Caffa.

DID YOU KNOW?

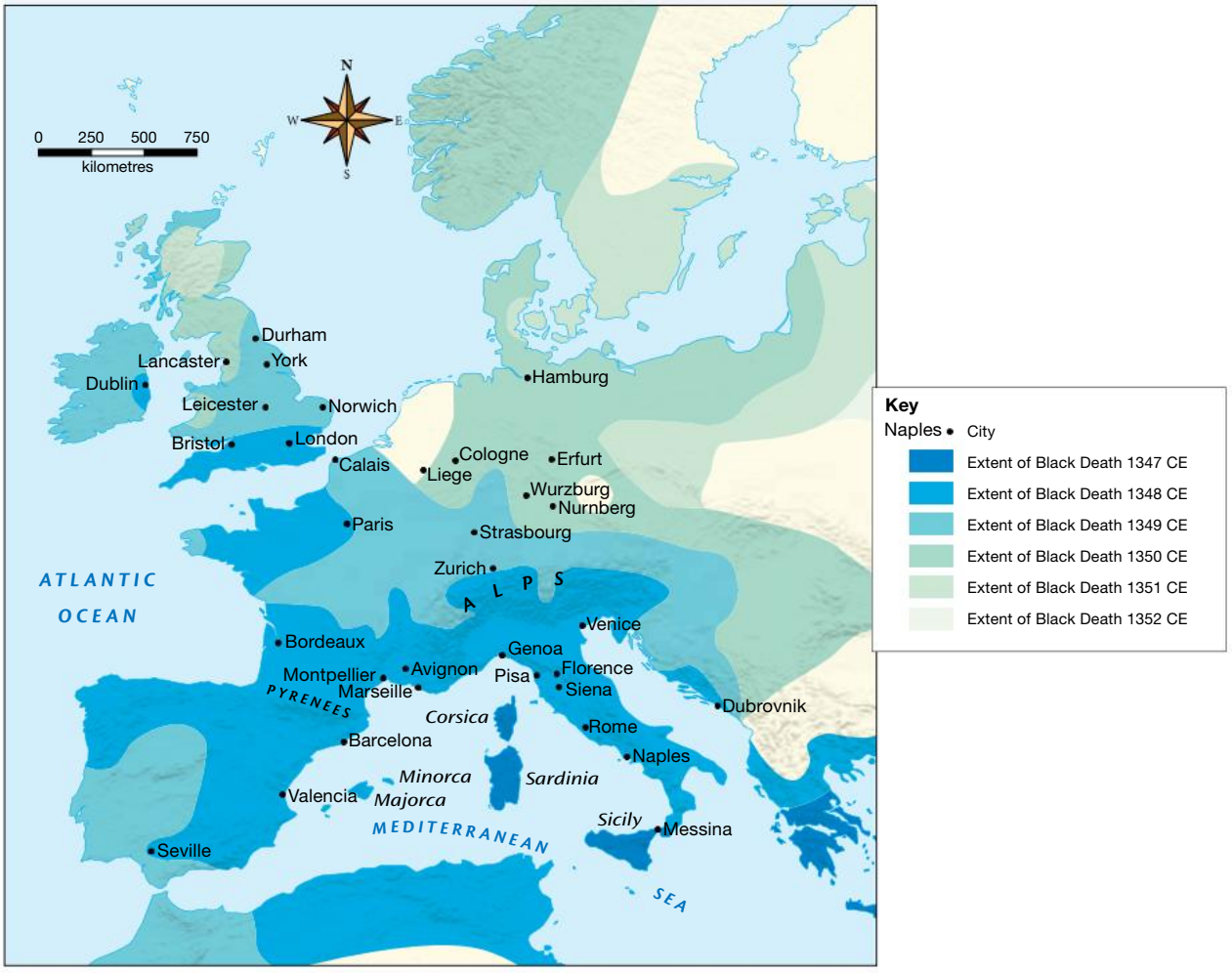
Some historians believe that fleas carrying the Black Death came to Caffa on the skins of marmots. These small Central Asian mammals had no resistance to the disease, and large numbers became infected and died in the mid 1340s. Fur traders came across the dead animals, removed their hides (including the deadly fleas) and sent them along the Silk Road to cities such as Caffa.

19.6.3 The spread through Europe, the Middle East and Africa

Europe

By January 1348, cases of the plague were reported in both Genoa and Venice in northern Italy. From there it quickly spread to the rest of Italy, and to southern France and Spain by middle of that year. Within a year all of western Europe was affected and, by 1350, the Black Death had turned east again and had reached Russia. Source 4 shows how quickly the Black Death spread throughout Europe between the end of 1347 and 1351.

SOURCE 4 The Black Death spread like a wave across Europe between 1348 and 1351.



DID YOU KNOW?

The spread of the plague to Scandinavia is believed to have occurred through a trading ship carrying wool from England. The ship was seen floating off the Norwegian coast and the locals rowed out to examine it. They found the crew to be dead and decided to take the cargo of bales of wool. Little did they know the bales were full of the deadly plague-carrying fleas.

Middle East and North Africa

The plague appears to have come to the Middle East through several different routes. During 1347, warriors returning to Baghdad from battle at Tabriz in northern Persia (now Iran) found that they had brought the disease with them. These soldiers would have carried supplies of grain with them for food. Not only did black rats infest the grain supplies but the fleas carrying the disease would also have been able to survive on grain debris. The area that includes modern-day Iraq, as well as Syria and southern Turkey, was soon ravaged by the Black Death. It is also believed that Muslim pilgrims coming to Mecca from northern India via the Persian Gulf and the Red Sea may have been transporting rats from Central Asia to the Arabian Peninsula, bringing the plague with them.

The Egyptian city of Alexandria was a major trading port on the southern shores of the Mediterranean. It had strong links with Constantinople, as well as with Arab cities to the east and all along the north African coast. Alexandria became infected in 1347, soon after the siege of Caffa. The Black Death then spread eastwards to Palestine and Syria in 1348, and into the Arabian peninsula, reaching Mecca.

SOURCE 5 The spread of the Black Death across the Middle East and northern Africa.



North Africa

From Alexandria, the plague began to spread along the north African coast, and had reached Tripoli in modern Libya by 1348. At the about the same time, the city of Tunis appears to have been infected through its trade with Sicily, with an outbreak reported in April 1348. From Tunis, the plague spread eastwards into

Libya, with that country now attacked by the plague from both east and west. In 1348, the ruler of Morocco attempted to conquer Tunis, but failed, and his retreating army carried the disease back to Morocco, infecting Algeria along the way. The plague reached Marrakesh in central Morocco in 1349. It is possible that Morocco was also infected by traders from Spain, bringing the disease via the island of Majorca.

From Alexandria, the plague also spread south along the Nile valley, although it does not appear to spread into other parts of Africa. It appears that settled areas with towns and agriculture provided the most suitable environment for black rats to thrive. The area to the south of Egypt and the Sahara was inhabited largely by nomadic tribes. Their lifestyle did not provide an environment suitable for the rats, so the plague did not spread into these parts of Africa.

19.6 Activities

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

Check your understanding

1. Outline the areas of Europe, Asia and the Middle East that had become permanent human settlements by the fourteenth century.
2. Where did the Black Death first appear in the deadly form that eventually devastated Europe, the Middle East and North Africa?
3. Why was the city of Caffa important in the spread of the Black Death?
4. Why did the Black Death primarily affect settled communities rather than people living a nomadic existence?

