

YEAR

7

Geography

STUDENT COMPANION



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Pearson Secondary Teaching Hub Geography 7 AC Student Companion

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We respect the living cultures of Aboriginal and Torres Strait Islander peoples and their ongoing connection to Country across lands, sky, seas, waterways and communities. We celebrate the richness of Indigenous Knowledge systems, shared with us and with schools Australia-wide.

We pay our respects to Elders, past and present.

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SAMPLE PAGES

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How to use this Student Companion

The Student Companion is a complementary resource that offers a print medium for corresponding lessons in Pearson Secondary Teaching Hub. It is designed to support teaching and learning by providing learners with a place to create a portfolio of learning to suit their individual needs, whether you are:

- supporting a blended classroom using the strengths of print and digital
- preparing for exams by creating a study guide or bound reference
- needing a tool to differentiate learning or
- looking for meaningful homework tasks.

Learners can develop their portfolio of learning as part of classroom learning or at home as an additional opportunity to engage and re-engage with the knowledge and skills from the lesson.

This could be done as prior learning in a flipped classroom environment or as an additional revision or homework task.

Learning intention and success criteria

Learning intentions are provided for every lesson. The learning intentions are goals or objectives that describe what learners should know, understand or be able to do by the end of the lesson.

Success criteria clarify expectations and describe what success looks like. The success criteria are specific, concrete and measurable so learners can actively engage with and reflect on their evidence of learning within each lesson.

Learning intention: To be able to identify the methods used in geographical investigations

Success criteria:

SC 1: I can identify how studying geography is relevant to real life.

SC 2: I can describe the steps in a geographical investigation.

Worked examples

Worked examples provide learners with a step-by-step demonstration of how the skill or concept is applied in a geographical context. The worked examples in the Student Companion are provided to:

- scaffold learning
- support skill acquisition
- reduce the cognitive load.

The **worked examples** are an effective tool to demonstrate what success looks like. The format of the worked examples in the Student Companion supports the gradual release of responsibility.

Identifying relevant primary data in the local area

Maps are one of the geographer's most important tools. A map is a representation of the whole, or a part, of the Earth's surface.

Sketch maps are one way to identify and display relevant primary data from a local area. Here's an example.

A sketch map of Northcote, Victoria

All sketch maps should include a border and a title.

Water-related features would often be shown in blue.

Including a legend helps a reader to interpret lines and symbols.

All sketch maps should include a border and a title.

Built features are shown using words and/or symbols.

Legend:
 - Creek
 - Road
 - Station
 - Railway
 [C] Cinema
 [TH] Town Hall

This sketch map shows the local area of Northcote, a suburb of Melbourne.

Practice activities are provided in the student companion so that learners can apply the knowledge and skills obtained in the worked example. These questions are designed to ensure learners build confidence and demonstrate efficiency with the skills and concepts.

Drawing a sketch map to capture primary data in the local area

Now it's your turn.

1 Draw a sketch map of your neighbourhood. First, you need to make some decisions about the primary data you will record:

- What places will you choose as the boundaries of your neighbourhood?
- Which roads and streets will you include?
- Which features of your neighbourhood are most important to you, and should be included?
- What reference points will you include so the map is meaningful to someone else?

Each lesson in the Student Companion contains a space for students to reflect on their understanding. The simple and intuitive design of the lesson reflection tool allows students to scale their confidence, reflect on their learning and identify areas in which they need support.

RATE MY LEARNING



I need some help



I am getting there



I get it



I am confident

Investigating using geographical methods

Learning intention: To be able to identify the methods used in geographical investigations

Success criteria:

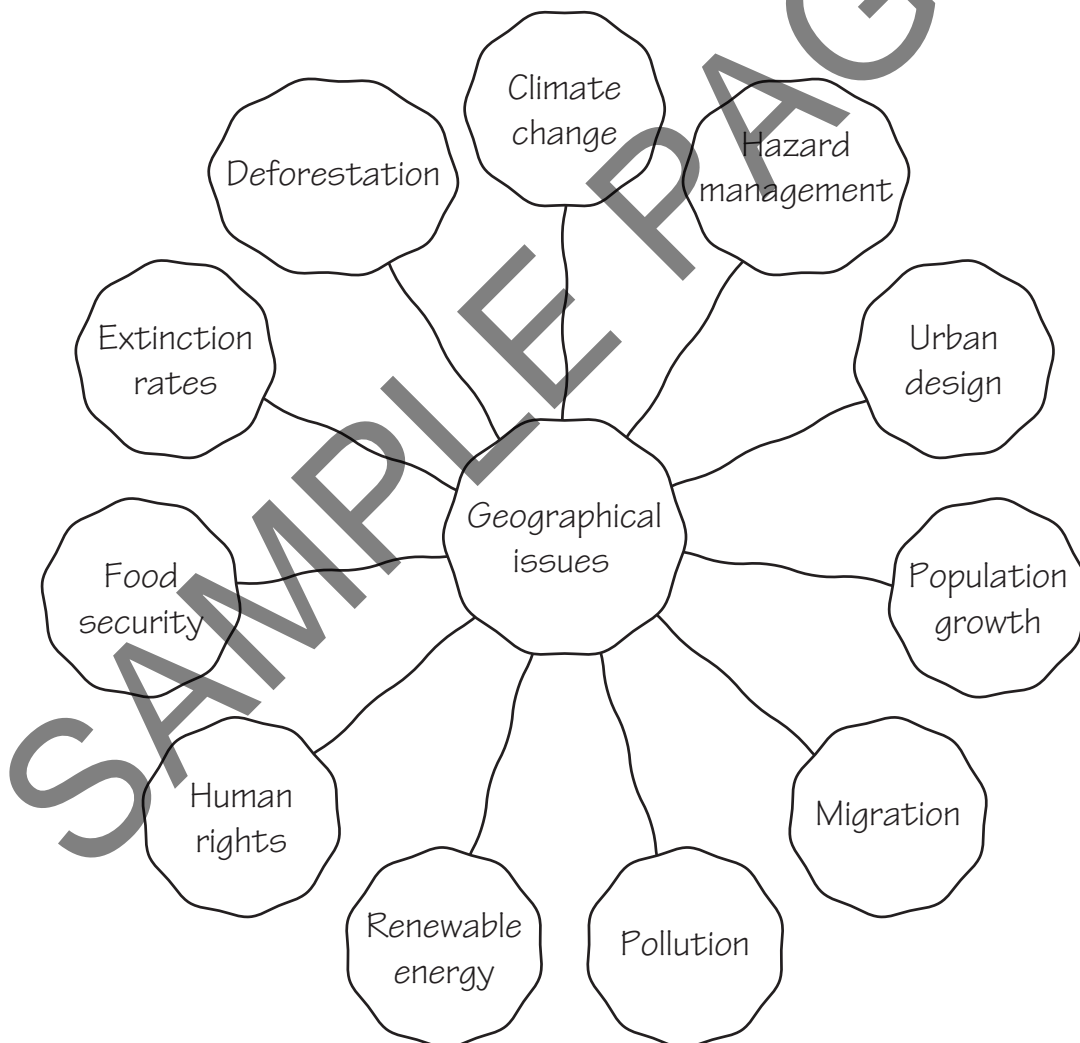
- SC 1:** I can identify how studying geography is relevant to real life.
- SC 2:** I can describe the steps in a geographical investigation.

