NEW SOUTH WALES

LiteracyWorks

LITERACY WORKS FOR

Geography

BOOK 2

Student eBook

STAGE 5

Sustainable biomes
Changing places
Environmental change and management
Human wellbeing

Quality literacy resources for subject areas

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Geography Book 2 Contents

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Geographical Inquiry Skills

The units in this book relate to the following Geographical Inquiry Skills for Stage 5.

Geographical Inquiry Skills Stage 5	
Processing geographical information	Evaluate information sources for their reliability, bias and usefulness (ACHGS065, ACHGS073) Evaluate multi-variable data and other geographical information using qualitative and quantitative methods and digital and spatial technologies as appropriate to make generalisations and inferences, propose explanations for patterns, trends, relationships and anomalies, and predict outcomes (ACHGS067, ACHGS076) Apply geographical concepts to synthesise information from various sources and draw conclusions based on the analysis of data and information, taking into account alternative perspectives (ACHGS068, ACHGS077)
Communicating geographical information	Present findings, arguments and explanations in a range of appropriate communication forms selected for their effectiveness and to suit audience and purpose, using relevant geographical terminology and digital technologies as appropriate (ACHGS070, ACHGS079) Reflect on and evaluate the findings of an inquiry to propose individual and collective action in response to a contemporary geographical challenge, taking account of environmental, economic and social considerations; and explain the predicted outcomes and consequences of their proposal (ACHGS071, ACHGS080)

NESA key words and links to genres

NESA provides a glossary of key words that appear frequently in NSW Education Standards Authority syllabuses, performance descriptions and examinations.

The table below shows how the key words may relate to a genre.

As a general rule, it is important to consider the entire instruction, not just the verb on its own. For example, the word 'analyse' on its own does not tell us about the genre:

- 'analyse reasons' could be a Factorial Explanation
- 'analyse spatial distribution' could be a Descriptive Report
- 'analyse liveability' could be an Evaluation.

Genre family

Reporting	Explaining	Persuading
Account for (e.g. spatial distribution)	Account for (e.g. rising salinity)	Analyse (e.g. liveability)
Analyse (e.g. spatial distribution)	State reasons for	Appreciate
Clarify	Analyse (reasons or consequences etc.)	Assess
Compare	Deduce (reasons or impacts etc.)	Critically evaluate
Contrast	Examine (reasons or consequences etc.)	Discuss
Critically analyse	Explain	Examine (arguments)
Define	Outline (reasons or impacts etc.)	Justify
Distinguish	Recall (reasons or causes etc.)	Predict
Examine (e.g. spatial distribution)	Summarise (reasons or causes etc.)	Propose
Extract		Recommend
Extrapolate		Summarise (an argument)
identify		Synthesise (an evaluation)
Outline (a phenomenon)		
Recall (facts)		
Summarise (facts)		
Synthesise		

Cognitive verbs and links to genres

Many schools refer to cognitive verbs. While Literacy Works does not use this approach, the verbs are highly relevant to the genre or text type for each task or instruction. Here is a list of the common cognitive verbs for Geography and how they relate to genres.

Kendall, J & Marzano, R. (2007). *The New Taxonomy Of Educational Objectives,* Corwin Press, Thousand Oaks, CA.

As a general rule, it is important to consider the entire instruction, not just the verb on its own. For example, the word 'analyse' on its own does not tell us about the genre:

- 'analyse reasons' is an Factorial Explanation
- 'analyse spatial distribution' is a Descriptive Report
- 'analyse liveability in a place' is an Evaluation.

Cognitive process	Cognitive verbs	Genre family		
		Reporting	**Explaining**	**Persuading**
Knowledge utilisation	Develop			develop strategies, develop an argument or point of view based on evidence
	Evaluate			evaluate according to criteria
	Predict		explain what might happen and why	
	Propose		propose reasons	propose or recommend strategies
	Synthesise	synthesise descriptions, classify information	synthesise reasons	synthesise information according to support a particular viewpoint or recommendation
Analysis	Analyse	analyse data or facts or descriptions	analyse reasons, causes or effects	
	Compare	compare data or facts or descriptions; compare and contrast report		
	Generalise	generalise about data and facts; sort information into categories or types	generalise about reasons, causes or effects	generalise about evaluations or arguments in support of a position
	Infer		work out the reasons, causes or effects	
	Interpret	interpret data and facts	interpret reasons, causes or effects	interpret evaluations or arguments in support of a position
	Reflect on	reflect on data and facts	reflect on reasons, causes and effects	reflect on evaluations or arguments
Comprehension	Explain		explain causes or effects or how things happen	
	Organise	organise data and facts; sort information into categories or types	organise reasons, causes and effects	organise arguments in support of an evaluation or position or point of view
Retrieval	Identify	identify data or information	identify reasons, causes or effects	identify arguments or evaluations
	Select	select examples or case studies; select the most important or relevant data to use	select reasons, causes or effects	select arguments or criteria for evaluation

Genres in Geography

Genres in Geography

Genres are purposes for writing, such as to report, explain or persuade. This table shows some of the main genres in Geography that are covered in this book. On the next page, you will practise matching questions and instructions with purposes.

Genre family	Genre	Purpose and example	
Reporting	Particular description	To describe the features of one particular thing e.g. Describe a desert biome	
	Descriptive Report	To describe and provide general features and characteristics e.g. Describe terrace farming	
	Classifying report	To describe a class or group of things e.g. Describe types of biomes	
	Compare and contrast report	To compare and contrast features of two or more things e.g. Compare and contrast spatial variation in wellbeing in two places	
Explaining	Sequential explanation	To explain in a sequence the phases of a process and show how the process occurs e.g. Explain how salinity increases	
	Factorial Explanation	To explain the multiple causes of a phenomenon e.g. Explain the causes of poverty	
	Consequential Explanation	To explain the multiple outcomes or effects of a phenomenon e.g. Explain the impacts of technology on crop yields	
Persuading	Exposition	To argue for a particular point of view substantiated with evidence e.g. Recommend a solution to an environmental problem	
	Evaluation	To make an evaluation based on criteria e.g. Evaluate a government program to reduce poverty	

Identifying genres

When you know the genre that is required by an assignment question or instruction, you will find it easier to complete the task and achieve success in your written assignments.

Draw a line to match the assignment question or instruction with the genre.

Assignment question or instruction	Genre
Recommend solutions to an environmental problem	describing features or characteristics (Descriptive Report)
What are the effects of land degradation?	
Evaluate environmental management strategies	explaining the phases of a process in a sequence (Sequential Explanation)
Describe push and pull factors for migration	
Explain a supply chain	
Explain factors that impact crop yields	explaining causes or factors (Factorial Explanation)
What are the benefits of international migration?	
What are the impacts of spatial inequality of health outcomes?	explaining effects or impacts (Consequential Explanation)
Describe the coniferous forest biome	
What are the causes of malnutrition?	
Explain how salinity increases	arguing for a point of view (Persuading - Exposition)
What are the most suitable modes of freight transport for different products?	
What are the effects of human-induced environmental change?	evaluating based on criteria (Persuading - Evaluation)

Analyse the question or instruction

Assignment and examination questions in Geography can have many parts. They also might relate to two or more different genres in the same assignment.

If you practise identifying the parts of the question or instruction, you will be able to know what to do and to plan your response more quickly and easily.

task word

A task word is a **verb** or **question** that tells you what to do

e.g. analyse, explain, why …?

There may be more than one word that tells you the genre.

scope

The scope is the specific **list of content** to cover and any examples

e.g. one biome, three countries, one environmental problem

Here is an example of an analysis of parts of the instruction.

Explain the impacts of *climate change*. Give examples from *two environments in Australia*.

task word: explain
other words that relate to the genre: impacts

scope: what: climate change
where? two environments in Australia

Look at all the parts of the question to work out the genre.

Explain and **impacts** mean that the genre is a **Consequential Explanation**

Analyse the parts of these questions or instructions. Identify the task word and scope. Then identify the genre for each.

1. Describe environmental management of a chosen environment. Genre _____

2. Compare and contrast human development in two regions. Genre: _____

3. Analyse the human impacts of environmental change in a place and recommend strategies that address the problem.
   Two genres: _____ and _____

4. Explain the causes of spatial variation in wellbeing. Genre _____

5. Evaluate a government program to improve wellbeing in rural communities.
   Genre _____

6. Recommend strategies to improve environmental management. Genre _____

Sustainable biomes

Rainforests

This page will focus your attention on exactly what information is shown in an image and in a written text. Analysing and comparing information presented in an image and in written language will help you to be a more critical reader.

Right: Tarsier monkey (Tarsius Syrichta) from a rainforest in the Philippines

Look at the image below. How would you describe it? Read the text in the box below right. Notice what information is shown in the text compared with the information in the image.

Rainforests are forests that experience high rainfall and warm temperatures all year round. The top layer of a rainforest is the emergent layer, with very tall trees. Next, the canopy layer contains the majority of large trees, branches and foliage (leaves). The understory layer lies between the canopy and the forest floor. It is a dark and moist layer. The forest floor is the bottom layer of the rainforest. It receives little sunlight so it is usually clear of vegetation.

Based on the text, draw a diagram of the four layers of the rainforest. Label the layers.

Fill in the table below to describe exactly what information can be found in the image only, the text only, and in both the text and image.

Image only	Both text and image	Text only
What meanings are shown in the image? e.g. shows the green colour	*What meanings are common or similar in both the text and image?* e.g. about rainforests	*What meanings are in the text only?* e.g. names the layers of the rainforest

Coniferous forest biomes

A Descriptive Report provides information about features or characteristics of something. This Descriptive Report is about coniferous forest biomes. The names of features are shown below left. The content of the report is jumbled on the right.

Draw lines to link features on the left with images and content it relates to.

Identify the thing being described

Definition

Spatial distribution

Climate

Soil

Vegetation

Productivity

This type of forest has two layers. There is an overstory of tall trees such as cedar, spruce, fir or pine, and a ground layer of herbs, mosses, fungi and

These areas are characterised by long, snowy winters and short, cool summers with moderate to high rainfall.

Coniferous forests are found in cold and temperate regions of the northern hemisphere, in northern regions of Asia and Europe and in the northern United States, Canada and Alaska.

Productivity of coniferous forests is low due to the cold temperature of the soil, as organic material takes a long time to break down and share nutrients. Coniferous forests contain about 18% of the Earth's total biomass (the dry weight of organic matter). These forests are carbon sinks, which means that they store carbon in the form of dead trees.