Apply your understanding

5. Examine **Source 3**. Why were the cities of Constantinople, Alexandria, Venice and Genoa among the first to be infected after the siege of Caffa?
6. How did the Tartars in **Source 2** spread disease into the city of Caffa?
7. Using **Source 4**, identify when each of the following cities was infected by the Black Death: London; Paris; Hamburg; Dublin; Marseilles.
8. Using **Source 5**, identify three different routes by which the Black Death came to the Middle East and northern Africa.
9. Using the internet and your library, find out all you can about the Silk Road, including the answers to the following:
   (a) Where did the Silk Road begin and end, and which regions or countries did it pass through?
   (b) When was the earliest recorded use of the Silk Road for trade?
   (c) What were the main goods traded along the Silk Road?
   (d) Why was the Silk Road so significant in spreading the plague?
10. One historian has suggested that without trade, the Black Death may never have happened. Explain whether or not you agree with this statement. Give evidence to support your opinion.
11. What is a pandemic? Explain why it is appropriate to refer to the Black Death as a pandemic.

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Complete this digital doc: Worksheet 19.3: Warfare and trade help the Black Death

myWorld History Atlas

Deepen and check your understanding of the topic with the following resources and auto-marked questions:

› **Black Death**

19.7 Responses to the Black Death

19.7.1 Medical treatments

The strength and speed of the Black Death pandemic caught everyone in its path off guard. Medical science had no way of dealing with the outbreak and religious beliefs provided no protection against the onslaught.

Medieval doctors had no idea what had caused the Black Death and so they resorted to the traditional methods of treating illness. As mentioned previously, bloodletting and the use of leeches were tried and failed. Attempts to cut into the buboes to remove the 'bad' blood often did little more than help spread the disease by exposing the doctors to the bacteria living in the blood.

SOURCE 2 Doctors attempted to treat the plague by draining the bad blood from the buboes in this fourteenth-century fresco.



SOURCE 1 A Welsh writer, who died in April 1349, described the buboes that appeared on the bodies of victims.

It is of the form of an apple, like the head of an onion, a small boil that spares no-one. Great is its seething, like a burning cinder, a grievous thing of an ashy colour. It is an ugly eruption that comes with unseemly haste. It is a grievous ornament that breaks out in a rash. The early ornaments of black death.

A common belief was that disease came from **miasma**, or the bad smells that were often found in overcrowded towns. To counter this, doctors often encouraged their patients to sniff posies of fragrant flowers, bundles of herbs or sweet-smelling oils. In some cases, they even suggested that patients should breathe in the smell of human waste in the hope that one bad smell might overcome the more dangerous miasma.

Doctors themselves began dressing in long hooded robes to protect themselves from infection. They would also wear a face mask that had a long beak-like structure at the front. This beak would contain sweet smelling herbs or oils, designed to filter any evil smells that the doctor might be exposed to.

Some towns resorted to the 'cure of sound'. They would loudly ring the church bells, or fire off cannons, in the hope that the noise would frighten the plague and drive it away. In addition to prayer, spells and charms of all sorts were tried in the hope of driving away the evil. These included washing the skin with vinegar and rose water, or applying a mixture of tree resin, white lily roots and dried human excrement to buboes that had been cut open.

DID YOU KNOW?

One plague prevention method involved the mixing of roasted and ground eggshells with the leaves and petals of marigold flowers, stirring this mixture with treacle into a pot of warmed ale and drinking twice a day. A similarly exotic remedy was to place a live hen near the swelling to draw out the disease and then drink a cup of your own urine twice a day.

Some effective treatments

The most successful measures taken to avoid the plague were those that involved forms of quarantine. In Venice, disease-carrying ships were quarantined on a number of small islands in the lagoon, away from

the main city. In Milan, houses found to contain the plague were walled up to prevent anyone going in or out. These methods did not completely stop the disease, but both of these cities had lower death rates from the plague than many others. In the French city of Avignon, Pope Clement VI sat between two large fires designed to purify the air. In fact, the plague bacteria cannot survive intense heat, and fleas also dislike heat, so this method may well have been the most effective. For many people, simply fleeing an infected town or village was the best form of protection, although it was usually only the wealthy who could take advantage of this.

19.7.2 Religious responses

Followers of all religions saw the Black Death as a punishment from God. Christians, who believed they were being punished for their sins, turned to prayer and carried out pilgrimages to holy places in the hope of warding off the disease. When the plague hit Mecca in 1348, devout Muslims believed it was God's punishment for allowing non-believers to enter the city. In some places, religious authorities and town councils imposed tight restrictions on people's behaviour in the hope of keeping the plague at bay. In the French city of Tournai, men and women living together but who were not married were ordered to marry or to separate, and gambling, swearing and working on the Sabbath were banned.

'Bring out your dead!'

So large was the death toll from the Black Death that all the usual religious rituals associated with death could rarely be observed. As many as half the priests died from the plague and many others fled, making the situation worse. In 1348, Pope Clement VI decreed that those who were infected could make their confessions to each other, including to a woman, if no priest was available. Collection of corpses took place every night, with most buried in mass graves on the outskirts of the town. Very rarely was a proper funeral service held for those who had died.

SOURCE 3 This illustration depicts Saint Sebastian interceding for victims of the plague.



SOURCE 4 In this fourteenth-century English engraving people are escaping from their village after setting the buildings on fire. The woman on the left appears to be performing the last rites for a plague-infected man.



Monks and monasteries

Throughout Catholic Europe, monasteries had become important centres of learning, and many had schools attached. The monks made an important contribution to the life of the surrounding community and were often the first ones that people would turn to in times of trouble. Because the monks saw it as their duty to tend to the

sick, they quickly caught the disease and numbers in the monasteries were reduced. In the period after the Black Death, many inexperienced and poorly trained monks moved into the monasteries, reducing their influence as places of learning.

Blaming the Jews

Throughout Europe, people looked for someone to blame for their misfortune, and suspicion quickly fell on the Jews. They were suspected of having poisoned the air or of infecting the wells from which people drew their drinking water. In some towns Jews were tortured mercilessly until they confessed to poisoning the wells. In other towns, Jews were herded into buildings which were then burned to the ground. Synagogues were destroyed and many Jews put to the sword. Despite Pope Clement issuing a decree declaring the Jews innocent, the persecution continued from 1348 until the early 1350s throughout most of Europe.

SOURCE 5 A medieval illustration showing a group of Jews being burnt at the stake. Jews were required to wear a yellow circle badge to identify themselves.



The Flagellants

One religious group that responded very publicly to the spread of the plague was a group known as the Flagellants. They believed that whipping themselves with steel-tipped whips would show their willingness to be punished for their sins, and win God's favour. The Flagellants are believed to have originated in the eleventh century and had undertaken pilgrimages across Europe in the 1260s. The onset of the Black Death drew many new followers to their brotherhood, and they travelled from town to town across Europe, whipping themselves until they bled. In reality, they were probably helping to spread the disease. Many of them carried the disease in their blood, and they often brought the disease-carrying rats and fleas with them as they travelled.

SOURCE 6 A procession of Flagellants in the Netherlands in 1349



19.7 Activities

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

Check your understanding

1. What did many people in the Middle Ages believe to be the cause of disease?
2. Identify and explain three 'medical' treatments that were recommended for dealing with the plague.
3. Explain the purpose of the costume worn by doctors during the period of the Black Death.
4. Why would the actions taken by the Pope probably have helped to protect him from the plague?