Geography helps us to make sense of the world we live in. This is important at the local scale, with the things that affect our lives in real time every day. It also helps us to understand what is happening at a global scale, both now and in the future.

Identifying how studying geography is relevant to real life

The following mind map contains just a small sample of the issues that are investigated by geographers.

- 1 Add to the mind map. What other contemporary (current) issues might a geographer explore?



Geographers aim to make suggestions about the best course of action resulting from the findings of their investigations. Based on their research, they might have advice, knowledge or solutions that they can share with others.

Investigating using geographical methods

Describing the basic steps in a geographical investigation

Now it's your turn. There are a number of steps in a geographical inquiry.

2 Match each step to its definition by writing the correct answer in each box.

inquiry question or hypothesis data analysis	observation conclusions	data collection evaluation
-------------------------------------------------	----------------------------	-------------------------------

Step	Description
	Create a question or hypothesis that frames your investigation. Decide what kind of questions will help you to gain deeper knowledge, resolve doubt or solve a problem.
	Decide what the focus of your research is going to be. What have you seen, heard or noticed that makes you curious to find out more?
	Determine the type of information and data that might be most relevant to your inquiry question or hypothesis. What could you measure, count, sketch, ask, describe or locate?
	Examine the data and information that you have collected. Can you spot any patterns or trends? What evidence is there that supports or challenges your hypothesis?
	Based on your research findings, form some judgements or opinions in response to your question or hypothesis. How are you going to represent and share your findings?
	Consider the quality and value of your research process and findings. How effective was your research?

SAMPLE ONLY

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Contemporary issues

Learning intention: To be able to engage with a current geographical issue

Success criteria:

- SC 1:** I can identify relevant information about a current geographical issue.
- SC 2:** I can use annotation to summarise important information in a source.

The study of geography covers a range of contemporary issues and events that are discussed and debated widely in the community.

Because people have different perspectives or points of view on issues, they will often disagree on how an issue should be addressed. Disagreement is often healthy, as long as we respect the rights of others to express views that we might not agree with. Being able to identify and evaluate these points of view can help us to make better decisions. This is what makes the study of geography so interesting.

Identifying relevant information about a current geographical issue

One of the best ways to identify relevant information in a source you are working with is by using annotation. Annotation means 'marking up' sections of important information by highlighting, underlining, circling, shading and adding your own notes.

In the following example, a written text about water scarcity in South Africa has been annotated. Notice how only the most important information has been annotated.

Water demand will catch up with water supply in 5 years.

South Africa is approaching water scarcity

The clock is ticking for South Africa's stretched water supply, and in another five years demand will have caught up with supply, according to a top official.

South Africa is constantly water-stressed. Although growth has slowed, an expanding economy, a growing population, and increased evaporation caused by climate change are combining to put additional pressures on water resources.

Yet leading experts at the conference said the situation could be addressed if the country reduced demand and improved water quality to enable reuse.

A paper by the World Wide Fund for Nature (WWF) said South Africa's water surplus had been dangerously low since at least 2000—four years after the country began buying bulk water from the multi-dam Lesotho Highlands Water Project, built on the Senquyane River in neighbouring Lesotho.

Experts said the quality and quantity of the water supply should be better managed, and called for more investment.

Anthony Turton, who now works as a water management consultant, predicted that South Africa would soon have to start reusing effluent (sewage), which would entail rebuilding equipment, with waste treatment plants a priority. Water treatment plants would have to produce effluent clean enough for reuse in the industrial sector, for example switching to buying cheaper, recycled water for cooling plants, he said.

...

Turton and others have also begun to conclude that if water could be stored in underground human-made aquifers, it could save a vast quantity of water from evaporation annually.

The government should crack down on hundreds of farmers who used water illegally from the Vaal River, 100 km south of Johannesburg, which supplies the city. The department of water affairs has established a unit, known as the 'Blue Scorpions', to police illegal bulk water use.

A longer-term solution is to reuse water.

Cracking down on illegal water use is also part of the solution.

Factors causing water stress include economic change, population change and climate change.

One of the 'solutions' to the water shortage has been to buy water from Lesotho.

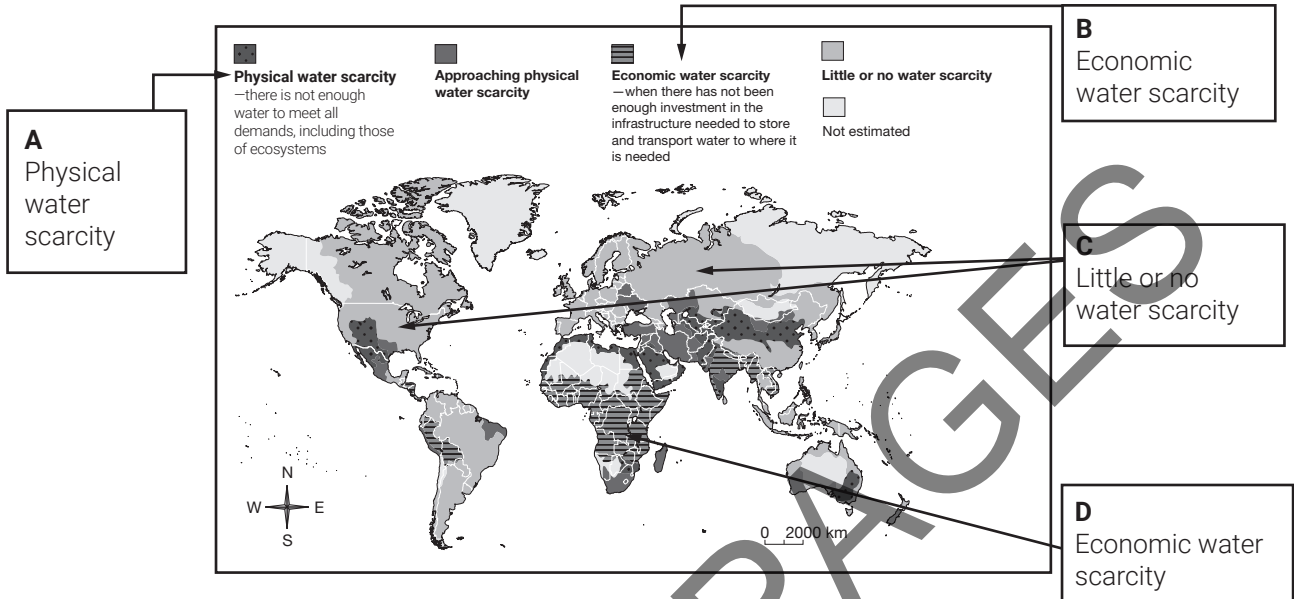
Source: Adapted from <http://www.irinnews.org/Report/84517/SOUTH-AFRICA-Clock-ticks-towards-water-scarcity>

Contemporary issues

Use annotations to summarise important information in a source

Now it's your turn. The map below shows areas of water scarcity. Some annotations have been added to the map for you.