The coniferous forest biome is one of the Earth's major biomes. It covers 14% of the Earth's total land area.

Soils in coniferous forests are called podzols. They are light-coloured, acidic soils, covered by a layer of humus (fallen and decomposing leaves).

Coniferous means that it grows cones such as pine cones. Coniferous forests are also known as taiga or boreal forests.

Features of the tropical rainforest biome

Read the information below about the tropical rainforest biome. Write a short Descriptive Report about it below. Some features may only have one sentence.

a forest in a hot, moist area	tropics means near the Equator; 2% of the Earth's land area	oxisols and ultisols, nutrient poor soils, rain washes nutrients away, nutrients are absorbed by plants not the soil	4 layers: emergent, canopy, understory, forest floor	located on or near the Equator, in Central and South America, Africa, Southeast Asia, India, New Guinea and Australia	very high productivity, high rate of photosynthesis due to light on broad leaves	climate is warm to hot with high rainfall, constant warm temperatures all year round, no dry season

Describe the tropical rainforest biome

General statement
Identify the thing being described
Definition

Description
Spatial distribution

Climate

Soil

Vegetation

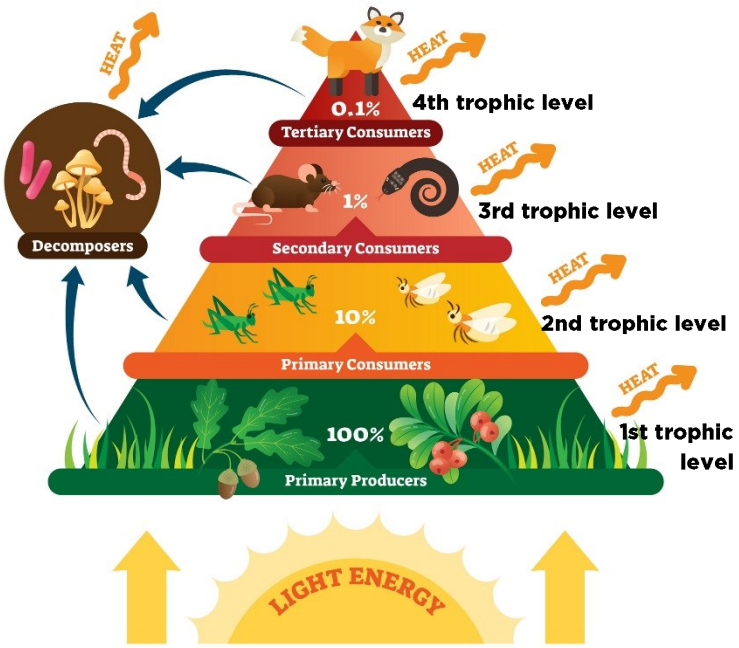
Productivity

Use your knowledge of other biomes to write a description paragraph about a biome. Follow the structure above.

Energy flows through biomes

Geographers understand the importance of energy in biomes. Energy is an abstract concept. It means the ability to survive, grow and reproduce. It also means the ability to do work and to make some kind of change. All living organisms need energy and use energy in different ways. The energy pyramid on the right shows that the energy in a biome comes from sunlight. Through photosynthesis, plants convert sunlight to energy in the form of glucose and carbohydrates. As other organisms eat the plants, and then eat other organisms, energy moves through the food chain.

The boxes below show three sentence structures for describing energy flows in a food chain.



Here are three different sentence structures that describe energy flows. Useful verbs are found in the box. Choose verb groups that make sense in each sentence and write them on the lines provided. Verb groups can have one or more words.

Verb group box

gain	is gained	take in	is taken in	consume	is consumed
transform	is transformed	gained	is gained	pass on	is passed on
share	is shared	transfer	is transferred	use	is used

	Question	Sentence structure	Verbs that make sense
1	What does energy do?	Energy _____ through a food chain. *e.g. Energy moves through a food chain.*	e.g. moves _____
2	What do organisms do to energy?	Organisms _____ energy. *e.g. Organisms use energy.*	e.g. use _____ _____
3	What is done to energy by organisms?	Energy _____ by organisms. *e.g. Energy is used by organisms.* *(Note: 'this is a passive voice sentence)*	e.g. is used _____ _____

Use verbs from the verb box above to complete this paragraph about energy flows.

Energy _____ through biomes in many ways. The energy pyramid shows how energy _____ from organism to organism while some energy is lost as heat. Plants are primary producers because they _____ sunlight and _____ the sunlight into energy. All organisms _____ energy to survive. In a food chain, when one organism is eaten by another organism, the energy _____ higher up the food chain. Most energy _____ by an organism to live and survive. When primary consumers like grasshoppers eat plants, only around 10% of the energy _____ to the grasshopper. When secondary consumers like mice eat primary consumers, only 1% of energy _____ . When tertiary consumers like foxes eat secondary consumers, only 0.1% of the original plant energy _____.

Energy flows in food webs

A food web is a complex series of food chains that operate within and between biomes. We can explain a food web in a System Explanation (see box on the right).

System Explanation
Purpose: To explain how a system works
Stages: Phenomenon to be explained
Explanation (*parts, function, interaction)*

Write a System Explanation about food webs and the flow of energy within and between biomes. Refer to the diagram on the previous page.

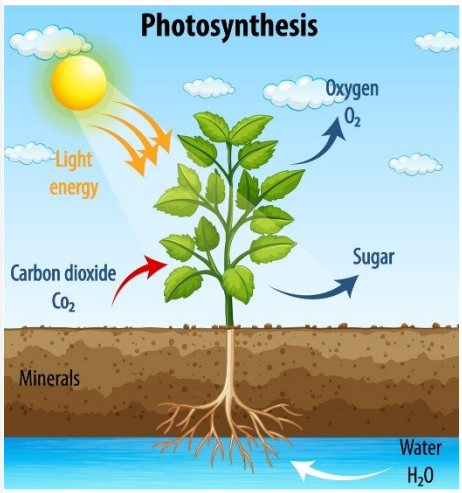
Phenomenon to be explained *Definitions*	A food web shows the complex interactions of energy in multiple food chains. Food chains _____	*Define food chains*
Preview parts of a food web	Organisms in food webs are grouped in trophic levels: _____	*State the trophic levels that will be explained*
Explanation *First trophic level*		*Part: define the first trophic level* *Function: What do they do? Give examples* *Interaction: How does transfer of energy happen? (Use verbs from the previous page)*
Second trophic level		*Part: define the second trophic level* *Function: What do they do? Give examples* *Interaction: How does transfer of energy happen? (Use verbs from the previous page)*
Third and fourth trophic levels		*Follow the same paragraph structure to write a paragraph about the third and fourth trophic levels*
Decomposers		*Write a paragraph about decomposers*

Biome productivity

Choose words from the box to complete this paragraph about productivity of biomes.

plants	photosynthesis	biomass	reproduce	oxygen	the sun	living organisms
carbon dioxide, water	chemical energy	grow	convert	chlorophylls	glucose	

Productivity of biomes means the amount of _____ or living plant material that is produced in the biome. The main source of energy in a biome is _____. The sun's energy has to be converted to chemical energy before it can be used by _____. Plants _____ the sun's energy into chemical energy through _____. _____ store light energy in _____ within plant tissues. They use the sun's energy, as well as _____, _____ and nutrients, to produce _____ and _____. Plants use some of this chemical energy to survive, _____and _____. There is still some _____ left over for use by other living organisms in the ecosystem.



Look at the list of biomes below. The biomes are ranked from highest productivity to lowest productivity. Define each biome using the word origins in the box to help you.

Highest productivity ↕ Lowest productivity

Biome	Define biome
Tropical rainforest	_____
Temperate deciduous forest	_____
Savanna	_____
Coniferous forest	_____
Temperate grassland	_____
Tundra	_____
Desert and semidesert	_____

Word origins

deciduous *decidere* is Latin and means 'to fall down'; it means trees that lose their leaves

savanna is a word from the Arawak culture of South America; *zavana* means flat plain with no trees

temperate from Latin *temperare* meaning moderate or kept in control

tundra is a word from the Sami culture of far-northern Europe (*tundar* means treeless area)

Label the pictures of the biomes listed in the table above.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

Explain biome productivity

When plants grow effectively, biomass is produced and biomes are productive. Plants grow if they have sunlight, warmth, water and nutrients (especially nitrogen). Each of these conditions can increase biome productivity. We can draw an impact chain for the effect of warm temperature. An impact chain shows how one thing causes something to happen, which in turn causes something else to happen, and so on.

Temperature is warm	so	diverse plants grow quickly	so	more biomass is produced	so	biome has higher productivity

Complete this impact chain to show how low temperature impacts biome productivity.

Temperature is freezing	so		so		so	

These impact chains repeat the conjunction 'so'. This is too repetitive. Sophisticated written language uses a variety of cause and effect language. The sentences on the right show a range of cause and effect language.

Temperature impacts biome productivity. Plants need warmth for growth so diverse plants grow quickly in warm climates such as in a tropical rainforest. As a result, more biomass is produced and biome productivity is high.

On the lines provided, explain how low temperature impacts the productivity of a biome. Use a range of cause and effect language.

Fill in this impact chain to show how climate and soil impact the productivity of a biome. Then answer the questions using cause and effect language and examples.

Rainfall is high	so		so		so	
Rainfall is low	so		so		so	
Many hours of daylight	so		so		so	
High quality soil	so		so		so	

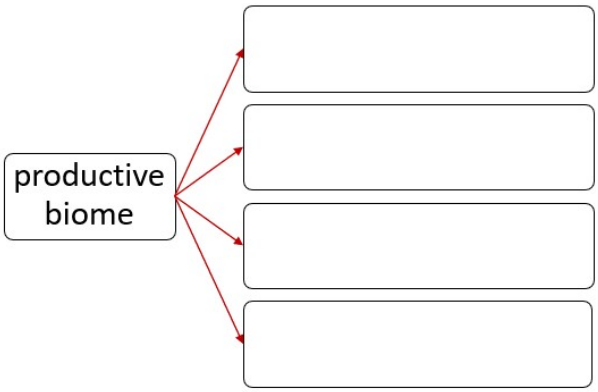
How does rainfall impact biome productivity?

How does soil quality impact biome productivity?