Apply your understanding

5. Use the information in **Source 1** to write your own description of the buboes that were symptoms of the plague.
6. Examine **Source 2**. Why was this activity potentially so dangerous for both the patient and the doctor?
7. What does **Source 3** tell us about the importance of religion in medieval life? How did religious authorities respond to the threat of the plague?
8. Normally, the Catholic Church allowed only priests to administer the last rites to a dying person. Why would the woman in **Source 4** have been permitted to carry out this role?
9. How do we know that the people being burned in **Source 5** were Jews?
10. What were the Flagellants, as depicted in **Source 6**, hoping to achieve through their activities?
11. In addition to the fire burning the village in **Source 4**, there appears to be lightning coming from the sky above the village. Why do you think the artist included this lightning in the engraving?
12. Imagine that you are the mayor of a town that has just begun to be affected by the plague. Draw up an illustrated notice to advise the townspeople of measures they should take to treat plague symptoms. Base this advice on the beliefs held at the time.
13. Using the internet and your library, find out all you can about the persecution of the Jews in medieval Europe, particularly during the Black Death. In particular, search for answers to the following:
    (a) why Jews were treated as outsiders at this time
    (b) examples of restrictions that were placed on Jews in different countries
    (c) at least one other incident when Jews were deliberately targeted for persecution.

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Complete this digital doc: Worksheet 19.4: Responses and treatment

Explore more with this weblink: Experiencing the Black Death

19.8 How did the Black Death change society?

19.8.1 Social changes

Between 1347 and 1351, the Black Death had a brutal effect on life in Europe and the area surrounding the Mediterranean Sea. Despite all the devastation, there were also some positive changes in the following years, many of which occurred as a direct response to the horrors of the plague.

Changes to medicine

The failure of medieval medicine to successfully treat the victims of the plague led to changes in the practice of medicine in the years following the Black Death. Before this time, hospitals were places where sick people were sent to be isolated. When people entered a hospital, all their possessions were disposed of because no-one expected them to survive. During the period of the Black Death, doctors began to try to cure patients placed in hospital, and this practice continued after the plague had gone. Some hospitals began to develop relationships with universities and collect libraries of medical texts. An increased emphasis on

medical knowledge led to more dissections of human corpses, and so improvements in the knowledge of anatomy and surgical practices soon followed.

SOURCE 1 As shown in this fifteenth-century illustration, the desire of doctors to find out more about the human body led to an increase in dissections, which improved knowledge of human anatomy.



Sanitation and public health

In a number of places, authorities became more aware of the need to take responsibility for the health of the population. In Italian cities such as Venice and Milan, public health boards were set up to deal with the plague, and these continued after the disease had moved on. These boards gradually gained extra powers and became a valuable means of preventing the spread of illness. In London, the city council brought in regulations to clean up the city. Laws to prevent littering, the employment of street sweepers and heavy fines for dumping waste in the river were all implemented in the years following the Black Death.

Religion

The devastation of the Black Death weakened the influence of the previously all-powerful Catholic Church. The inability of religious leaders to deal with the plague through prayer and the fact that so many priests had died of the disease led to many people losing some respect for the Church. In the 1360s and 1370s, an English **theologian** John Wycliffe wrote a number of works critical of the papacy and of the role of monasteries in society. He gained a strong following among people whose recent experiences had led them to question the power and influence of the Catholic Church in society. Many of Wycliffe's followers were executed for **heresy**.

Political unrest

The huge decline in the numbers of peasants and agricultural workers meant there were fewer people left to perform these tasks. This meant that peasants were able to demand higher wages. However, these demands were often resisted by those in power. Peasants and workers in various parts of Europe rose up to demand their rights in the years following the Black Death. In France in 1358, a group of workers called the Jacquerie rose up in revolt to try and improve their working conditions. In 1378 a group of workers in the wool industry, who were known as the *ciompi*, led a revolt in Florence where they managed to force some democratic government reforms for a brief time. In England, causes of the Peasants' Revolt

SOURCE 2 The Jacquerie uprising in 1358 was an attempt by French workers to improve their conditions.



of 1381 (see subtopic 18.18) can be traced back to the changes in society that resulted from the Black Death.

Language

In England before the Black Death, most educated people spoke Latin or French. The death of large numbers of educated monks and other scholars meant that schools had to resort to English as the language of instruction. By the 1380s, poets such as Geoffrey Chaucer were publishing their works in what is now referred to as Middle English (see **Source 3**). Chaucer is considered by many to be the father of English literature.

SOURCE 3 The decline in the use of Latin and French in England led to increased use of a form of English, such as in this extract of a poem by Chaucer.

And whom I sawgh he wolde never fine
To reden on this cursed book al night,
Al sodeinly three leves have I plight
Out of his book right as he redde, and eke
I with my fist so took him on the cheeke
That in oure fir he fil backward adown.
And up he sterte as dooth a wood leon
And with his fist he smoot me on the heed
That in the floor I lay as I were deed.
And whan he sawgh how stille that I lay,
He was agast, and wolde have fled his way,
Till atte laste out of my swough I braide:
"O hastou slain me, false thief?" I saide,
"And for my land thus hastou mordred me?
"Er I be deed, yit wol I kisse thee."

19.8 Activities

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

Check your understanding

1. How did the experience of the Black Death change the ways in which hospitals operated?
2. Describe an example of action taken in London to improve sanitation and public health after the plague had moved on.
3. Why did many people begin to lose respect for the Church after the Black Death?

Apply your understanding

4. (a) Describe what is happening in **Source 1**.
   (b) List the differences in the way this activity is depicted in the source compared with how it would be performed today.
5. (a) What appears to be happening in **Source 2** and why did this event take place?
   (b) Where else did similar uprisings take place?
6. The extract from a poem by Chaucer in **Source 3** is written in what we now call Middle English. Although it is a form of the language that is unfamiliar to us, it is still recognisable as English.
   (a) Identify the words in the poem that are the same as modern English words.
   (b) Identify the words that are similar to modern English words and give their equivalent.
   (c) List any words that seem completely unrecognisable. Suggest possible meanings for these words based on the context.
   (d) After analysing the language, summarise what you think this poem is about.
7. The *ciompi* in Italy managed to gain some 'democratic' reforms in the government of their city. Give an example of what you think might be a 'democratic' reform.

19.9 Weakening the feudal system

19.9.1 Declining population and power shifts

The dominant form of social and economic organisation in Europe in the Middle Ages was the feudal system. The massive drop in population that occurred as a result of the Black Death was to change the relationship between landowners and those who worked the land. This change severely weakened the feudal system in the following decades.

Huge decline in population

It is estimated that approximately 25 million people died in Europe during the period of the Black Death. This represents a decline in the population of between thirty and fifty per cent in the years 1347 to 1351. The earlier outbreak in Hubei, China is said to have caused the death of 5 million, or 90 per cent of the population. Later outbreaks in China in 1353 to 1354 are believed to have killed almost two-thirds of the Chinese population. In the Middle East the effects seem to have been less devastating, although still very significant. It has been estimated that less than one-third of the population was killed by the plague across the Middle East, although some local areas suffered a higher death rate.

New power for the peasants

Under the feudal system, peasants had been tied to the land and were expected to work the land their families had worked for generations before. The sudden loss of millions of peasants across Europe left many estates with insufficient numbers to work the land. This led to some wealthy landowners offering increased payment to agricultural labourers in other areas to entice them to their estates. Peasants suddenly found they had bargaining power, and in some places wages doubled in the space of one year. At the same time, prices fell for many goods because the number of customers had declined so dramatically. The decrease in available farm workers led many land holders to move away from growing crops and to increase the keeping of livestock, such as sheep and cattle, as this required fewer farm workers.