1 Use the text boxes to summarise the important information that the map contains.



This map shows areas of water scarcity around the world.

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I am confident

Asking inquiry questions

Learning intention: To be able to develop questions about a geographical phenomenon

Success criteria:

- SC 1:** I can identify open and closed questions.
- SC 2:** I can ask open questions based on the geographical themes being explored.

Geographical inquiries provide you with the opportunity to actively engage in understanding the place you live in and the wider world. What makes an inquiry 'geographical' is the issue being investigated and the kinds of questions being asked. Typically, we might use questions that begin with words like *who, what, when, where, why* or *how*.

Identifying open and closed questions

The questions we ask fall into two main categories: 'open' and 'closed'. Closed questions only allow for a limited number or type of answers. Sometimes they can be answered using just one word (for example, 'yes' or 'no'). Open questions allow for more detailed answers or a range of answers which can often include a person's perspective or point of view.

A good inquiry question is one that really probes an issue, is specific to the topic being studied and can generate many sub-questions. It is better to use open questions for a geographical inquiry as they will lead to a deeper level of research and more interesting findings.

Here are some generic questions that could be used as part of a geographical inquiry about a place.

1 See if you can identify which are open questions and which are closed.

	Open	Closed
(a) What is this place called?	<input type="checkbox"/>	<input type="checkbox"/>
(b) Where is this place? (What country is it in?)	<input type="checkbox"/>	<input type="checkbox"/>
(c) When was this place first settled?	<input type="checkbox"/>	<input type="checkbox"/>
(d) How is this place connected to other places?	<input type="checkbox"/>	<input type="checkbox"/>
(e) How many people live in this place?	<input type="checkbox"/>	<input type="checkbox"/>
(f) How is this place changing?	<input type="checkbox"/>	<input type="checkbox"/>
(g) Who lives in this place?	<input type="checkbox"/>	<input type="checkbox"/>
(h) How would it feel to live in this place?	<input type="checkbox"/>	<input type="checkbox"/>
(i) Why is this place the way it is?	<input type="checkbox"/>	<input type="checkbox"/>
(j) How is it similar to/different from other places?	<input type="checkbox"/>	<input type="checkbox"/>

Asking inquiry questions

Asking open questions based on a geographical theme

Now it's your turn. Consider the photograph below and answer the questions that follow.



This pollution was washed into the Yarra River in Melbourne by stormwater (surface run-off).

2 What can you interpret from the photograph and caption?

3 Imagine you were asked, 'Who is responsible for the situation shown in the photograph?' Would this be an open or closed geographical question? Explain your answer.

4 Write two open geographical questions you could ask to find out more about the situation shown in the photograph.

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Surveys – Questionnaires and interviews

Learning intention: To be able to recognise relevant survey questions

Success criteria:

- SC 1:** I can identify relevant survey questions.
- SC 2:** I can ask relevant questions to collect suitable data.

Questionnaires and interviews are methods that researchers use to collect data from a group of people. The aim of these surveys is to gain information and insights into a topic of interest. It's important that the survey questions are relevant to the topic.

Identifying relevant questions

Relevant questions can be asked as open or closed questions.

- Open questions are interview-style questions. Participants are required to construct their own response.
- Closed questions are questions that provide participants with a choice of answers. Participants may be asked to tick boxes and/or rank or score the responses.

Consider this example of a short survey about the liveability of a local neighbourhood.

closed questions








Neighbourhood survey	
1 What suburb do you live in?	Quinns Rocks
2 How long have you lived in this suburb?	8 years
3 What do you like most about the suburb that you live in?	Close to the beach
4 Do you feel safe in your suburb? Circle the answer that applies to you.	Always, Sometimes, Never
5 If you could change one thing about your suburb, what would it be?	> It would be great if the buses ran more often – it's a little bit hard to get around.
6 If you had to live in another suburb, and you could choose any, which suburb would it be?	Mosman Park

open questions

Surveys – Questionnaires and interviews

Asking relevant questions to collect suitable data

Now it's your turn. Consider the responses given by a range of people during a recent survey, as shown below, and then answer the questions that follow.

 <p>I am in favour of a style of farming in which large areas of land are farmed as a single unit, since it leads to greater efficiency.</p> <p>a</p>	 <p>I am studying the areas of land that are covered by water for part or all of the time.</p> <p>b</p>	 <p>My concern is about those corporations that produce and sell goods or services in many different countries.</p> <p>c</p>	
 <p>I am coming to live permanently in a country that is foreign to me.</p> <p>d</p>	 <p>I have spent most of my life in the system of livestock grazing, based in areas of medium to low rainfall, in which no irrigation is used.</p> <p>e</p>	 <p>I am moving to a coastal community for a lifestyle change.</p> <p>f</p>	 <p>I love a society that is made up of people from different racial and cultural backgrounds.</p> <p>g</p>

environmental factors	personal safety	transport options
lifestyle considerations	employment opportunities	close to family and friends
affordability		

- 1 Based on the responses received, were the people surveyed asked an open or closed question?

- 2 What evidence supports your answer to Question 1?

- 3 Using the responses, suggest what question they might have been asked.

- 4 From the word box, identify the factor that most influenced each person. Write the factors in the spaces provided.

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Surveys – Tallies

Learning intention: To be able to recognise the importance of the tally system as a way of collecting geographical data

Success criteria:

- SC 1:** I can use a tally system to collect geographical data.
- SC 2:** I can use a tally system to provide totals and conduct simple analyses.

Geographers often use surveys to collect statistical data in the field. For example, if you were studying a local park, you could count the number of visitors, types of vegetation or amount of litter.

When you are observing and counting a single factor, you can use a tally system. A tally is a simple technique that involves making a pencil or pen mark on a page each time you observe the item you are studying. Later, you can count these marks to find the total number.

Using a tally system to conduct a traffic survey

Traffic surveys are surveys conducted to determine how traffic movements vary over time or location. Geographers might be interested to find out how traffic flows vary according to the time of day, weather conditions, day of the week, location or season.

Now it's your turn.