Biome productivity and climate change

Read this paragraph and fill in the chart to show the effects of a productive biome.

Productivity describes the amount of energy that is created in a biome and moves through food chains and food webs. Productive biomes are fertile places to plant crops for human consumption and also to produce feed for livestock. In addition, productive biomes promote biodiversity, with a range of living organisms (plants and animals).



Climate change has many impacts on biome productivity, shown in the table below. Use your knowledge of biomes to explain each impact on biome productivity. Use cause and effect language from the box below. Include examples of biomes.

Cause and effect language	
Conjunctions	because, as, since, so
Prepositions	as a result of, due to
Verbs	lead to, result in, cause
Nouns	reason, cause, result, impact
Text connectives	Therefore, As a consequence As a result, Consequently

Impact of climate change	Impacts on biome productivity
1 decreased rainfall in some areas	Decreased rainfall may result in _____ _____ As a consequence, crops may die out and topsoil may blow away leading to _____
2 higher temperatures	(Positive impacts) _____ _____ (Negative impacts) _____ _____
3 increasing rainfall in some areas	(Positive impacts) _____ _____ _____ (Negative impacts) _____ _____
4 extreme weather events (floods, droughts, storms)	(Negative impacts) _____ _____ _____ _____
5 rising sea levels	(Negative impacts) _____ _____ _____ _____

Human effects on biomes

The text below is jumbled. Group the information on each biome together and sequence the phases in the order shown on the right.

The Descriptive Report on this page is about human alterations of biomes. Each stage of the report has three phases:

1. Identify the biome
2. Explain human effects on the biome
3. Evaluate the impact of human effects on the biome

Land clearing and deforestation has impacted coniferous forests in some areas, such as in the USA, Norway and eastern Russia. Land is then used for livestock grazing and for crop growing. However, some areas of coniferous forest are still unaffected by humans, such as in parts of Canada.

Savanna or grassland biomes cover around 24% of the Earth's land mass.

Historically, deserts have been used for nomadic herding (moving livestock from place to place). In recent years, some semi-desert areas have been used to graze livestock, which damages the fragile ecosystems in the biome. The grasses in semi-desert areas have become overgrazed leading to soil erosion and decreased productivity.

In the past, Indigenous peoples had minimal impact on the tropical rainforest biome due to their sustainable hunting and gathering. In recent years, rainforests have been cleared for agriculture and construction of towns and cities, leading to deforestation, land degradation, soil erosion and loss of biodiversity.

As hot desert biomes have low productivity, the extent of human impact has been limited.

Three main types of human alterations have impacted on savanna biomes. The first involves livestock, as people have altered the biome by herding and ranching horses, cattle and sheep. Overgrazing has caused erosion, loss of native grasses and severe land degradation. The second impact involves agriculture and using grasslands for farming, leading to loss of soil fertility and salinity. The third impact involves clearing of land for industry and housing, which destroys the savanna biome altogether.

Hot desert biomes cover around one fifth of the Earth's land area.

The impact of humans on coniferous forests is severe in some places but minor in other areas.

Tropical rainforests cover around 8% of the Earth's landmass, and this percentage is decreasing.

The savanna biome is one of the biomes that has been most impacted by humans, as the changes made by humans have left very few areas of savanna in their natural state.

The coniferous forest biome covers around 14% of the Earth's landmass.

Recent damage to the rainforest biome has been severe. Around 8 million hectares of rainforest are lost every year due to human activities and the pace is increasing.

Human alteration of biomes

Most human effects on biomes cause damage or disruption to the natural environments within the biome. We can evaluate the impact of human activities on biomes on a scale from least impact to most impact.

Arrange the evaluation words below on the scale.

serious	little	major
no impact	severe	some
minimal	limited	minor

least impact ⟷ **most impact**

_____ impact	_____ impact	_____ impact	_____ impact
_____ impact	_____ impact		_____ impact
	_____ impact		_____ impact

Use the information below to write two paragraphs about human impacts on biomes. Include an evaluation of the human effects on the biome.

Polar biomes

- 11% of the Earth's land area
- little human habitation or land use
- fishing and pollution disrupt marine ecosystems
- global warming from human activities in other areas is causing polar ice to melt

Temperate deciduous forest

- 7% of the Earth's landmass
- land clearing and deforestation has devastated many forests
- land used for farming, livestock grazing
- land cleared for urban areas

Identify biome		
Human impacts		
Evaluate impacts		

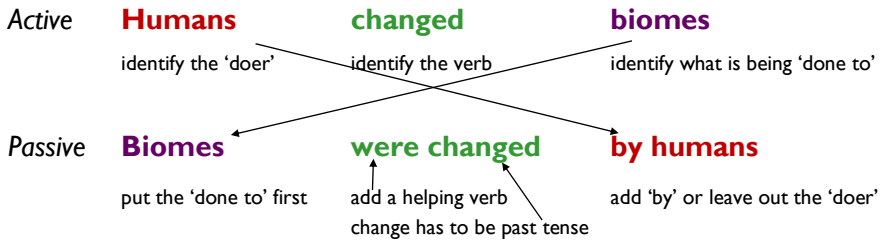
Human alteration of biomes

Expert writers can change the way they structure their sentences depending on what they are trying to achieve. One way of doing this is to use **active voice** or **passive voice.** Writers can use passive voice to make their writing more impersonal and academic, or to change the focus of their paragraph structures. Most writers use a combination of active and passive.

Active voice
Active voice means that the 'doer' of a verb comes first.
e.g. Humans **changed** biomes
Humans are the 'doers' of the verb 'changed'.

Passive voice
Passive voice means that the 'doer' of a verb is left out or left until the end.
e.g. **Biomes** were changed.
e.g. **Biomes** were changed by humans.

Here's how to change from active to passive.



Change each sentence from active voice to passive voice.

	Active voice sentence	Passive voice sentence
1	Farmers cleared land.	Land was _____ by _____
2	Agriculture damaged biomes.	_____
3	Farmers modified most temperate grasslands on Earth.	_____
4	Humans built urban settlements in fertile areas.	_____
5	People cleared forests.	_____
6	Farmers planted commercial crops.	_____
7	Developers destroyed forest biomes.	_____
8	Human activity impacted many biomes.	_____

Rewrite the paragraph below so that there is less repetition of 'humans' or 'they' at the start of each sentence. Use some passive voice sentences. You can combine sentences.

Over the course of human history, humans altered biomes in many ways. They removed vegetation for construction of homes and buildings. They built paths and roads through biomes. Farmers built fences and enclosures for animals. They cultivated plants and crops. They harvested crops for food. They poisoned or killed unwanted organisms such as pests and weeds. They used fertiliser to increase crop yields. They used water for irrigation. Humans also introduced species to biomes. In these ways, humans altered biomes.

Over the course of human history, biomes _____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Terrace farming

Common spelling errors involve three words that sound the same: **there**, **they're** and **their**. The table on the right shows their different meanings and uses.

	Meaning	Example
they're	they are	***They're*** *building terraces.*
their	possessive, it belongs to them	*Rice farmers use terraces to irrigate* ***their*** *crops.*
there	adverb - a place or sentence starter	*Look at the terrace* ***there****.* ***There*** *are many terraces in Asia.*

Read the information about terrace farming and write there, they're or their on each line.

Terrace farming involves building platforms or wide steps on the side of a hill or a mountain and planting crops _____ on the terraces. _____ also known as paddy fields.

_____ are many examples of terrace farming in the ancient world. Ancient Romans built terraces for views of _____ cities. In South America, the Wari people and the Incas built _____ homes and communities in the high Andes mountains. Terraces were used to grow _____ potatoes, maize and other crops for food. Without terraced farming, _____ would have been no way for communities to meet _____ food requirements in the steep mountains.

Terraced farmland in Peru, Andes Mountains

Batad rice retraces in the Philippine Cordilleras. Photo: Mon Federe.

The Rice Terraces of the Cordilleras in the Philippines are famous. _____ listed by UNESCO as a World Heritage Site because _____ built on steep slopes at high altitudes, with complex irrigation systems. _____ also at least 400 years old. _____ are still some people farming _____ on the terraces today. However, many young people prefer to make _____ careers in tourism for visitors to the terraces.

Terrace farming is still used by farmers in many parts of Asia including the Philippines, Vietnam, Indonesia and Cambodia. _____ mostly using terraces to grow rice.

_____ are many benefits of terrace farming. Terraces enable people in hilly communities to meet _____ food needs. _____ also a way of optimising water use in irrigation, as the water flows from higher to lower terraces. Land can become more productive in places where _____ are terraces. However, _____ are also negative impacts on soil quality as the water washes away nutrients.

Farmers planting rice in Cambodia. Photo: Brad Collis

Factors that impact crop yields

Crop yields refer to the amount of seed or grain that is produced by plants in a certain area. This page shows three types of factors that can impact crop yields: environmental, economic and technological factors.

Draw lines to link the type of factor with related information and images

capital: commercial agriculture is capital-intensive (needs expensive machinery)

rice grows in hot climates

most plants grow best in valleys or plains

plant breeding technology has increased crop yields

economies of scale: it is more efficient to plant large areas of one crop (monoculture)

rainfall: plants need water

environmental

global markets for crops: if prices are high, profits are high

different crops need different types of soil

rocky, hilly areas are hard to farm

new agrochemicals (fertilisers and pest controllers)

economic

wheat crops need loam (well-drained soil)

wheat grows in warm climates

wheat crops need rainfall of 3-100cm per year

technological

automated machinery can be controlled by drones

temperature: plants need warmth

soil moisture monitors make irrigation more precise

rice crops need rainfall of over 100cm per year

topography (landforms and features)

farmers have to buy expensive machinery

rice crops need clay soil that holds moisture

Factors that impact crop yields

Answer the questions below about the information on the previous page.

Environmental factors

1 In the information about environmental factors, there are four main sub-types of factors mentioned. One is temperature. What are the other three? _____

2 Write a topic sentence for a paragraph about environmental factors that lists these four sub-types.

_____

3 On the previous page, number the environmental factor sub-types e.g. temperature is 1. Add them to the diagram below. Find examples that support each of the four sub-types and number them too so they are easy to find when you write. An example for temperature is: 'wheat grows in warm climates.'