19.9.2 Changes in the social class structure

Under the traditional feudal system peasants had kept part of the crop as payment for their labour. By the end of the fourteenth century money wages became a more significant part of peasant earnings. This often meant that peasants and their families had money to spend on goods that had previously been available only to the wealthy. As the population began to recover, there was a gradual rise in the number of people becoming merchants and shopkeepers in response to this increase in demand.

SOURCE 1 As shown in this Italian fresco, increased wages led to a growth in markets and in the number of merchants offering goods for sale.



Skilled trades open up

Before the Black Death most of the skilled craftsmen and tradesmen such as bakers, blacksmiths and stonemasons had entered their trades because

of family connections. The huge death toll meant that many craftsmen had to look outside their own families for apprentices to train. This often led to the sons of peasants gaining access to a trade and the potential wealth and status this would bring.

Growth in the middle class

Previously, society had been made up primarily of a wealthy landowning upper class and a relatively poor peasant lower class. The increase in the number of people involved in business, crafts and trades brought about the growth of a **middle class**, particularly in some of the rapidly growing towns. Many historians believe the increasing importance of the middle class in some European countries occurred more quickly because of the Black Death.

SOURCE 2 A fifteenth-century woodcut showing an apothecary (a medieval pharmacy or chemist) with master and apprentice



DID YOU KNOW?

In some parts of Europe, kings and aristocrats were alarmed by the growth of the middle class and the increased wealth of some of the peasant class. They passed 'sumptuary laws', which regulated the type of clothing that peasants were allowed to wear. This was to prevent peasants from using their new-found wealth to begin dressing and behaving as if they were members of the upper classes.

19.9.3 An opposing view

In recent years, some historians have suggested that the changes to the feudal system and growth of the middle class would have happened without the Black Death. They argue that the population was in decline before 1347 because of crop failures and famine. They also point out that the plague returned to Europe many times over the next three hundred years. Although these later incidents did not bring such a high death toll in as short a time, they did keep the population low. Some historians argue that the effects of the Black Death from 1347 to 1351 have been exaggerated in previous historical studies.

19.9 Activities

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

Check your understanding

1. What proportion of the population is estimated to have died during the Black Death in:
   (a) Europe
   (b) China
   (c) the Middle East?
2. How did the decline in population open up opportunities for peasants who had previously been tied to one estate under the feudal system?
3. In what ways did farming practice change after the Black Death?

Apply your understanding

4. How does the Black Death appear to have contributed to the development of markets, such as that shown in **Source 1**? How would you describe the people at this market?
5. Examine **Source 2**. Why did access to apprenticeships become possible for members of the peasant class after the Black Death? How do we know that the tradesman depicted has a prosperous business?

6. What do we mean when we refer to a 'middle class' in medieval society?
7. Give four examples of occupations that would have been carried out by middle class people during the Late Middle Ages.
8. From the information in this subtopic and from what you have learned about the Middle Ages this year, how important do you think the Black Death was in the weakening of the feudal system and the growth of the middle class in late medieval Europe?

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Complete these digital docs: Worksheet 19.5: The plague that changed the world
Worksheet 19.6: The Black Death — cause and effect

19.10 SkillBuilder: Recognising different perspectives

19.10.1 What is perspective in history?

Perspective refers to a particular point of view. When studying historical sources, it is important to identify the perspective of the authors of each of those sources. Sometimes different sources will contradict each other, which can make it confusing when trying to find out what actually happened. If we can understand more about the person who produced the source, we can recognise the beliefs or understanding they may have had that could have influenced their point of view. Also, the way we view events today may be quite different from the way people viewed events in the past.

Note: We use the term 'author' to refer to anyone who has produced a historical source. Works of art can have a perspective just as well as written sources.

Why is it important to recognise different perspectives?

It is almost impossible for anyone to write about history without having a particular perspective. Their personal experiences and background will influence the way in which they interpret and record an event. This applies to both primary and secondary sources. The more we know about the author of a source, the more likely we are to take this into account when making judgements about the accuracy of that source. This can help us to gain a more complete view of the past.

19.10.2 How to identify different perspectives

Recognising different perspectives is a useful skill to master. The following are the types of questions you should ask about the authors of historical sources:

1. *Who wrote the source, and where is that author from?* The more we know about the person providing the source, the better we are able to identify that person's perspective.
2. *Who was the author writing for?* It is important to know the intended audience for the source. Was the author simply writing for their own records, as in a diary, or were they trying to convince another person?
3. *What do we know about the background of the author?* The author's character is important in determining the value of the source. For example, was he or she an ambitious person attempting to influence an important official? To what extent was the author actually involved in the events — or was he or she simply an observer?
4. *Can the author's point of view be trusted?* Some authors may have something personal to gain by presenting only one side of an issue. They may have a particular reputation, or a place in society to protect, or ideas and beliefs they are trying to promote. Some authors will have enemies whose reputations they wish to discredit.

An example of how to recognise different perspectives

Source 1 below is typical of the level of knowledge about the plague in fourteenth-century Europe.

SOURCE 1 An extract from Giovanni Boccaccio's *Decameron*, written c. 1349–51

I say, then, that the years of the fruitful Incarnation of the Son of God had attained to the number of one thousand three hundred and forty-eight [In 1348], when into the notable city of Florence, fair over every other of Italy, there came to death-dealing pestilence, which, through the operation of the heavenly bodies or of our own iniquitous [evil] doings, being sent down upon mankind for our correction by the just wrath of God, had some years before appeared in the parts of the East and after having bereft these latter of an innumerable number of inhabitants, extending without cease from one place to another, had now unhappily spread towards the West.

We can use the questions outlined to understand the author's perspective before we try to analyse the source.

1. *Who wrote the source, and where is that author from?* The source was written by Giovanni Boccaccio, an important fourteenth-century Italian author.
2. *Who was the author writing for?* The *Decameron* was a work of fiction, so Boccaccio was writing for a wide audience. At the time only the relatively wealthy could read, so he was aiming his writing at the middle and upper classes. In one sense, he probably hoped he would entertain them.
3. *What do we know about the background of the author?* Boccaccio came from a prosperous background and mixed socially with the wealthy members of society in Florence and Naples.
4. *Can the author's point of view be trusted?* Because the *Decameron* is a work of fiction, the stories contained within it are not necessarily true. However, it is believed that Boccaccio based many of the characters in the book on real people living at the time. His understanding of the causes of the Black Death would have been fairly consistent with beliefs of the time. It would not make sense for him to describe something too different from the experiences of his readers. We also know that his descriptions of the symptoms of the plague and people's reaction to it in other parts of the *Decameron* are consistent with the descriptions by other authors.

19.10.3 Developing my skills

Recognising different perspectives

Examine Sources 2 and 3 below and answer the questions about author perspective for yourself. Then answer the following question: How does the difference in the perspective of the two authors help us to understand the Black Death and the society it affected?

SOURCE 2 Modern medical opinion from 'Prevention of Plague: Recommendations of the Advisory Committee on Immunization Practices (ACIP)', US Center for Disease Control and Prevention

Recommended means of reducing the risk for acquiring plague in and around homes include:
(a) eliminating sources of food and shelter for rodents near homes,
(b) modifying homes to prevent rodent access,
(c) treating domestic dogs and cats weekly with appropriate insecticides,
(d) avoiding direct contact with sick or dead rodents, and
(e) handling severely ill cats with extreme caution (these animals should be examined by a veterinarian).