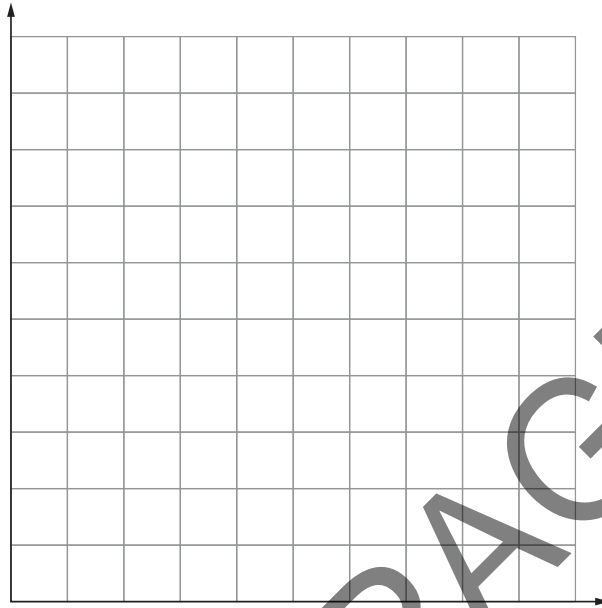
- 1 Conduct a field survey of the total amount of traffic passing a given point in your local area, over a 5-minute interval, at three different times on the same day. Use a tally system to record your results in the table below, and then answer the questions that follow. Remember to take care around roads.

Location: _____ Date: _____ Observer: _____			
Time of day	Duration	Tally	Total number of cars passing this point at this time of day
	5 minutes		
	5 minutes		
	5 minutes		

Surveys – Tallies

Using a tally system to conduct a simple analysis

- 2 Once you have completed your survey, total the results in the last column of the table. Use your tally total to produce a simple graph of your results for the three different times.



- 3 At what time of day was the traffic busiest? Why do you think this was the case?

- 4 Suggest three refinements that would make your tally system easier to use.

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I get it



I am confident

Photographs

Learning intention: To be able to recognise different types of photographs

Success criteria:

SC 1: I can identify different types of photographs that are used in geography.

SC 2: I can describe the advantages of different types of photographs.

Photographs are very important to geographers. A photograph of an area can give a geographer an idea of what a place looks like without needing to visit it. Photographs record a landscape as it exists at a particular time. They can also be used to record fieldwork observations.

Identifying the different types of photographs used in geography

Geographers group photographs into three categories:

■ ground level

Ground-level photographs are taken from the ground. Features in the foreground will appear larger than those in the background. Large objects in the foreground may block out features in the middle ground and background.



This is a ground-level photograph of Dubrovnik in Croatia.

■ oblique aerial

Oblique aerial photographs are taken from above the ground, with the camera pointed at an oblique (slanted) angle to the ground. They are like ground-level photographs in that features in the background will appear smaller than those in the foreground. Often the horizon is not visible.



This is an oblique aerial photograph of Dubrovnik in Croatia.

■ vertical aerial

Vertical aerial photographs are taken from above the ground, with the camera lens pointed directly down on the area being photographed. Features in the photograph are all shown at the same scale and it is hard to estimate their height.



This is a vertical aerial photograph of Dubrovnik in Croatia.

Photographs

Describing the advantages and disadvantages of each type of photograph

Now it's your turn.

1 Consider the three images below and complete the table that follows.

Image 1



This photograph shows buildings that were damaged by the 2004 tsunami in Aceh, Indonesia.

Image 2



This photograph shows the city centre of Otmuchów in Poland.

Image 3



This photograph shows part of the city of London in the UK, with the Palace of Westminster in the foreground.

Photograph	Type of photograph	Evidence used to help you decide which type of photograph this is	Advantages of these types of photographs
1			
2			
3			

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Sketches

Learning intention: To be able to use sketches to collect geographical information

Success criteria:

- SC 1:** I can identify the steps in drawing a sketch.
- SC 2:** I can draw a sketch to capture geographical information.

Geographers use sketches to highlight significant features of a particular landscape. If the drawing is based on observations made during fieldwork, it is called a field sketch.

Field sketches are usually done in pencil, but can be finished off with a black pen and colour. Labels or notes (annotations) can be added around the borders of the sketch to draw attention to significant features.

You do not need to have artistic ability to draw a field sketch. It is more important that you develop your geographical understanding by identifying and sketching features of a particular landscape.

Identifying the steps in drawing a sketch

To construct a field sketch, follow the steps below.

- Step 1 Study the scene being observed and select the features to be sketched.
- Step 2 Use a soft pencil (so it's easier to erase mistakes) and a blank sheet of paper to draw a frame the same shape as the scene you wish to sketch.
- Step 3 Divide the scene into three parts: the foreground, middle ground and background. This may include the horizon and prominent landform features.
- Step 4 Mark in other prominent features, such as roads, railway lines, rivers or powerlines. These will provide reference points for the addition of detailed features.
- Step 5 Add detail if appropriate. Details may include buildings, trees and fences.
- Step 6 Use shading and/or colour to highlight the key features of your field sketch. Avoid making your sketch too cluttered.
- Step 7 Label the main features shown in your sketch.
- Step 8 Give your field sketch a heading and note the date of the observation.


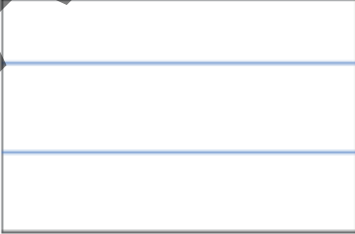


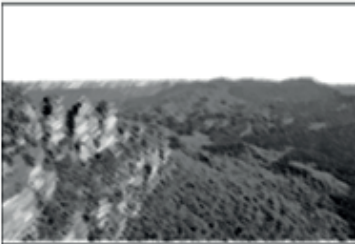
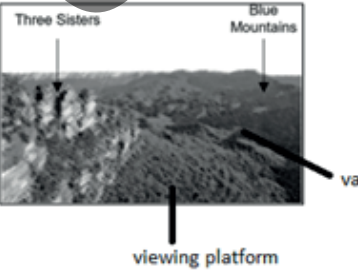
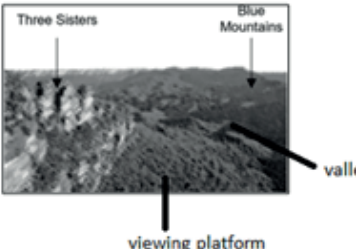
Sketches

Imagine that you were in the field looking at the view of the Three Sisters in the Blue Mountains of New South Wales, as seen in the following photograph.



This photograph shows the Three Sisters in the Blue Mountains, NSW.

This is what the steps involved in completing a field sketch would look like.