Economic factors

4 There are three sub-types of economic factors. One sub-type is that commercial agriculture is capital intensive. What are the other two? _____

5 Write a topic sentence for a paragraph about environmental factors that lists these three sub-types.

_____

6 Fill in the information about economic factors in the diagram below.

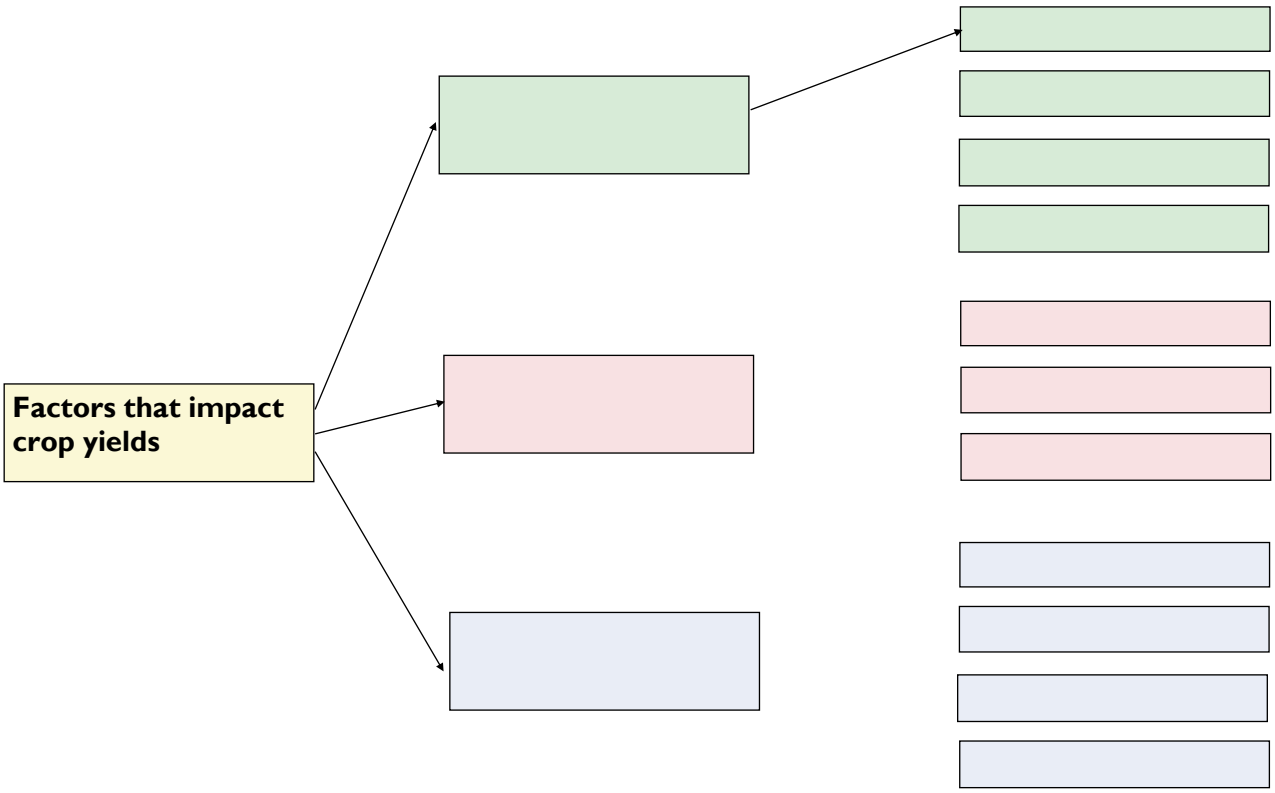
Technological factors

7 This section does not have sub-types of factors. Instead it lists four main technologies that can help crop yields. The first one is automated harvesters. What are the others? _____

8 Write a topic sentence for a paragraph about technologies. _____

_____

9 Add the technologies to the diagram below. Add arrows to complete the diagram.



Explain factors that impact crop yields

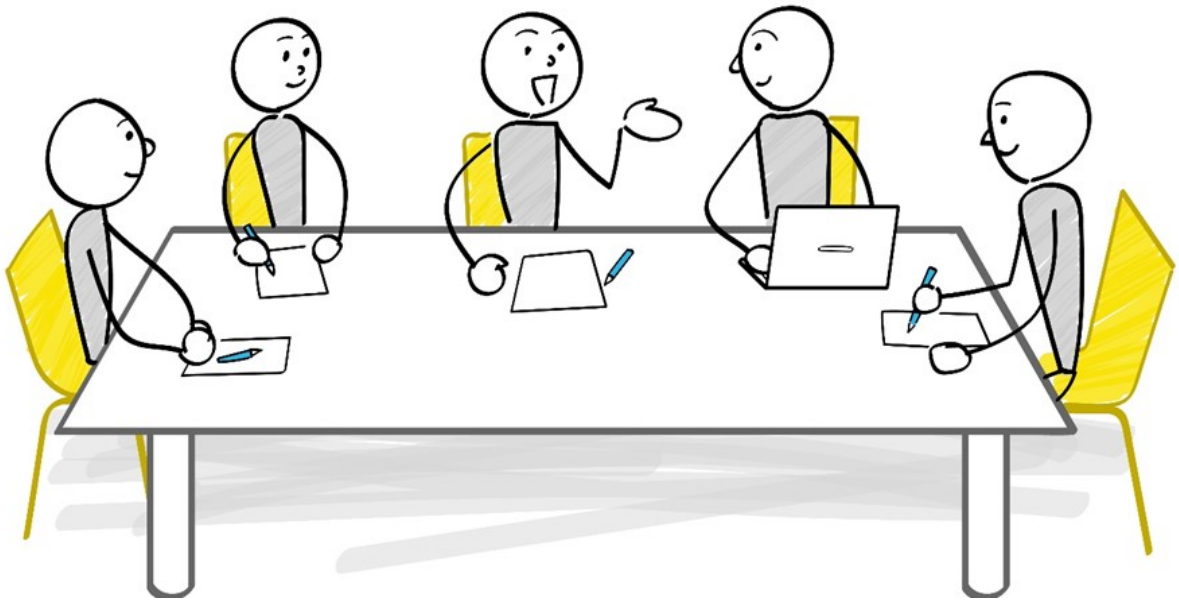
Follow the prompts and instructions to write a Factorial Explanation about factors that impact crop yields.

Phenomenon to be explained *Definitions of crop yields* *Preview factors*	Crop yields refer to _____ _____ There are many factors which impact crop yields, including _____ _____	*Define crop yields* *Preview the main types of impacts in order*
Factors *Environmental*	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	*Include your topic sentence about environmental factors* *Explain the sub-types of factors in order* *Add information using text connectives (e.g. in addition, also)*
Economic	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____	*Start with topic sentence about economic factors* *Explain the factors and what they mean*
Technological	_____ _____ _____ _____ _____ _____ _____ _____ _____ _____	*Include your topic sentence about technological factors* *Include the examples of technologies that improve crop yields*
General statement	_____ _____ _____	*Restate the three factors. Why is it important to improve crop yields?*

Land use discussion

Imagine that there is a large area of vacant land on the edge of your city or town. It is zoned by the council for many uses. The council has organised a meeting of people who want to use the land for different purposes. They have to argue their case. You will be given one of the roles on the right.

Role	You want to use the land for:
urban developer	an affordable housing estate
industrial developer	new factories and warehouses
mining	a quarry for mining basalt (for building roads)
biofuel facility	a biofuel plant (processing agricultural waste into fuel)
fish farm	incubating fish eggs and growing young fish
golf course	building a championship golf course and a housing development



Use the table below to plan what you will say in the group meeting.

My role

What I want to use the land for

Reasons - who will this benefit? Why?

Possible objections that other people may have

Ideas for how I can respond to these objections

After the meeting, answer the questions below.

In your personal opinion, should land be used for these purposes or for food production? Why? What do you need to know more about in order to make a judgement?

Sustainable food supply chains

One of the challenges of growing population is food security, which means having access to affordable, nutritious food. One strategy to feed a larger population sustainably is to reduce food loss and waste. Around one third of the world's food is wasted (FAO, 2021). In Australia, 7.6 million tonnes of food are wasted across the supply chain every year, from the grower, to transport, to the supermarket to the consumer (AWE, 2021).

This paragraph has four phases as shown in the left column below. Read the paragraph and notice the structure and language features.

Identify the strategy for reducing waste	Fresh produce can be saved from waste on farms and during transport. Food is wasted **if** there is uneven ripening of crops and **if** fruit and vegetables are the wrong shape for supermarkets (e.g. too large). Poor storage and care of food *can* **result in** crushing or bruising during transport. Also, food *may* ripen too soon before it reaches the supermarket. Strategies to solve these problems include agricultural technology that *can* monitor ripeness and timing for harvests. Farmers *could* be educated about the requirements that supermarkets have for fresh produce **so that** more of their produce *can* be sold. Smart packaging and refrigeration *can* maintain freshness and protection during transit between the farm and supermarket. These strategies *can* help to prevent waste on farms and transport and **therefore** make food chains more sustainable.
Explain why food waste occurs	
Identify strategies to make food chains sustainable	
Summarise how these strategies solve the problem	

Use cause and effect language (in bold) e.g. **if**

Use low and medium modality (in italics) to show that these are possibilities or options
e.g. *may, can*

Complete a second paragraph about sustainable food chains using the hints provided.

Identify the strategy for reducing waste	Another strategy for reducing waste is for supermarkets to change their acceptance criteria for how fresh produce should look.	
Explain why food waste occurs	Many supermarkets reject fruit and vegetables if they are the wrong shape or if they are not perfect. For example, oranges that are not round may be rejected because consumers will think they are not tasty. _____	*Add another example* *Use cause and effect language*
	_____	
	Up to one third of Queensland bananas may be rejected due to _____	*Why could bananas be rejected?*
	_____	
Identify strategies to make food chains sustainable	To make fresh food more sustainable, _____	*What could supermarkets and consumers do?*
	_____	
	_____	*Use low or medium modal language*
	_____	
Final sentence summarise how these strategies solve the problem	In summary, another strategy for reducing waste in the supply chain is to	*Link the final sentence back to the topic sentence.*
	_____	
	_____	

Sources:
AWE Department of Agriculture, Water and the Environment (2021). *Tackling Australia's food waste.* https://www.awe.gov.au/environment/protection/waste/food-waste
FAO, IFAD, UNICEF, WFP & WHO. (2021). *In Brief to The State of Food Security and Nutrition in the World 2021. Transforming food systems for food security, improved nutrition and affordable healthy diets for all.* Rome, FAO.