SOURCE 3 Adapted from the *Paris Consilium*, a document written by 49 medical professors at the University of Paris in October 1348 at the request of King Philip VI of France. The king was seeking an explanation for the plague.

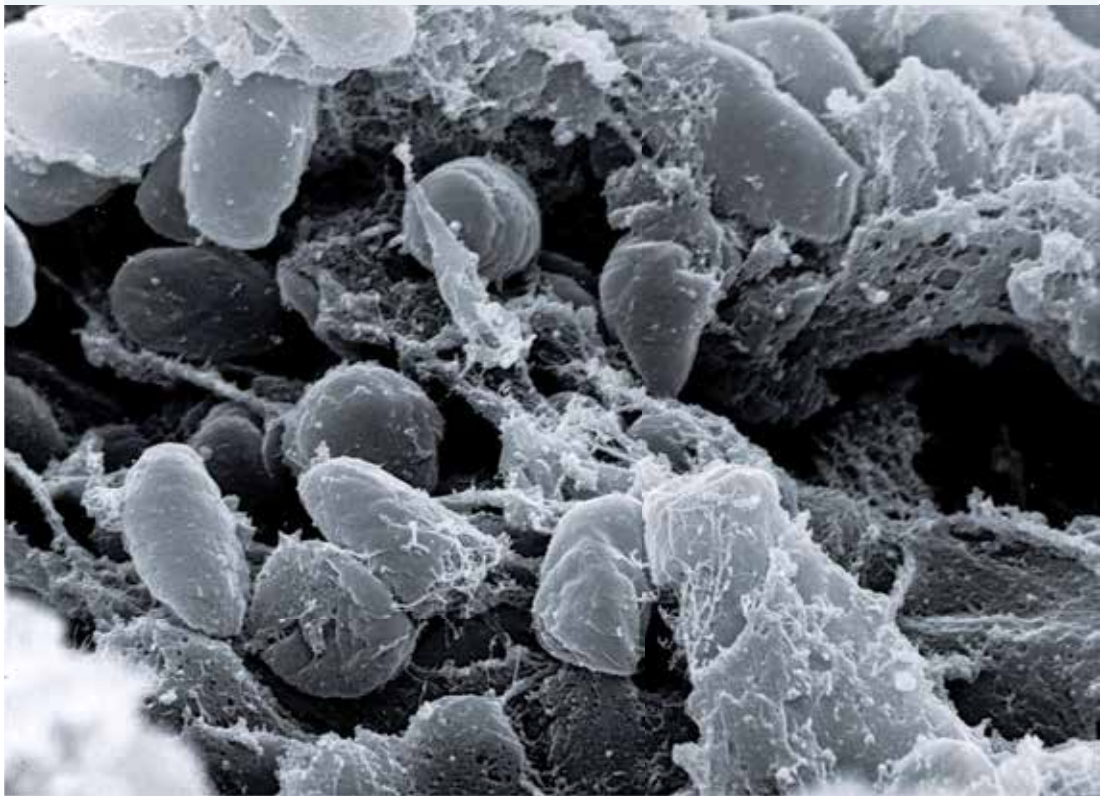
The celestial cause [of the plague] has come from the conjunction of Saturn, Jupiter, and Mars, under the moist sign of Aquarius, that occurred most recently in the year of Our Lord 1345, following both solar and lunar

eclipses. According to Albert the Great, the conjunction of Jupiter and Mars will bring plague. The planet Jupiter is hot and wet — the qualities that bring rotting and putrefaction, harbingers of the plague.

The earthly cause [of the plague] is the poisoning of the air from noxious gases that arise from earthquakes. Further unfortunate conjunctions of constellations have brought on thunder, rain, and wet south winds that have dispersed the poisonous vapours caused by carcasses rotting in swamps. As the poisoned air has entered the body, it has contaminated the heart, and thus the body's vital spirit, causing its organs to rot.

No poultry should be eaten, no waterfowl, no pig, no old beef, altogether no fat meat … It is injurious [harmful] to sleep during the daytime … Fish should not be eaten, too much exercise may be injurious … and nothing should be cooked in rainwater. Olive oil with food is deadly … Bathing is dangerous …'

SOURCE 4 An image of *Yersinia pestis*, the bacteria modern science now knows causes the bubonic plague.



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Complete this digital doc: Worksheet 19.7: Recognising different perspectives

19.11 Review

19.11.1 Review

In this topic we have explored the Black Death and the way in which it devastated Europe, Asia and North Africa during the fourteenth century, particularly between 1347 and 1351. We have learned that the Black Death was a combination of three related diseases — bubonic plague, pulmonary/pneumonic plague and septicaemic plague. We have also learned about the effects the plague had on medieval society, including living conditions, science, religion and the feudal system.

The plague returned to Europe in the 1360s, but this time with a much lower death rate. It continued to reappear at regular intervals throughout different parts of Europe for the next four hundred years, although never with the huge death toll suffered during that brief period from 1347 to 1351.

19.11 Activities

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

Multiple choice quiz online only

Short answer quiz

1. How did the Black Death get its name?
2. List the three related diseases that caused the Black Death.
3. Identify two aspects of medieval life that allowed disease to spread quickly.
4. What was one commonly used cure for illness in medieval times?
5. Describe one way in which religious belief restricted the development of medicine in the Middle Ages.
6. Where did the first recorded outbreak of the Black Death occur?
7. Why was the city of Caffa significant in the spread of the Black Death?
8. Describe one way the plague spread to the Middle East and North Africa.
9. Identify one method that was used to try to avoid the plague.
10. Why were many people buried without the usual religious observance?
11. Why were the Jews victimised so severely during this time?
12. Who were the Flagellants and how did they attempt to avoid the plague?
13. Describe one way the Black Death affected the attitudes of people towards religion.
14. What advantage do many European peasants appear to have gained from the Black Death?

SOURCE 1 English population, 1250–1700 CE; estimates based on parish records

Year	Population (millions)	Year	Population (millions)
1250	4.23	1400	2.08
1290	4.75	1450	1.90
1300	4.73	1490	2.14
1315	4.69	1560	3.02
1348	4.81	1600	4.11
1351	2.60	1650	5.31
1377	2.50	1700	5.20

Apply your understanding

15. Examine **Source 1** at right.
    (a) Approximately how many people were killed by the Black Death in England?
    (b) What evidence is there that the plague returned to England regularly over the next three hundred years?
    (c) Approximately how long did it take for the English population to recover to the level it had reached before the Black Death?
    (d) The statistics in **Source 1** are estimates based on records in parishes where reliable records were kept. These statistics assume other parishes without reliable data had similar death rates. Do you think this is a good method for estimating population growth? Give reasons for your answer.
    (e) Do the figures in the table support the view of historians that the Black Death weakened the feudal system? Explain your answer.
16. Examine **Source 2** on the next page.
    (a) What is the name usually given to the artistic theme presented in this painting?
    (b) What do the skeleton-like figures represent?
    (c) Which social class do you think each person in the painting might belong to? Give a reason for your answer.
    (d) What message does the painting convey about medieval European religious beliefs?
    (e) Why did paintings of this type become more common after the Black Death?

SOURCE 2 A medieval illustration influenced by the Black Death



17. Using the internet and your library, identify three dates when the plague again appeared in a region of Europe. For each date, identify:
    (a) which regions or countries were affected
    (b) how many people are believed to have been killed on each occasion.
18. Using the internet and your library, find out when was the last time a major plague pandemic affected each of the following countries:
    (a) England (b) France (c) Italy (d) China.