<p>Step 1</p> <p>Study the scene. Features to be sketched will include the Three Sisters, other nearby hills and the sky.</p>	<p>Step 2</p> 	<p>Step 3</p> 
<p>Step 4</p>  <p><mark in the main lines></p>	<p>Step 5</p>  <p><add detail to main features></p>	<p>Step 6</p>  <p><shade the areas of rock/vegetation></p>
<p>Step 7</p>  <p><add annotations as indicated></p>	<p>Step 8</p> <p>Three Sisters rock formation, Blue Mountains, NSW</p>  <p><add the sketch heading></p>	

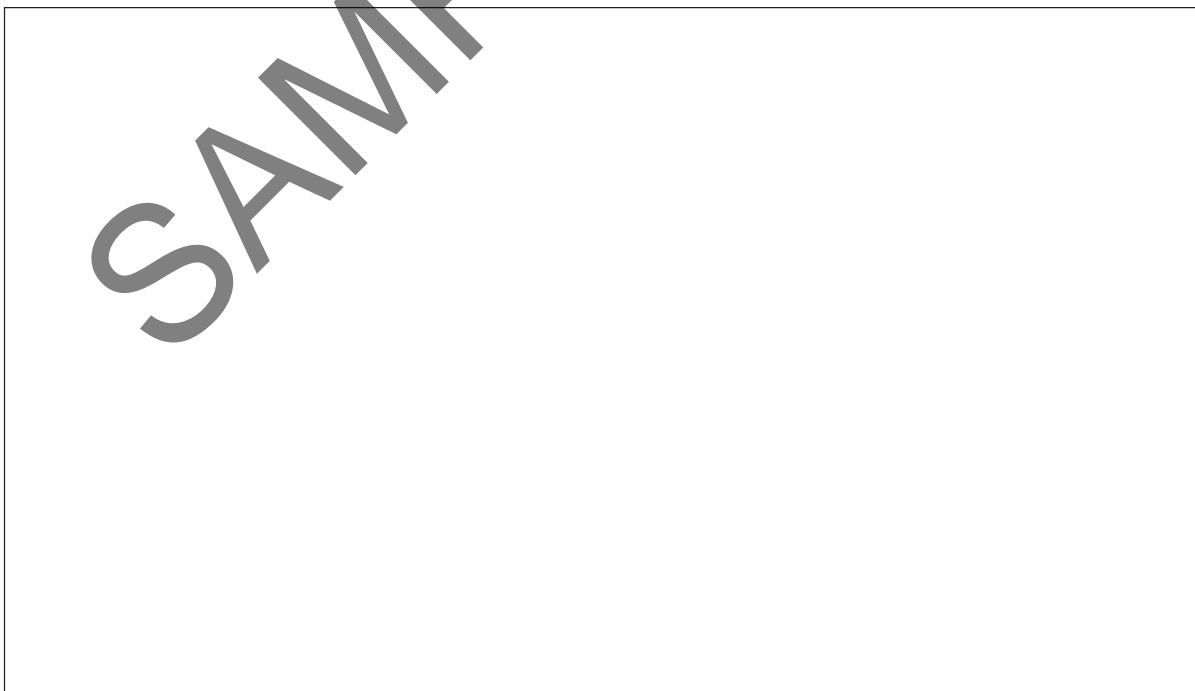
Drawing a sketch to capture geographical information

Now it's your turn. Imagine that you were in the field on the Gold Coast, observing the erosion that has taken place at the beach shown in the photograph below.

- 1 Follow the steps shown above to complete a field sketch of this location.



Erosion is impacting beaches on the Gold Coast in Queensland.



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Sketch maps

Learning intention: To be able to collect relevant primary data from the local area

Success criteria:

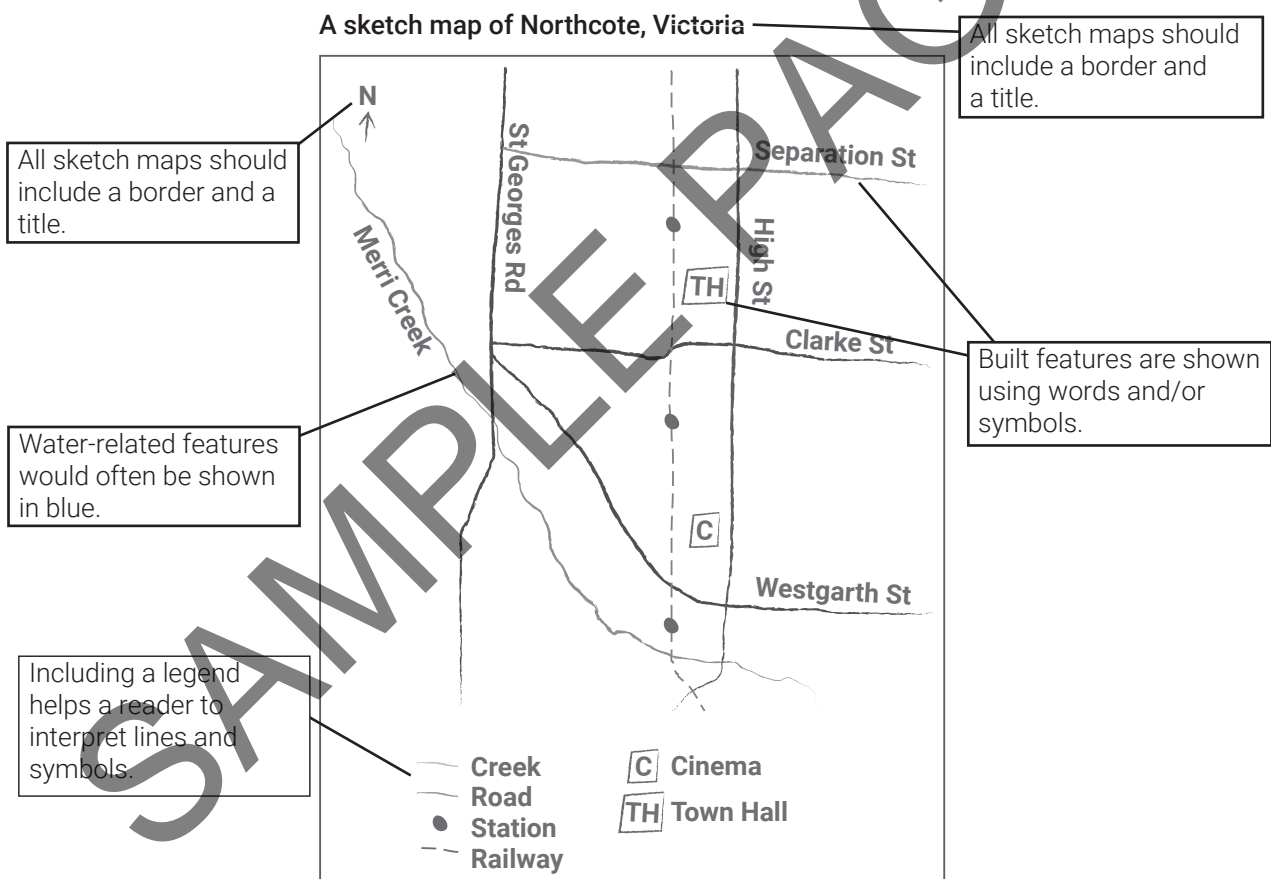
- SC 1:** I can identify relevant primary data in the local area.
- SC 2:** I can draw a sketch map to capture primary data in the local area.

Geography seeks to explain the character of places and the distribution (spread) of people, features and events on or near the Earth's surface. These characteristics are examples of relevant primary data that we might want to collect, store and display.

Identifying relevant primary data in the local area

Maps are one of the geographer's most important tools. A map is a representation of the whole, or a part, of the Earth's surface.

Sketch maps are one way to identify and display relevant primary data from a local area. Here's an example.