Sustainable food supply chains

Look at the infographic on the right. Then write a paragraph about how understanding of food expiry dates can minimise food waste in the supply chain.

Identify the strategy for reducing waste	Correct understanding of food expiry dates can prevent food waste in the food supply chain.	
Explain why food waste occurs	_____ _____ _____ _____ _____	*Why would misunderstanding of expiry dates cause food to be thrown away? Give some examples about supermarkets and consumers.* *Use cause and effect language.*
Identify strategies to make food chains sustainable	_____ _____ _____ _____	*What could supermarkets and consumers do?* *Use modal language.*
Summarise how these strategies solve the problem	_____ _____	*Link the final sentence back to the topic sentence.*

Write a paragraph about redistributing excess food. Use the structures and language features on this page, and the example below.

OzHarvest is an Australian Charity that collects unused or unwanted food from supermarkets, bakeries, restaurants and caterers and redistributes it to people in need.

OZHARVEST
Nourishing Our Country

The government changed legislation to allow food donors to give their surplus food to charities without fear of being sued.

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Changing places

Urbanisation vocabulary

Geographers often explain things that happen in the world by using nominalisations. Nominalisations are nouns (things) that condense meaning about complex events and processes (verbs).

For example, **urbanisation** is a nominalisation. Urban means city. Urbanisation is the process of a place becoming more urban as more people move to the city and the area of the city expands.

Draw a line to match a definition with a nominalisation on the right.

many people or things are gathered together in one place	transformation
the appearance or nature of something changes completely	centralisation
people move somewhere else to live	expansion
one main place manages or governs a number of regions or outlying areas	migration
the land is negatively impacted by human activities	modernisation
gradually, more people live in suburbs outside the city centre	degradation
something becomes more updated and contemporary	decentralisation
the space or area becomes bigger or wider	suburbanisation
control, government or management moves from the centre to different regions which can control themselves	concentration

Rewrite this paragraph by changing the underlined wordings into nominalisations from the list above.

In recent years, most nations in the world have experienced <u>lots of major changes</u> caused by <u>cities becoming more populated</u>. This is due to <u>people moving</u> to cities leading to urban <u>areas becoming a lot bigger</u>. Many cities experience <u>suburbs becoming more popular and bigger</u> outside the city centre. In urban areas, some people experience the benefits of <u>more contemporary and updated life</u> and employment opportunities. However, disadvantages include <u>the land becoming negatively impacted</u> and lower quality of life.

In recent years, most nations in the world have experienced _____ caused by

_____

_____

_____

_____

_____

_____

_____

_____

Push and pull factors for urbanisation

Follow your teacher's instructions to read and annotate this paragraph.

Urbanisation is caused by push and pull factors. Push factors are events or forces that push someone away from where they are living. Examples of push factors are war, violence, famine and poverty. Other push factors include losing employment, land dispossession or loss of subsistence agriculture. Pull factors are reasons that attract or motivate someone to migrate. The main pull factors for urbanisation are employment opportunities and the potential for higher standards of living. Other pull factors include family and relationships, educational opportunities and medical care.

Add push factors and pull factors for migration to the diagram on the left and right of the picture. Add your own ideas as well as the factors from the paragraph above.

PUSH FACTORS

PULL FACTORS

Answer the questions below about push and pull factors.

In the future, what push factors might cause you or your family to leave where you live?	
If you were going to live somewhere else, where might that be? Why?	
What pull factors might attract you live somewhere different in the future?	

Flooding in Jakarta

Jakarta, the capital city of Indonesia, is a megacity with a population of 10.9 million people. This enormous city faces many challenges including severe flooding. Floods are becoming more common and more serious. The activities on the next pages will help you understand and write about the causes of flooding as well as the consequences and impacts of flooding in Jakarta.

The list below shows causes and effects of flooding in Jakarta. Tick the box to show if the event or situation is a cause of flooding or an effect of flooding.

		Cause of flooding	Effect of flooding
1	Jakarta is located in a low-lying area near the sea.	✓	
2	Thirteen rivers flow through Jakarta to the sea.		
3	Sewage and pollution spread in floodwaters.		
4	New construction developments have been built on wetlands and marshes.		
5	Dozens of people may be killed in each flood.		
6	There are inadequate sewage pipes and drains.		
7	Diseases spread such as dengue and cholera.		
8	Torrential rains are happening more frequently due to climate change.		
9	New buildings do not have water storage so rainwater pours off them.		
10	Drinking water becomes polluted.		
11	Deforestation has occurred upstream.		
12	People lose their homes, incomes and businesses.		
13	Most of Jakarta is paved in concrete so the ground has little capacity to absorb water.		
14	Damage to property costs millions of dollars.		
15	Only 40% of Jakarta's sewers and drainage pipes are functioning properly.		
16	Living standards for people in Jakarta are reduced.		

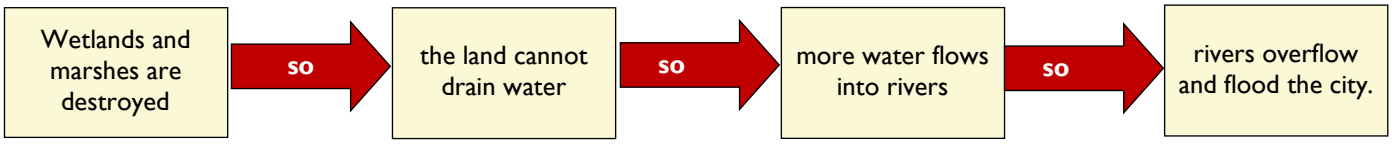
We can analyse the causes and effects by grouping them into categories. Write the number of each cause or effect next to one or more categories.

	What it means, what it impacts:	Cause or effect number
Social	people, relationships, quality of life, living standards, health and illness	
Environmental	natural ecosystems, natural conditions, impacts on the environment	1, 2
Economic	business, jobs, employment, economy, construction, infrastructure	

Chains of causes and effects

Causes and effects of flooding can be expanded into a chain of effects. Expert writers tend to condense several causes and effects into one sentence. To do this, they convert sentences and processes (verbs) into things (nouns), as shown below.

Step 1: Understand the chain of cause and effect



Step 2: convert the chain into an expert written sentence

Change the **process** 'are destroyed' into a **thing** 'destruction'

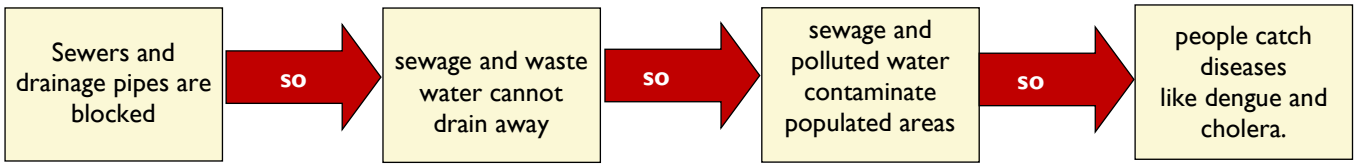
Use a cause and effect verb: e.g. leads to, results in, causes

Combine the next causes and effects into a sentence ending:
The process: 'cannot drain' becomes a thing: 'inadequate drainage'
'more water flows into rivers' becomes 'overflowing rivers'
'overflow and flood the city' becomes 'floodwater'.

Destruction of wetlands and marshes **results in** **inadequate drainage, overflowing rivers and floodwater.**

Convert these chains of cause and effect into expert written sentences

1



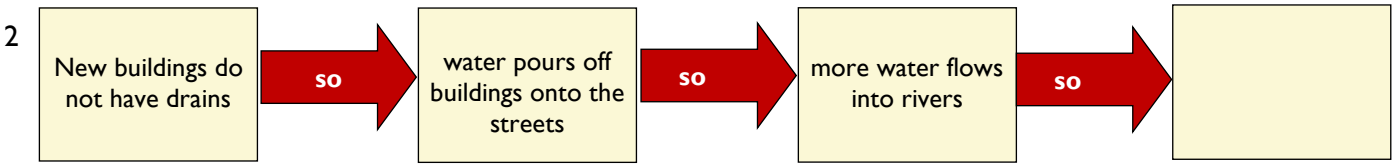
Change the **process** 'are blocked' into a **thing** 'blockage'

Use a cause and effect verb

Combine the next causes and effects into a sentence ending:
the process 'cannot drain' becomes a thing 'inadequate drainage'
'contaminates' becomes 'contamination'
'catch diseases' becomes 'diseases'.

_____ of sewers and drainage pipes _____ _____, _____ of populated areas and _____

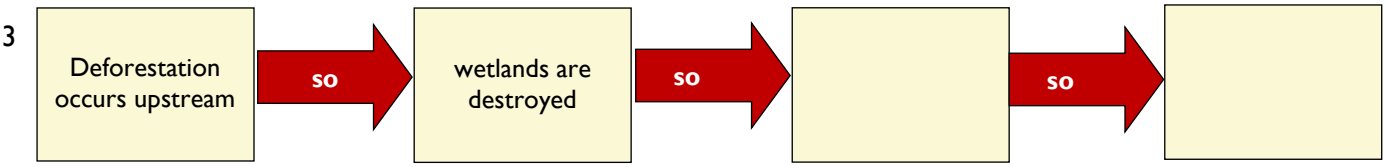
2



_____ _____ _____

in new buildings _____

3



_____ _____ _____

_____

Causes and effects of flooding

Convert these chains of three causes and effects into expert written sentences

1

Most of Jakarta is paved with concrete	so		so	

Concrete paving of Jakarta _____ _____

2

Jakarta is located in a low-lying basin with 13 rivers running through it	so		so	

_____ _____ _____

_____ _____

Left: A flooded mosque and neighbourhood in Jakarta

Right: Skyscrapers in the centre of Jakarta

Explain the economic impacts of floods in Jakarta.

3

Severe flooding occurs regularly	so		so	

_____ _____ _____

_____

Explain the social impacts of floods in Jakarta.

4

More than ten million people live in Jakarta and experience floods	so		so	

_____ _____ _____

_____

Explain flooding in Jakarta

Write an explanation of the causes and effects of flooding in Jakarta below.