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Go online to access additional end of topic resources such as interactivities and printable worksheets.

Try out these interactivities: Black Death timeline (int-6870)
Black Death word search (int-4117)

Complete these digital docs: Worksheet 19.8: Word search
Worksheet 19.9: Summing up
Worksheet 19.10: Reflection

Back to the big questions

At the beginning of this topic several big questions were posed. Use the knowledge you have gained to answer these questions.

1. What was the Black Death, and how did it cause the death of so many people?
2. How did fourteenth-century living conditions and the state of medical knowledge leave the population defenceless against serious disease?
3. Why did the Black Death break out when it did, and where did it spread?
4. How did people attempt to deal with the disease?
5. What were the consequences of the Black Death in Europe and other parts of the world?

GLOSSARY

abbess: chief nun in a convent
abbey: monastery or convent run by an abbot or abbess
abbot: chief monk in a monastery
Act: a law passed by Parliament
altitude: height above sea level
aquifer: a body of permeable rock below the Earth's surface that contains water, known as groundwater
archaeological: concerning the study of past civilisations and cultures by examining the evidence left behind, such as graves, tools, weapons, buildings and pottery
archbishop: head bishop
artillery: large mounted firearms such as the cannon
Australian Bureau of Statistics: a government-owned agency that gathers and publishes a range of statistics to assist government, business and the community with decision making
backwash: the movement of water from a broken wave as it runs down a beach returning to the ocean
barge: a long flat-bottomed boat used for transporting goods
belonging: the feeling of being part of a group or community with shared values
beneficiaries: the people who are entitled to the benefit of any trust arrangement
Bill: a proposed law that has not yet been agreed to by parliament or received royal assent
biological warfare: method of warfare based on infecting the enemy with deadly disease
bishop: clergyman who governs a diocese, a large church district
blizzard: a strong and very cold wind containing particles of ice and snow that have been whipped up from the ground
breach of contract: a situation where a legally binding agreement is not honoured by one or more of the parties to the contract
buckler: small shield
budgets: estimates of all government income to be raised by taxes and other charges, and the planned spending of that income, within any given year
burden of proof: the legal principle describing who has to prove a case in court. In a criminal trial, this burden is on the prosecution.
caliph: in Islamic countries, the chief civil and religious ruler and a successor to the Prophet Mohammed
capital growth: an increase in the value of shares or property over time
caravel: a type of light, fast ship, used mainly by the Portuguese and Spanish between the fifteenth century and seventeenth century
cardinal: leading clergyman who is a member of the Pope's Council, or Sacred College, and who has the power to elect the Pope from among his own group
catastrophe: a disaster on a vast scale
cathedral: main church of a diocese; contains the bishop's throne
Caucasus: the region where Europe meets Asia between the Black Sea and the Caspian Sea
chronicle: a record of events as they happened, usually written by a person who was present at the time they occurred
circumnavigate: to sail around the world
clergy: officials of the Church
clockwork: the inner workings of a mechanical clock or a machine that operates in a similar way
cloister: a covered walkway surrounding a quadrangle
code of conduct: a set of standards of behaviour that all participants are expected to follow
codified: refers to laws that have been collected and organised, usually in written form

colony: an area of a country that is ruled by a different country
common law: law developed by judges through the decisions of courts
compass: navigation instrument that shows the direction of north
competition: the outcome of two or more businesses attempting to supply their products to the same group of customers
concentric: having a common centre
conditions of employment: the arrangements made between an employer and the employee in terms of work requirements and employee benefits
conscription: a process by which people are required to join the armed forces, even if they do not wish to do so
constitution: a set of rules that determines the structure of government and its law-making powers
constructive wave: a gentle backwash that leads to material being deposited on land
consumers: persons or groups who are the final users of goods and services produced within an economy
contagion: the spreading of disease
contiguous: adjoining, where its parts are not separated by other states or oceans
convection current: a current created when a fluid is heated, making it less dense, and causing it to rise through surrounding fluid and to sink if it is cooled. A steady source of heat can start a continuous current flow.
convent: community of nuns
converging plates: a tectonic boundary where two plates are moving towards each other
cooperative: a business that is owned and operated by the group of people that it serves
corporation: a business owned by shareholders
cost of living: the level of prices paid by consumers for goods and services
cost–benefit analysis: an approach for determining and evaluating the benefits and costs of a project or decision. The evaluation includes monetary and non-monetary effects.
country: the area of land, river and sea that is the traditional land of each Aboriginal language group or community; the place where they live
crowdshipping: a method of delivery where couriers are obtained from a large group of people, especially from online communities, and connected with customers
Crown: the Queen's authority in the Australian parliament, represented by the Governor-General at the federal level and a Governor at the state level
Crusader: during the Middle Ages, someone who took part in a Crusade, an armed expedition against those believed to be enemies of the Church
cultural: relating to the ideas, customs and social behaviour of a society
curtain wall: outer wall surrounding an inner wall in a castle
Customary law: guidelines for behaviour developed by Aboriginal and Torres Strait Islander peoples
dauphin: name given to the oldest son of the French king
defamation: unlawful damage to a person's good reputation through written or verbal statements
defendant: the party in a civil or criminal trial against whom an action has been brought
democracy: a form of government in which the people determine how they will be governed
democratic: supporting democracy, or the system of government where supreme power is vested in the people and exercised directly by them or by their elected representatives under a free electoral system
demographics: characteristics relating to population, especially age, gender, ethnicity, employment, income and education
deposed: removed from a position of authority
deposition: the laying down of material carried by rivers, wind, ice and ocean currents or waves
destructive wave: a large powerful storm wave that has a strong backwash
dhow: a traditional Arab sailing vessel

disposable income: the amount of money that households have available for spending and saving after income taxes have been accounted for
divergent plates: a tectonic boundary where two plates are moving away from each other and new continental crust is forming from magma that rises to the Earth's surface between the two
dividends: company profits paid to shareholders, either in cash or as more shares
doctrine of Mahomet: the religion of Islam; the Muslim faith, which follows the teachings of Mohammed
dormant: inactive or sleeping, with the potential to become active at any time
downstream: nearer the mouth of a river, or going in the same direction as the current
drainage basin: an area of land that feeds a river with water; or the whole area of land drained by a river and its tributaries
duke: in England, a lord whose status placed him just below that of a prince; elsewhere in Europe, a ruler of a small state called a duchy or dukedom
dysentery: a severe, infectious bowel disease
ecological footprint: the amount of productive land needed on average by each person in a selected area for food, water, transport, housing and waste management
ecosystem: an interconnected community of plants, animals and other organisms that depend on each other and on the non-living things in their environment
edict: order issued by a monarch or other person in authority
electorate: an area of Australia that elects one member to parliament
employer: the person or business that pays workers for the work they do
employer expectation: what the employer expects to receive from employees in return for the money that they pay them
employment: working in return for a wage or salary
endemic: normally and regularly found in a particular location or environment
erosion: the wearing away and removal of soil and rock by natural elements, such as wind and water, and by human activity
escarpment: a steep slope or long cliff formed by erosion or vertical movement of the Earth's crust along a fault line
ethnic minority: a group that has different national or cultural traditions from the main population
Eurocentric: a point of view that has a strong European focus
exploit: use dishonestly to one's own advantage
export: goods and services sold by local businesses to overseas consumers
faith: religious belief and practice
fault: an area on the Earth's surface that has a fracture, along which the rocks have been displaced
federation: the process through which the six separate Australian colonies formed to join one united nation
feudalism: social order in medieval Europe
fief: a gift, usually land, given by a lord to a vassal (or tenant) in exchange for loyalty and service
field sketch: a diagram with geographical features labelled or annotated
financial intermediary: any organisation that takes deposits from those with surplus funds, and makes those funds available to borrowers
fly-in, fly-out (FIFO): system in which workers fly to work in places such as remote mines and after a week or more fly back to their home elsewhere
focus: the point where the sudden movement of an earthquake begins
foreign policy: decisions made by governments concerning their relationships with other nations
franchise: the situation where a business sells the rights to distribute its products under its name to other individuals or businesses
franchisee: the individual or organisation that purchases a franchise