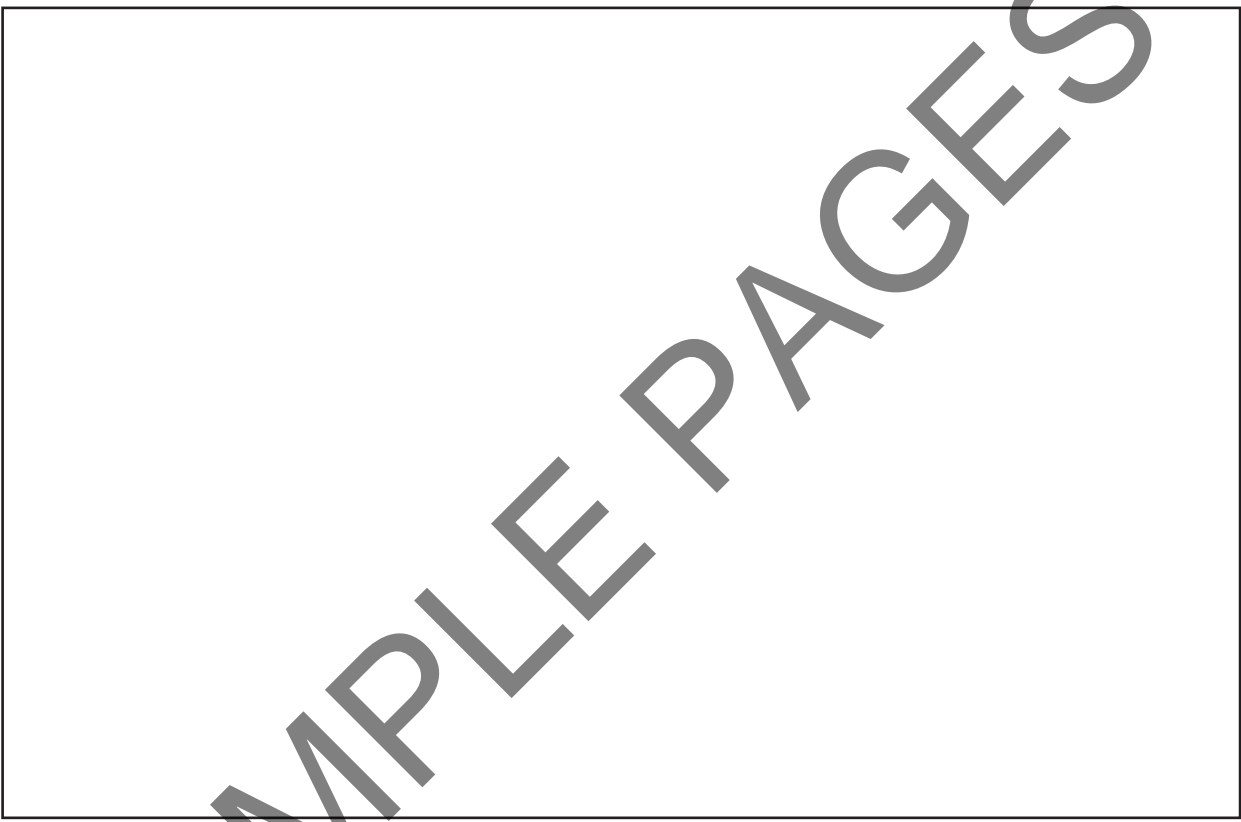


This sketch map shows the local area of Northcote, a suburb of Melbourne.

Drawing a sketch map to capture primary data in the local area

Now it's your turn.

- 1 Draw a sketch map of your neighbourhood. First, you need to make some decisions about the primary data you will record:
 - What places will you choose as the boundaries of your neighbourhood?
 - Which roads and streets will you include?
 - Which features of your neighbourhood are most important to you, and should be included?
 - What reference points will you include so the map is meaningful to someone else?



- 2 Compare your sketch map with the maps of others who live in the same neighbourhood. What are the main differences?

- 3 What do these differences tell you about the other map-drawers?

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Introduction to data

Learning intention: To be able to recognise the types of data used by geographers

Success criteria:

- SC 1:** I can identify types of primary and secondary data.
- SC 2:** I can distinguish between quantitative and qualitative data.

A geographical investigation can include information that is collected by a researcher in the field for a specific purpose (primary data) as well as information created by others that already exists (secondary data).

Identifying types of primary data

Primary data can be either qualitative or quantitative. Qualitative data tells you about the characteristics of something, such as the style or colour of a house. Quantitative data measures or counts something, such as the size of a house or the number of rooms.

- 1 Determine which examples of primary data sources are qualitative and which are quantitative. Write your answers into the table below.

photographs population surveys quantitative questionnaires interviews	statistical counts sketch maps land-use mapping qualitative questionnaires	observations field sketches land surveys measurements
--------------------------------------------------------------------------------	-------------------------------------------------------------------------------------	----------------------------------------------------------------

Type of primary data	Sources
Qualitative	
Quantitative	

Identifying types of secondary data

Secondary data is data that has already been collected and published by others, such as in research journals, newspapers, magazines, government reports or on the internet. It can be either qualitative or quantitative.

The types of secondary data are often the same as for primary data (for example, measurements, photographs or questionnaires) but unlike primary data, secondary data has been collected by someone else, not you.

- 2 Determine which examples of secondary data sources are qualitative and which are quantitative. Write your answers into the table below.

historical photographs	hydrological maps	data collected by catchment management groups
satellite images	aerial photographs	census data and surveys
published reports	land-use maps	zoning maps
Bureau of Meteorology data	government reports	

Type of secondary data	Sources
Qualitative	
Quantitative	

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Elements of maps

Learning intention: To be able to recognise the common elements of a reliable map

Success criteria:

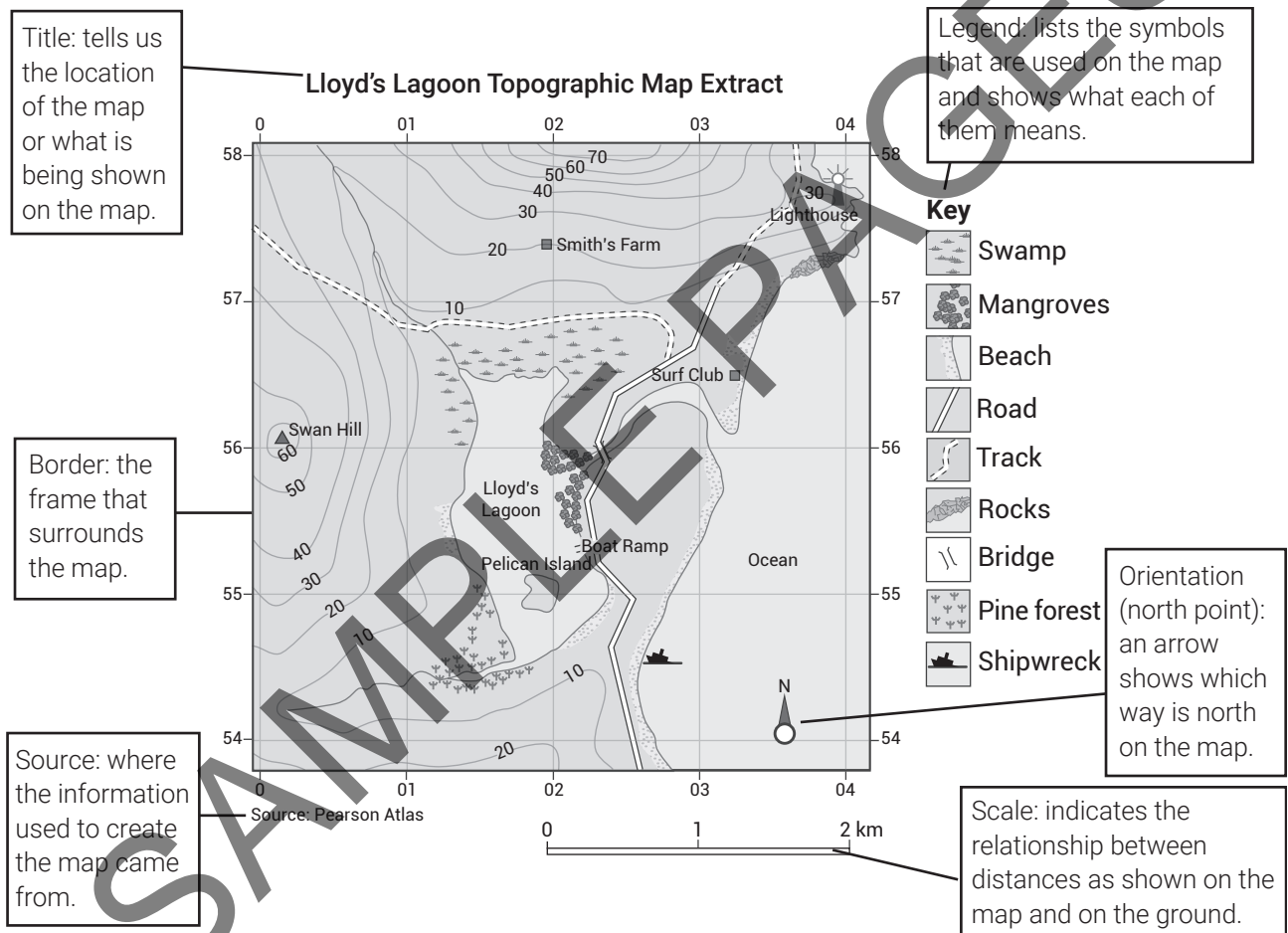
SC 1: I can identify the common elements of maps.

SC 2: I can describe the common elements of maps.

The common elements of a reliable map include a **border**, direction symbol (**orientation**), **legend**, **title**, **scale** and **source**. An acronym to help you remember these elements is BOLTSS.

Identifying the common elements of maps

Here is a map extract from a place called Lloyd's Lagoon. The common elements of the map have been annotated for you.



Identifying and describing the map elements

Now it's your turn. The six common elements of maps are indicated on the map below.

- 1 Write the name of each of the six map elements in the boxes around the map.
- 2 Below the name, write a description of each element.

D

A

Street map of Chetwynd, British Columbia, Canada

B

F

E

C

F

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Latitude and longitude

Learning intention: To be able to recognise latitude and longitude on a world map:

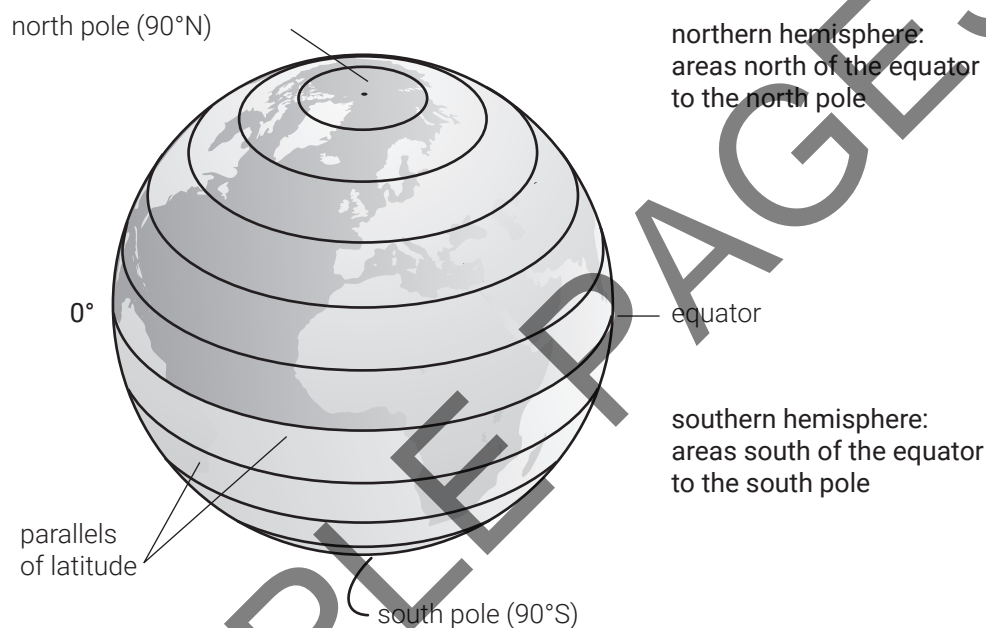
Success criteria:

SC 1: I can identify lines (parallels) of latitude on a world map.

SC 2: I can identify lines (meridians) of longitude on a world map.

Identifying lines of latitude on a world map

Lines of latitude are imaginary lines that run around the Earth parallel to the Equator. The Equator, which is itself a line of latitude, runs around the circumference of the Earth halfway between the North and South Poles. Lines of latitude are parallel to each other and are thus known as parallels of latitude.



Lines of latitude are sometimes called parallels of latitude because they run parallel to each other.

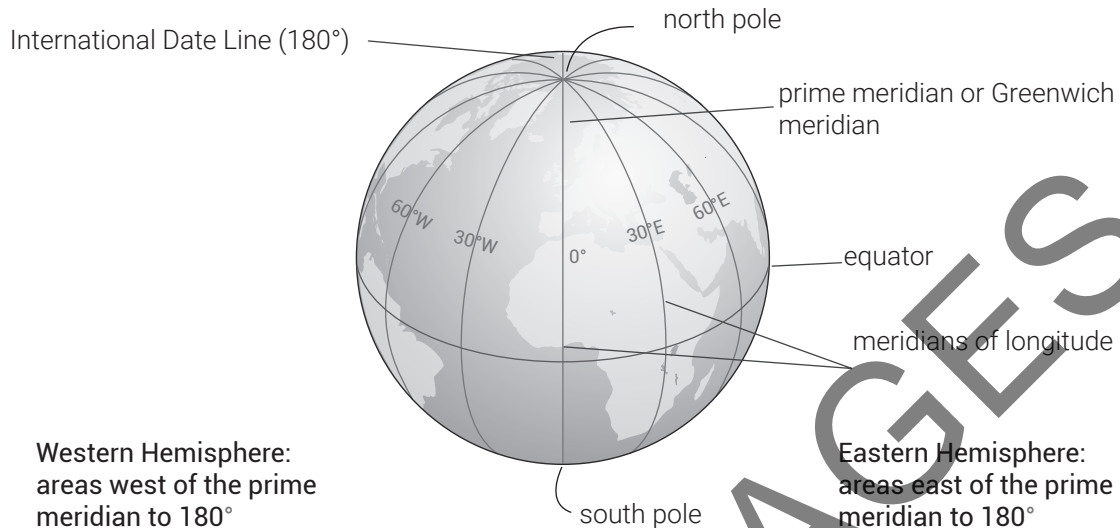
Now it's your turn.