Phenomenon to be explained	Jakarta, the largest city in Indonesia, faces many serious problems including flooding. Every year, Jakarta experiences severe flooding that impacts the entire city. The main causes of flooding in Jakarta are _____ _____ Flooding also has serious _____ impacts.	*Define the phenomenon.* *Preview the causes and the effects that will be explained.*
Causes	Flooding is caused by Jakarta's physical location, urbanisation and its lack of drainage infrastructure. _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	*Explain why Jakarta's location causes flooding.* *Explain why urbanisation causes flooding.* *Explain why lack of drainage infrastructure causes flooding.* *Use cause and effect language including cause and effect verbs*
Effects	The flooding of Jakarta has social, environmental and economic impacts. _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	*Explain the social impacts of flooding in Jakarta.* *Explain the environmental impacts.* *Explain the economic impacts of flooding.*
General statement	_____ _____ _____ _____ _____	*Summarise the main causes and effects of flooding.* *What needs to happen?*

USA and Australia urban distribution

Complete the dictogloss led by your teacher.

Notes

The table below shows some reasons for the population distribution of the USA and Australia. On the lines, explain why each reason led to the distribution of urban concentration. Use a text connective from the box to start your sentence.

As a result,	Consequently,	Therefore,	For that reason,

e.g. The USA has fertile land available across the nation. **For that reason, people could settle anywhere and find suitable land for agriculture and industry.**

1 Extensive railway networks were built across the USA during the time when cities were expanding. _____

2 The USA has many long rivers that allowed ships to transport people and goods. _____

3 The USA has 50 states, each with a state capital. _____

4 In Australia, the best climate and most fertile land are found near the coast, whereas the centre is arid. _____

5 European settlement in Australia was in six separate colonies connected to coastal ports. _____

6 In the early days of European settlement of Australia, coastal shipping was the main form of transport and there were limited inland rail and road networks. _____

Internal migration data

A 'sea change' is when people migrate to coastal areas.

Internal migration is when Australians migrate within Australia. They may migrate for work or for education, to be close to family, for cheaper housing or a 'sea-change' or 'tree change'.

A 'tree change' is when people migrate to rural areas.

The Australian Bureau of Statistics reports on **net migration** to and from capital cities. For example:

If 100 people arrive and 90 people leave, net migration is 10.

If 100 people arrive and 108 people leave, net migration is -8.

If net migration is a negative number it means more people are leaving capital cities than moving to capital cities or states.

The three data displays below show the same data about net migration to and from all the capital cities in Australia combined. The time periods are quarters so Mar 2011 means the total of January, February and March 2011. Answer the questions on the next page.

Table 1

Quarterly net migration, greater capital cities combined

Quarter	Net migration
Mar 2011	-5,392
Sep 2011	-4,416
Mar 2012	-4,826
Sep 2012	-3,491
Mar 2013	-3,754
Sep 2013	-3,445
Mar 2014	-3,164
Sep 2014	-3,827
Mar 2015	-2,989
Sep 2015	-3,713
Mar 2016	-3,896
Sep 2016	-4,340
Mar 2017	-5,303
Sep 2017	-7,723
Mar 2018	-7,980
Sep 2018	-7,115
Mar 2019	-5,171
Sep 2019	-5,631
Mar 2020	-10,142
Sep 2020	-11,247
Mar 2021	-11,845

Source: Australian Bureau of Statistics. Regional internal migration estimates. March 2021.

Figure 1: Line graph

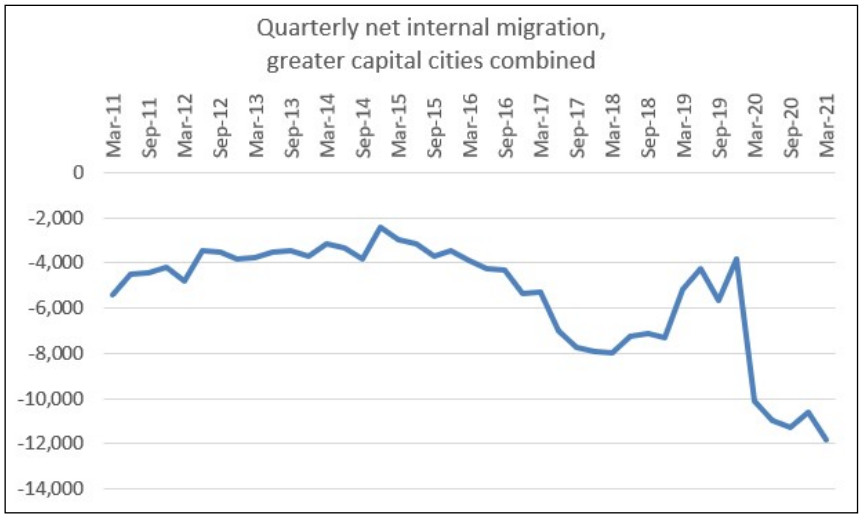
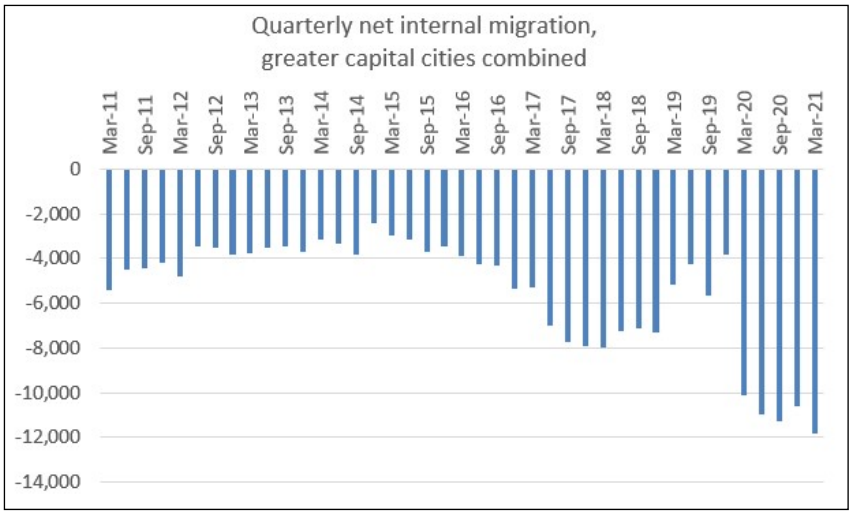


Figure 2: Bar chart



Interpreting internal migration data

Answer these questions about the data displays on the previous page. *Short answers are fine.*

1	How many years of data are shown?	
2	Which data display shows the net migration figures in detail?	
3	Which data display has one line over time, showing a general trend?	
4	Which data display shows individual lines or bars for each quarter?	
5	Look at the table. Which quarter had the smallest net loss from capital cities?	
6	Which quarter had the largest quarterly net loss in migration?	
7	What was happening in the world and in Australia around the time of March 2021? Why would this impact on internal migration?	
8	Look at the line graph. When the line dips down, are there more or fewer people leaving capital cities?	
9	Look at the bar graph. Draw a line along the tips of each bar. What do you notice about the shape of the line you have drawn?	
10	In Geography, which data display is most suitable for showing a trend over time?	
11	Which data display is best for showing detailed numerical values?	
12	Which data display is best for comparing different time periods without exact details?	

When we write about data, we use **showing verbs** e.g. shows, reveals, demonstrates, indicates, highlights

e.g.	Net migration figures	**show**	that more Australians are leaving capital cities.
	the data (plural: figures)	*showing verb*	*What does the data show?*
e.g.	The March 2021 number	**shows**	that more Australians are moving to the regions.
	the data (singular: number)	*showing verb*	*What does the data show?*

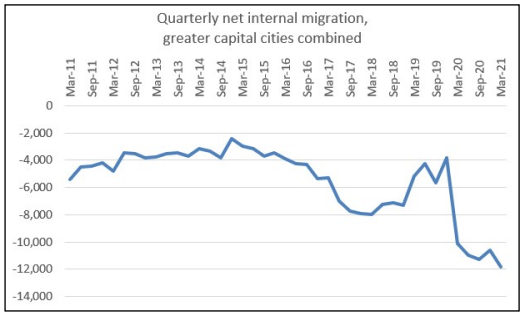
Use a showing verb to complete each sentence below.

a	Net migration estimates	that capital cities are becoming less appealing for many Australians.
b	The data from the ABS	that more Australians are moving to the regions, rather than from regions to the capitals.
c	The line graph	a trend away from urban areas over the past ten years.
d	Quarterly net migration numbers	that March 2021 had the greatest loss of people from capital cities to the regions.
e	Internal migration numbers	that regions are becoming more popular than cities for migration within Australia.
f	The most recent net migration numbers	

Analysing interstate migration data

After we have analysed data, we can write an analysis paragraph.
The stages of an analysis paragraph are:

1. **General trend** - make an overall statement about the most important feature of the data
2. **Specific facts** - add facts that support the overall statement.
3. **Reasons** - provide possible reasons for the data.



Read the model paragraph below.

showing verb

most important point about the data

General trend

Facts and evidence

Reasons

Net migration data **shows** that more Australians moved from capital cities to regional areas. In March 2021 quarter, there was a net loss of 11,200 people from capital cities to the regions. This is the largest net loss for the past ten years. This trend **may** be due to the pandemic and lockdowns because crowded capital cities were less desirable places to live than rural areas. Another **possible** reason for migration to the regions was that working from home became more popular so employees did not have to travel to city offices.

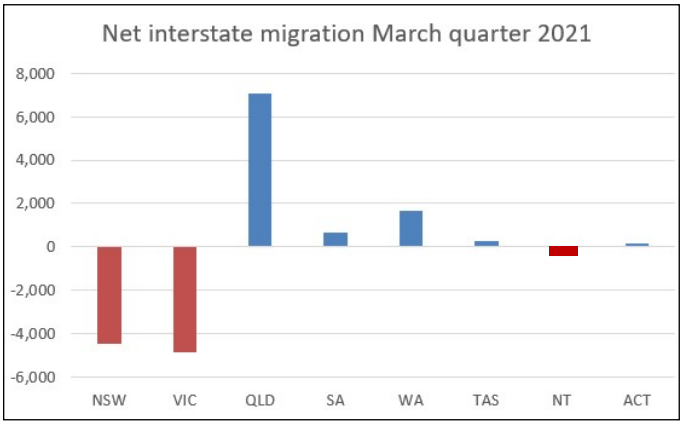
low modality
e.g. may, possible

cause and effect language
e.g. due to

Analyse the data below about interstate migration in Australia. Work out what the data means and write a paragraph using the model above.