franchisor: an individual or organisation that grants the right to use a franchise
franklin: in the fourteenth century, one who was a landowner but not a member of the nobility
Franks: people of a group of a Germanic nation who ruled in western Europe from the sixth century CE
Gaul: most of present-day France and Belgium
gender segregation: the division of males and females into separate groupings
Generation Alpha: people born from 2010 onwards
Generation X: people born between 1965 and 1979
Generation Y: people born between 1980 and 1994
Generation Z: people born between 1995 and 2009
geographical factors: reasons for spatial patterns, including patterns noticeable in the landscape, topography, climate and population
glacier: a large body of ice, formed by an accumulation of snow, which flows downhill under the pressure of its own weight
globalisation: the process of interacting with markets in other countries around the world, as part of an integrated global economic system
groundwater: water that seeps into soil and gaps in rocks
guild: an association of people engaged in a particular trade or craft for the mutual benefit of its members
habitat: the total environment where a particular plant or animal lives, including shelter, access to food and water, and all of the right conditions for breeding
heresy: any religious opinion that differed from that of the Roman Catholic Church
heretic: a Christian who holds views that conflict with official Church teachings
Holy Land: land in the Middle East which has significant importance for Christians, Muslims and Jews
holy relics: the physical remains of someone or something very significant to a religious tradition
homage: pledging duties and loyalty to someone of superior rank in the feudal system
homicide: the killing of one person by another person
hotspot: an area on the Earth's surface where the crust is quite thin, and volcanic activity can sometimes occur, even though it is not at a plate margin
household sector: a term used by economists to refer to the total of all consumers in the economy
human features: structures built by people
human resource management: the process of managing the people who work within an organisation
human resources: the people who work within an organisation
humidity: the amount of water vapour in the atmosphere
Hundred Years' War: a series of campaigns and battles over territory between the English and the French, and between warring French princes
hunter–gatherers: people who collect wild plants and hunt wild animals rather than obtaining their food by growing crops or keeping domestic livestock
idolatry: worship of idols
illumination: hand-painted illustration in a medieval book
imported: goods and services purchased by local consumers from overseas businesses
indigenous peoples: the descendants of those who inhabited a country or region before people of different cultures or ethnic origins colonised the area
indigenous: native to or belonging to a particular region or country
industries: the way that different parts of the economy are grouped; for example, manufacturing, mining, etc.
inflation: a general rise in prices across all sectors of the economy
infrastructure: the total of all the means of transport and communication within an economy, including the roads, railways, ports, airports, power lines, pipes and wires that enable people, goods, services, water, energy and information to move about efficiently
inputs: those things that contribute to the production process

interest: a charge made for the use of money that has been deposited or borrowed
intermittent creek: a creek that flows for only part of the year following rainfall
intermittent: describes a stream that does not always flow
investment: the direction of money into the purchase of equipment or premises for the establishment of a new business, or the expansion of an existing business
joust: combat between two mounted knights using blunted lances
Judaism: the religion of the Jewish people
jury: in a criminal trial, a randomly selected group of people who decide the guilt or innocence of an accused person
katabatic winds: very strong winds that blow downhill
keep: innermost tower of a castle
khaghan: title equivalent to emperor; Great Khan
khan: title of rulers in Central Asia; 'king', 'chief'
khanate: territory ruled by a khan
labour: the human skills and effort required to produce goods and services
labour force: people aged 15 and over who are able to work and are either employed or unemployed
labour market: the availability and the ability of workers to work and for employers to hire them
lance: a long wooden shaft with steel point used as a weapon by mounted knights
lancers: mounted troops armed with lances (spear-like weapons used when charging)
land rights: the rights of people (in this case Indigenous groups) to own the land their ancestors have lived on for generations
lateen sail: a triangular sail rigged at 45 degrees to the mast of a boat or ship
Latin America: the part of the Americas that was colonised by the Spanish and Portuguese
laws: the system of rules that Australia recognises as regulating the actions of its citizens, which it may enforce by the imposition of penalties and sanctions
lay-by: an agreement by which the customer pays a deposit on goods, and the seller holds the goods for an agreed period of time while the customer pays the balance owing
legislation: a law made by Parliament
leper: person stricken with leprosy, a bacterial disease that causes ulceration of the skin, deformities and a loss of sensation
liable: legally responsible for a civil wrong
limited liability: where shareholders cannot lose more than their investment in the event of the failure of the business
lithosphere: the crust and upper mantle of the Earth
lord: chief position in the feudal system below the monarch
lymph nodes: part of the immune system
mace: iron-headed club
magistrate: a court official who hears cases in the lowest court in the legal system
mandatory standards: compulsory legal minimum standards that must be observed by a supplier of goods or services
manslaughter: the accidental or unintentional killing of one person by another person
mantle: the layer of the Earth between the crust and the core
mariner's astrolabe: a medieval instrument used to navigate while sailing. It was used to find a ship's latitude by measuring the altitude of the Sun or a star.
martyred: killed or made to suffer because of religious beliefs
Mass: Roman Catholic church service
mercenary: a soldier who fights for money rather than for patriotic reasons
miasma: unpleasant smells or fumes thought to be the cause of disease in medieval times

middle class: a class of people who traditionally fit in between a rich upper class and a working class. In medieval European society, this was the group in between the landowning aristocracy and the peasants or labourers who worked the land. They were usually small landowners or people involved in trade and commerce.
migrants: people who leave one country to reside in another
minimum wage: the legally binding minimum that must be paid to any employee over the age of 21 years
miracle: an extraordinary act or event attributed to the power of God
missionaries: people sent out by the Church to convert others to Christianity
moat: water-filled defensive ditch surrounding a castle
monastery: a place where Christian monks lived
monk: member of a closed community of men living under religious vows and rules
Moors: a member of a north-west African Muslim people of mixed Berber and Arab descent
mortgage loan: a loan advanced to allow a person to buy a house or other property, with the property itself as security for the loan. This means the bank or other lender can take possession of the property if the borrower fails to make the regular payments.
motte: mound upon which a castle was built
Muslim: a believer in Islam, the faith revealed through the Prophet Mohammed
negligence: a situation where a person breaches a duty to exercise reasonable care to avoid a foreseeable risk, resulting in another person being injured or suffering a risk of injury
nomadic: describes a group that moves from place to place depending on the food supply, or pastures for animals
Normandy: now a French province, in the Middle Ages it was a dukedom in northern France
nuisance: interference with someone's enjoyment of public or private property
nun: member of a closed community of women living under religious vows and rules
offshoring: moving certain work processes to be performed overseas rather than being carried out 'in-house' by an organisation
Opposition: the main political party in the lower house of parliament not in power
orb: globe with a cross, symbolising a Christian monarch's rule
outsourcing: contracting a person or people outside an organisation to perform certain work tasks (that previously might have been performed by workers within the organisation)
pagan: one who worships many gods; someone who is not a Christian, Jew or Muslim
palisade: tall fence made of pointed timber stakes driven into the ground
pandemic: widespread across a large region
Pangaea: the name given to all the landmass of the Earth before it split into Laurasia and Gondwana
partnership: a business owned and operated by two or more people
peninsula: land jutting out into the sea
percentage mark-up: a fixed percentage increase to the price paid by a business for goods, to determine the selling price of those goods
perennial: describes a stream that flows all year
permafrost: a layer beneath the surface of the soil where the ground is permanently frozen
persecution: a campaign to harm or punish people based on their religion, race or beliefs
pestilence: fatal epidemic disease
phalanx: body of foot soldiers in close battle order
physical process: continuing and naturally occurring actions such as wind and rain
pike: long spear-like weapon carried by foot soldiers
pilgrim: one who travels to a sacred place to show devotion to his or her faith
pillage: to steal or plunder using force, especially during war