1 Fill in the blanks in the following statements.

- (a) Latitude is measured in the number of degrees north or south of the .
- (b) The Equator is at degrees latitude.
- (c) The Equator divides the Earth into two parts – the Northern and Southern .
- (d) The latitude of the North Pole is .
- (e) The latitude of the is 90°S.

Identifying lines of longitude on a world map

Lines of longitude are imaginary lines that run around the Earth between the North and South Poles, at right angles to lines of latitude. Lines of longitude are not parallel as they converge on the Poles. Each line is called a meridian of longitude.



Meridians of longitude meet at the North and South Poles.

Now it's your turn.

2 Fill in the blanks in the following statements.

- (a) Longitude is measured in degrees east or west of the .
- (b) The prime meridian runs through in London, England.
- (c) The longitude of the prime meridian is .
- (d) Meridians are numbered, both eastwards and westwards, from the prime meridian at 0°, around the Earth to .
- (e) The line of longitude at 180° is known as the .

Latitude and longitude

Differentiating between latitude and longitude

Now it's your turn. Consider the map below and answer the questions that follow.

A

B

C

66°30'N
60°00'N
30°00'N
23°26'N
0°
23°26'S
30°00'S
60°00'S
66°30'S

30°W 0° 30°E 60°E 90°E 120°E 150°E 180° 150°W 120°W 90°W 60°W 30°W

World map showing latitude and longitude.

- 3 Complete the map by labelling the lines of latitude and longitude identified by the arrows.
- 4 Identify one similarity and one difference between lines of latitude and longitude.

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Satellite images

Learning intention: To be able to recognise features in a satellite image

Success criteria:

- SC 1:** I can identify common features in a satellite image.
- SC 2:** I can distinguish between the biophysical, managed and constructed elements of the environment in a satellite image.

Satellite images are created from data collected by satellites that orbit the Earth. Geographers use remote sensing including satellite images to study the spatial distribution of biophysical, managed and constructed elements of the environment.

Identifying common features in a satellite image

Follow these steps to identify the common features in a satellite image.

Step 1 Look for evidence of location and time. Often the caption provides some relevant information about the image, especially about the location.

Step 2 Look for a familiar feature of the environment that will give you some idea of scale.

Step 3 Identify the main features of the image. Use size, shapes and patterns to help you.

Step 4 Group the main features of the image under the following headings.

Biophysical environment	Managed environment	Constructed environment
<ul style="list-style-type: none">• landforms; for example, relief and drainage features• climate• vegetation	<ul style="list-style-type: none">• land use• rural and urban zones	<ul style="list-style-type: none">• transport networks• settlements

Step 5 Ask yourself the following questions:

- Is the area characteristic of the physical and built environments?
- What is the physical nature of the environment: fluvial (rivers), coastal, arid (dry), glacial, mountainous and so on?
- To what extent has the area been changed by human activity?

Consider the following satellite image as an example.

The land appears to be vegetated, but there is some evidence of recent lava flows, shown by the grey colour (ash, dust or lava) overlying the green.

The volcano is the main feature of the image, with a circular crater recognisable. The volcano appears to be surrounded by rural land.

Familiar features are hard to see in this satellite image. The width of the river may give a rough idea of scale.

The caption reveals that this is an image of Mount St Helens, just after an eruption, which tells us that this is a volcano. A quick Google search can reveal the location of this place.

Mount St Helens

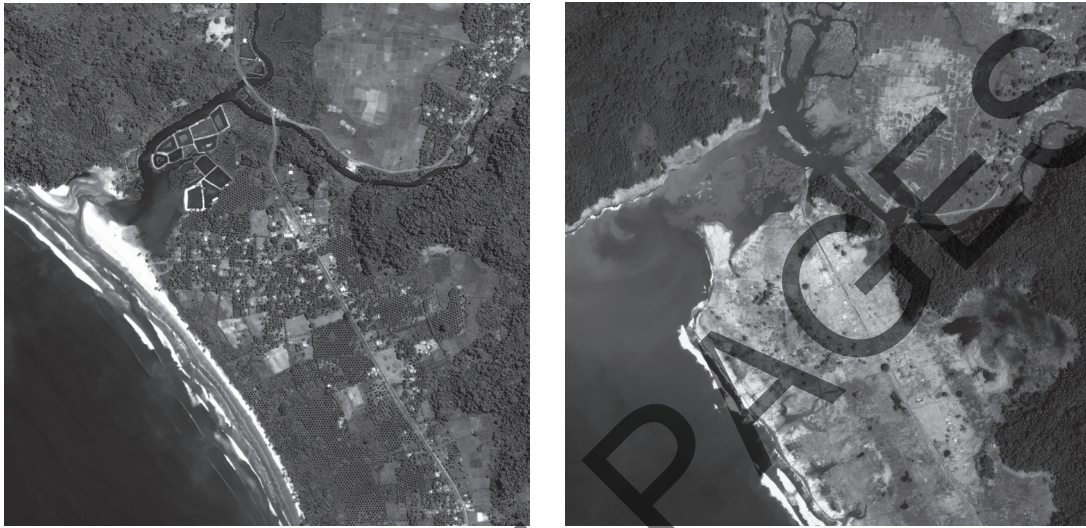
This true-colour image shows Mount St Helens just after an eruption.

Satellite images

In summary, this satellite image appears to show a volcano in a largely rural area, after a recent eruption. Some of the land surrounding the volcano has been covered by ash, dust or lava following the eruption.

Distinguishing between the biophysical, managed and constructed elements of the environment in a satellite image

Now it's your turn. Consider the satellite image below. Work through the steps for analysing this type of image and then answer the questions that follow.



This pair of satellite images shows Glee Bruk, a small town located approximately 50 km from Banda Aceh, Indonesia. The images were taken on two dates – 12 April 2004 and 2 January 2005.

- 1 Identify the location shown in the satellite images.

- 2 How would you categorise the location – mostly rural or mostly urban? Give a reason to support your answer.

- 3 Between the times these two satellite images were taken, a tsunami occurred. Which image was taken before the tsunami – image A or image B?

- 4 Describe one piece of evidence from the biophysical environment and one piece of evidence from the constructed environment to support your answer to Question 3.

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