March 2021 quarter net interstate migration

	Arrivals	Departures	Net
NSW	26,221	30,684	-4,463
VIC	18,907	23,771	-4,864
QLD	28,500	21,465	7,035
SA	7,460	6,812	648
WA	9,161	7,522	1,639
TAS	3,808	3,531	277
NT	4,009	4,419	-410
ACT	6,076	5,938	138
	104,142	104,142	



Source: Australian Bureau of Statistics. Regional internal migration estimates. March 2021.

General trend

Facts and evidence

Reasons

Describe the most important overall point about the data. Use a showing verb.

Give at least two facts to support the overall point.

Explain reasons for the data using low modality and cause and effect language.

Consequences of internal migration in China

Geographers often explain the consequences or impacts of a phenomenon, such as internal migration in China. Since the late 1980s, millions of workers have moved from rural areas to urban areas such as Shenzhen, Shanghai and Beijing. There are approximately 286 million internal migrant workers in China. One third of China's total workforce are migrant workers. Some consequences of internal migration in China are shown below.

economic consequences for China

- **economic growth**
- **export industries**
- **rise of middle class**

Internal migration has economic consequences for China. Internal migration has provided a source of workers that has fuelled economic growth for China. The labour of migrant workers enabled Chinese companies to produce and export goods to the rest of the world. The buying power of migrant workers created a large middle class in China which can afford to buy products and services, leading to more growth.

Map of China showing regions where most internal migrants live and work.

Look at the diagram below showing economic consequences for workers and write a short paragraph about it. Use the paragraph above as a model.

economic consequences for workers

- workers earn higher incomes than those in rural areas
- more career opportunities
- higher living standards

Internal migration has had _____ consequences for _____

_____

_____

_____

_____

_____

_____

Internal migration to cities is leading to the urbanisation of large areas of China. Fill in the diagram and write a paragraph about the environmental consequences.

environmental consequences of urbanisation

- destruction of natural habitats
- _____
- _____

_____

_____

_____

_____

_____

_____

_____

_____

Explaining negative consequences

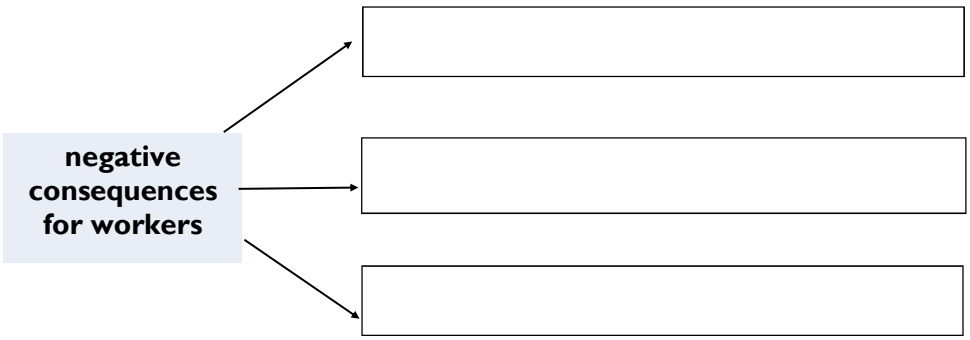
Read the paragraph below about negative consequences for internal migrant workers in China. Underline the cause and effect language.

Exhausted factory workers sleeping at work

Dormitory accommodation for workers
Source: chinalaborwatch.org

Internal migrant workers in China experience many negative consequences. One major impact involves poor working conditions. Many migrant workers are exploited because they work more than 60 hours per week in hot and crowded factories. They may have to live in large shared dormitories and have little leisure time. The Chinese registration system called 'hukou' also causes major problems for internal migrants. Migrant workers from rural areas cannot access education or healthcare or buy a property if they do not have an urban 'hukou'. Consequently, many migrant workers are disadvantaged in the cities. Migrant workers also experience many negative effects on their mental health. The stress of long work days, sleep deprivation and separation from friends and family result in mental health problems for many migrant workers.

Based on the paragraph above, draw a consequences diagram



Look at the diagram below about negative consequences of internal migration for rural areas. Write a paragraph about these consequences and explain why they are a problem. Use cause and effect language.

Internal migration in China has led to many negative consequences for _____

_____

_____

_____

_____

_____

_____

_____

International migration to Australia

Read this information about international migration to Australia. Answer the questions in the boxes below.

International migration has shaped the development of Australia. The first arrivals were the ancestors of Indigenous Australians over 65,000 years ago. The first European colony was established in 1788 as a British convict settlement. Free settlers followed in the 1790s. The gold rushes of the mid-1800s attracted prospectors from many cultures including China. In the 1900s, international migration from non-white backgrounds was banned by the White Australia policy. By 1945, the population of Australia was seven million people. After World War II, the government began a program to attract migrants from the United Kingdom. The White Australia Policy ended in 1966. In the 1970s, thousands of migrants and refugees arrived in Australia from Asia and the Middle East. Since 1945, more than 7.5 million international migrants have settled in Australia.

In 2022, the Australian population was 26 million. Aboriginal and Torres Strait Islanders make up 2.8% of the population. Around a third of the Australian population was born overseas. Nearly half of the population is first or second generation Australian, meaning that they were born overseas or one or both parents were born overseas. More than one fifth (21%) of Australians speak a language other than English at home.

1. Here

The answers to these questions are HERE on the page.

1. Look at the photo on the page and describe it.
2. When did the first people come to Australia? _____
3. Who were they? _____
4. After that, how many stages of migration were there? When? Who were the main cultural groups who arrived in Australia?

2. Hidden

The answers to these questions are HIDDEN which means that interpretation is needed.

1. The information above is in two sections. What is each section about? _____
2. What is a prospector (line 7)?
3. What is the meaning of first generation or second generation Australian?
4. Calculate how many people speak a language other than English at home and how many were born overseas. _____

3. Head

The answers to these questions are in your HEAD which means that you have to use your own ideas.

1. Why do you think Australia changed its policy to attract more migrants after World War II? _____
2. What are some of the benefits of international migration?
3. What might be some of the challenges of international migration for Australia in the future? _____

Benefits of international migration

International migration to Australia has resulted in many social and cultural benefits for Australians. It has also led to economic advantages.

Draw lines to match the type of benefit (social/cultural or economic) with examples.

more job opportunities

learning about other cultures and places

migrant workers pay taxes

helps people become more flexible

trade with other countries

creative approaches to problem solving

social and cultural

economic

builds understanding of other perspectives

migrants buy goods and services

breaking down stereotypes

economic growth

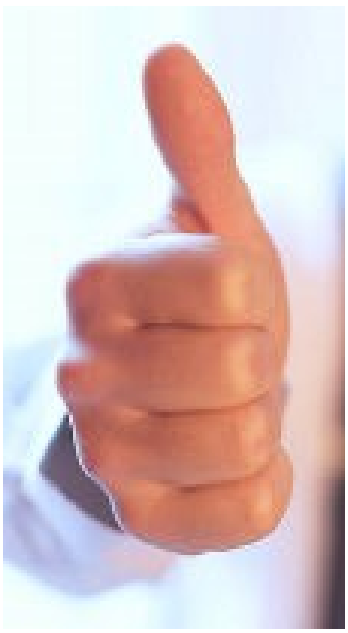
food from many cultures

tolerance and peace

Sort the evaluative language below into two categories: positive or negative. Some of the words depend on the context, but you can decide if the word would usually relate to a positive judgement or a negative judgement related to migration.

Evaluative language

discrimination understanding criticism growth burden concern
inadequate unfair benefits overcrowding tolerant flexible
claim prejudice interesting expand opportunities success



positive	negative

Benefits of international migration

This page explores how to respond to this instruction: **Identify the benefits of international migration for Australia.** The genre (purpose) is an Exposition, which persuades the reader. The overall position or viewpoint is called the **thesis.** In this case, the thesis is that **international migration has many benefits for Australia.**

Exposition
An Exposition has these stages:
- **thesis**: state the position
- **arguments**: support the thesis
- **counter-argument**: show that you have considered opposing views
- **restate thesis**: reinforce the position

Read this information about international migration to Australia. Answer the questions in the boxes below.

Argument + Evidence

State an argument that supports the thesis. Use evaluative language.

Support the argument with facts and evidence from reliable sources.

State the argument in the topic sentence

Evidence

Restate the argument in different words

Cultural diversity creates a more **flexible**, **adaptive** and **peaceful** society. When people from many different cultures interact, they can share a wide range of ideas and a variety of ways of problem solving (FECCA, 2016). This flexible mindset encourages innovation and creativity, which is helpful for individuals, workers, students and for society as a whole. Diverse societies like Australia are built on respectful relationships between groups of people, the government and law enforcement (United Nations, 2016). Consequently, cultural diversity leads to **greater tolerance, cohesion and harmony** within the society.

use positive evaluative language

refer to reputable sources e.g. government

text connective links ideas

Federation of Ethnic Communities' Councils in Australia [FECCA]. 2016. *Fact Sheet 8: Maximising the value of cultural diversity.*
United Nations. (2016). Leaving *no one behind: the imperative of inclusive development. Report on the World Social Situation 2016.* New York: UN.

Read the next argument paragraph about another social benefit of international migration. Identify the stages. Highlight the positive evaluation language. Underline the evidence and sources. Circle the text connective.

Another social benefit is that international migration makes Australian life more colourful and interesting. Migrants to Australia have brought with them new and unique products, cuisines, arts and cultural festivals which all Australians can enjoy (FECCA, 2016). A recent survey shows that 85% of Australians believe that 'multiculturalism has been good for the country', which is a higher rating than for other government policies (Scanlon Foundation, 2021). Therefore, this evidence shows that migration has made Australian life more interesting and diverse.

Federation of Ethnic Communities' Councils in Australia [FECCA]. 2016. *Fact Sheet 8: Maximising the value of cultural diversity.*
Scanlon Foundation. (2021). *Mapping social cohesion survey 2020*. Monash University.

Economic benefits of migration

The next argument paragraph is about economic benefits of migration. Use the fact box and writing hints to write an argument paragraph.

Economy fact box

- Migration leads to more workers and more consumers in an economy
- Gross Domestic Product (GDP) is a measure of production in the economy
- The Productivity Commission found that GDP is around 7% higher with international migration than it would be without migration (Breunig et al., 2014)
- Migrants consume goods and services
- Most migrants are young; the rest of the Australian population is ageing
- Taxes of young migrant workers can help to fund future pensions for the ageing Australian population (Australian Chamber of Commerce and Industry, 2018).