plague: fatal epidemic disease; usually used in reference to the bubonic plague
plaintiff: the person who commences a legal action in civil law
plateau: an extensive area of flat land that is higher than the land around it. Plateaus are sometimes referred to as tablelands.
Poll Tax: a tax levied on every person, regardless of age, sex or income
population density: the number of people living within one square kilometre of land; it identifies the intensity of land use or how crowded a place is
population distribution: the pattern of where people live. Population distribution is not even — cities have high population densities and remote places such as deserts usually have low population densities.
precedent: a legal principle developed by a court in the process of resolving a dispute
prevailing wind: the main direction from which the wind blows
primary industry: an industry that produces raw materials, e.g. farming, mining, forestry
primary production: the production of crops, livestock or other basic materials which may then be used by other branches of industry
privatise: to sell a government-owned provider of goods or services to private investors
producers: individuals and businesses involved in the production of goods and services
product development: the creation of products with new or different characteristics that offer new or additional benefits to customers
profit: what remains after all business expenses have been deducted from the money that has been collected from selling goods or services
prosecute: to take legal action against another person for a criminal offence
quaternary industries: service industries involved in the processing and transfer of information and knowledge, e.g. IT consultants, education services
quinary industries: domestic service providers, e.g. cleaning, childcare, home maintenance
rain shadow: the drier side of a mountain range, cut off from rain-bearing winds
reconciliation: the process of restoring and encouraging respect for Indigenous culture and identity
redundant: a situation in which a job is no longer required to be performed by anyone; this may be as a result of the reorganisation of a business, the introduction of new technology or a decline in business sales or production
reeve: a magistrate administering law in a village
referendum: a process of allowing the people to vote on an important issue, such as a proposed change to the Constitution
regurgitate: to vomit, or bring up the contents of the stomach or throat
Renaissance: meaning 'rebirth', it refers to the flowering of the arts and sciences in late medieval Italy and later in north-western Europe
repeal: to remove a law so that it no longer applies
resource: something that is of use to people
retrenching: losing one's job as a result of the position being made redundant
rift zones: a large area of the Earth in which plates of the Earth's crust are moving away from each other, forming an extensive system of fractures and faults
right: an entitlement to be treated in a particular way. A legal right is a right that can be enforced by law.
rip current: a strong localised current that channels a fast-flowing stream of water offshore
sacrament: sacred Christian ceremony; in the Catholic Church, for example, baptism and marriage
saint: a person honoured by the Church for having lived an especially holy life
sastrugi: parallel wave-like ridges caused by winds on the surface of hard snow, especially in polar regions
sceptre: rod symbolising royal authority of the monarch
scurvy: a painful and often fatal disease caused by lack of vitamin C
sea change: movement of people from major cities to live near the coast to achieve a change of lifestyle

secondary industry: industry involved in the processing of primary resources to manufacture other goods
sediment: material carried by water
seismic waves: waves of energy that travel through the Earth as a result of an earthquake, explosion or volcanic eruption
self-sufficient: able to provide for its own needs
serfdom: the position of peasants who were not free to leave the land they worked
sermon: moral or religious lecture delivered by a priest
shamanism: Central Asian religion based on a belief in many gods in the natural world and the power of shamans (priests) to influence these gods
shareholders: the part-owners of a corporation
sole proprietorship: a business that is owned and operated by one person
soluble: able to be dissolved in water
stalactites: a feature made of minerals, which forms from the ceiling of limestone caves, like an icicle. They are formed when water containing dissolved limestone drips from the roof of a cave, leaving a small amount of calcium carbonate behind.
stalagmites: a feature made of minerals found on the floor of limestone caves. They are formed when water containing dissolved limestone deposits on the cave floor and builds up.
standard of proof: the level of proof required to establish a case. In criminal law, the prosecution must prove that the accused is guilty beyond reasonable doubt.
statute laws: laws made by parliament
steppe: a vast plain without trees
sternpost rudder: a heavy board hung from the centre of the back of a ship that makes it easier to steer
stirrup: foot support suspended from a saddle by straps
superstition: a belief based on custom or fear rather than knowledge or reason
swash: the movement of water in a wave as it breaks onto a beach
target market: a group of customers with similar characteristics towards which a business has decided to aim its marketing efforts and its products
tariff: a tax on goods imported into the country from overseas
Tatars: another name for Mongols. Also known as Tartars.
tectonic plate: one of the slow-moving plates that make up the Earth's crust. Volcanoes and earthquakes often occur at the edges of plates.
***terra nullius*:** 'land belonging to no-one'
tertiary industry: industry that involves the provision of services to others, e.g. doctors, accountants, retailers
thatch: straw used for making roofs
theologian: a person who is considered to be an expert in religious matters
the West: democratic countries dominated by European culture that have a generally high standard of living, such as the United States, Great Britain, Germany, Sweden and Australia
tithe barn: a barn where peasants' produce was stored as a form of taxation
trade unions: an organisation of employees formed for mutual support, and to seek improvements in pay and working conditions for its members
transaction: any commercial or business exchange of goods or services for money
transport: the movement of eroded materials to a new location by elements such as wind and water
treaty: an agreement between two or more countries to carry out certain actions. It is usually legally binding on those countries.
trebuchet: heavy medieval siege machine that uses a sling to hurl large missiles
tree change: movement of people from major cities to live near the forest to achieve a change of lifestyle
trespass: a tort (civil wrong) involving direct and intentional interference with a person, or a person's land or goods

tributary: river or stream that flows into a larger river or body of water
trust: a business created to hold property or assets for the benefit of another person or a group of people
trustee: a person or company that holds property or assets for the benefit of another
undertow: the powerful flow of water in the waves as it returns to the sea
unemployment benefits: welfare payments by government to people who are unemployed and looking for work. Such payments in Australia are generally known as the Newstart Allowance.
unlimited liability: where a business owner is personally responsible for all the debts of their business
urban: relating to a city or town. The definition of an urban area varies from one country to another depending on population size and density.
urban sprawl: the spreading of urban areas into surrounding rural areas to accommodate an expanding population
urbanisation: the growth and expansion of urban areas
vassal states: a state whose ruler acknowledges a foreign ruler as his overlord
vernacular: everyday language spoken by a particular group or class
voluntary standards: standards that suppliers agree to comply with that are not compulsory or legally enforceable
weathering: the breaking down of bare rock (mainly by water freezing and cooling as a result of temperature change) and the effects of climate
work–life balance: a feeling of having an appropriate balance between work and non-working time and activities
work: human labour which can be paid or unpaid; voluntary or involuntary

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