State the argument in a topic sentence

The economic benefits of international migration include _____

What are the main benefits? Use positive evaluation words. Keep it general.

Evidence

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Use evidence from the fact box. Start with GDP. Add a reference. Use the author names not Productivity Commission.

Add more facts and a reference.

Restate the argument in different words

_____
_____
_____
_____

Start with a text connective from the box below. Summarise how migration impacts the economy and what the result is.

References

Australian Chamber of Commerce and Industry. (2018). *Migration works for all of us. Policy position paper*. Canberra.

Breunig, R., Deutscher, N. & To, H.T. (2014). 'The relationship between immigration to Australia and the labour market outcomes of Australian-born workers', *Productivity Commission Report Migrant Intake into Australia.* Australian Government, Canberra.

Text connectives
Therefore
As a result
Consequently
Thus

List the three arguments that support the thesis statement.

Thesis: International migration has many benefits for Australia.

Arguments: _____
_____
_____

Dealing with opposing views

To be persuasive in an Exposition, we can include a **counter-argument** to show that we have considered other points of view and opposition to our thesis. If we can deal with opposing views, then our thesis will seem stronger and more sophisticated. Follow these three steps for a strong counter-argument:

1 Present the opposing view

State the opposite view to our thesis. Include evidence used by the opposing view.

2 Criticise the opposing view

Use facts and data and strong reasons to show why the opposite view is not actually true, or it is not relevant or not effective.

3 Reinforce the thesis

Restate our main thesis again.

Read the counter-argument below: that migration causes problems associated with urbanisation. Label the three stages and answer the questions below.

Some critics claim that migration has a negative impact on traffic congestion and drives up house prices in large cities. Migrants often settle in cities where they can find employment and be near extended family. Despite this, migration is not totally responsible for congestion and house prices. Traffic congestion is caused by adequate infrastructure, such as transport networks, which the government is responsible for (Australian Chamber of Commerce and Industry, 2018). According to the Reserve Bank of Australia, high house prices are due to low interest rates and Australian investors buying properties, not due to migration. In fact, most migrants are students who rent properties rather than purchasing them (RBA, 2021). Consequently, evidence shows that migration is not responsible for urbanisation problems and, instead, migration drives economic growth.

Australian Chamber of Commerce and Industry. (2018). *Migration works for all of us. Policy position paper*. Canberra.

Reserve Bank of Australia [RBA]. (2021). *Submission to the Inquiry into Housing Affordability and Supply in Australia. House of Representatives Standing Committee on Tax and Revenue*. Canberra.

1 What is the opposing view against the thesis that migration has many benefits for Australia?

_____

2 Who believes this view? _____

3 What is the effect of the word 'claim' in line 1? _____

4 In line 3, the words 'despite this' (a conjunction of concession) flip the argument back to the main thesis again. What follows the words 'despite this'?

_____

_____

5 What are reasons provided that show why the opposing view is not true?

_____

_____

6 What are the two sources provided? Are they reputable? Why/why not?

_____

_____

Write a counter-argument

Critics of migration have said that migrants live on social security or take jobs from Australians. Write a counter-argument paragraph using the fact box.

Opposing view

Migrants live on social security or take the jobs of Australian-born workers.

Conjunctions of concession

despite despite this
although whereas while

Fact box

Source: Breunig, Deutscher & To. (2014).

- Over 95% of skilled migrants are employed soon after their arrival in Australia.
- Migration has no impact on the jobs of Australians.

Source: Australian Chamber of Commerce and Industry (2018)

- Migration creates more jobs, especially when migrants start their own businesses.

Australian Chamber of Commerce and Industry. (2018). Migration works for all of us. Policy position paper. Canberra.

Breunig, R., Deutscher, N. & To, H.T. (2014). 'The relationship between immigration to Australia and the labour market outcomes of Australian-born workers', *Productivity Commission Report Migrant Intake into Australia*. Australian Government, Canberra.

1 Present the opposing view

State the opposite view to our thesis.

Some critics _____ that _____

_____

_____

2 Criticise the opposing view

Use facts and data and strong reasons to show why the opposite view is not actually true, or it is not relevant or not effective.

_____

_____

_____

_____

_____

_____

_____

_____

_____

3 Reinforce the thesis

Restate our main thesis again.

_____

_____

_____

Australian Chamber of Commerce and Industry. (2018). *Migration works for all of us. Policy position paper*. Canberra.

Breunig, R., Deutscher, N. & To, H.T. (2014). 'The relationship between immigration to Australia and the labour market outcomes of Australian-born workers', *Productivity Commission Report Migrant Intake into Australia*. Australian Government, Canberra.

Exposition: Benefits of migration

1. Cut up these sections of the exposition and arrange them in order.
2. Label the stages: thesis
arguments
counter-argument
reinforce thesis

Another social benefit is that international migration makes Australian life more colourful and interesting. Migrants to Australia have brought with them new and unique products, cuisines, arts and cultural festivals which all Australians can enjoy (FECCA, 2016). A recent survey shows that 85% of Australians believe that 'multiculturalism has been good for the country', which is a higher rating than for other government policies (Scanlon Foundation, 2021). This evidence shows that migration makes Australian life more interesting and diverse.

Some critics claim that migration has a negative impact on traffic congestion and drives up house prices in large cities. Migrants often settle in cities where they can find employment and be near extended family. Despite this, migration is not totally responsible for congestion and house prices. Traffic congestion is caused by inadequate infrastructure, such as transport networks, which the government is responsible for (Australian Chamber of Commerce and Industry, 2018). According to the Reserve Bank of Australia, high house prices are due to low interest rates and Australian investors buying properties, not due to migration. In fact most migrants are students who rent properties rather than purchasing them (RBA, 2021). Consequently, evidence shows that migration is not responsible for urbanisation problems and, instead, migration drives economic growth.

In summary, Australia has benefited in many ways from international migration. International migrants bring with them unique perspectives and skills that encourage diversity and creative thinking, enhance the workplace, grow the economy and help to build social cohesion. Despite unfair criticism of migrants' job prospects, international migration offers Australia the best opportunity for continued growth and prosperity.

Cultural diversity creates a more flexible, adaptive and peaceful society. When people from many different cultures interact, they can share a wide range of ideas and a variety of ways of problem solving (FECCA, 2016). This flexible mindset encourages innovation and creativity, which is helpful for individuals, workers, students and for society as a whole. Diverse societies like Australia are built on respectful relationships between groups of people, the government and law enforcement (United Nations, 2016). Consequently, cultural diversity leads to greater tolerance, cohesion and harmony within society.

Australian Chamber of Commerce and Industry. (2018). *Migration works for all of us. Policy position paper*. Canberra.
Breunig, R., Deutscher, N. and To, H.T. (2014). 'The relationship between immigration to Australia and the labour market outcomes of Australian-born workers', Productivity *Commission Report Migrant Intake into Australia.* Australian Government, Canberra.
Federation of Ethnic Communities' Councils in Australia [FECCA]. 2016. *Fact Sheet 8: Maximising the value of cultural diversity.*
Parliament of Australia (2017). *Migration to Australia since federation: a guide to the statistics.*
Reserve Bank of Australia [RBA]. (2021). *Submission to the Inquiry into Housing Affordability and Supply in Australia. House of Representatives Standing Committee on Tax and Revenue*. Canberra.
Scanlon Foundation. (2021). *Mapping social cohesion surveys 2020*. Monash University.
United Nations. (2016). Leaving no one behind: the imperative of inclusive development. Report on the World Social Situation 2016. New York: UN.

Australia is a successful global example of international migration, with more than 300 multicultural groups living and working together (Parliament of Australia, 2017). International migration offers many benefits to Australia, including cultural diversity, a more interesting lifestyle as well as economic growth.

The economic benefits of international migration include a stronger and bigger economy. Migration means more consumers and more workers, which grows the economy. The Productivity Commission reports that GDP (Gross Domestic Product i.e. the amount of production in the economy) is around 7% higher with international migration than it would be without migration (Breunig, Deutscher & To, 2014). This is because migrants consume goods and services that boost the economy. In addition, most migrants are young so their taxes help to fund pensions for the ageing Australian population (Australian Chamber of Commerce and Industry, 2018). As a result, migration leads to a flourishing economy and higher living standards for all Australians.

Australia's urban future

Australia's urban future means what cities and towns might look like in the future and what it might be like to live and work there.

Think about these questions:

- How can regional areas encourage migrants to move there? What can they offer?
- How can large cities minimise environmental problems? What would you recommend?
- How can individuals become more socially connected in their town or city?
- What urban planning rules could help urban development be more sustainable? What rules would you recommend? Why?
- What kind of infrastructure should governments develop? Why?
- How can we make housing more affordable?
- What issues do you think are more important for Australia's urban future? Why?

Write five recommendations for improving Australia's urban future. Include what governments, businesses, communities and individuals could do.

Recommend + Reason

Use low or medium modality
e.g. could, may, might, possible, should, can

Support with a reason, facts and evidence.
Use cause and effect language
e.g. because, so, so that

Recommend	Reason
e.g. Local councils in regional areas could target migrants for jobs with the council	so that migrants and their families might be attracted to settle in regional areas.

Environmental change and management

Evaluative language for environments

Geographers use evaluative language to take a position about the environment and environmental change. Evaluative words have positive or negative meanings built into them. For example, 'valuable' is positive and 'pollution' is negative.

Sort the evaluation words in the box below into nouns or verbs. Then sort them again into positive or negative nouns, and positive or negative verbs.

Nouns are things or concepts
e.g. Geographers study the _____ in/of the environment.
Geographers study the **importance** of the environment.

Verbs are processes or happenings
e.g. Human beings can _____ the environment.
Human beings can **value** the environment.

safety	restrict	danger	sustain	biodiversity	pollute
sustainability	develop	disrupt	monoculture	interfere	pollution
renew	problem	degrade	wellbeing	crisis	restoration
disease	recycle	destroy	reuse	devalue	restore
exploitation	loss	enable	diminish	significance	

positive nouns	negative nouns
importance	

positive verbs	negative verbs
value	

Underline the positive and negative evaluative language in this paragraph. You might find evaluative language in nouns, verbs or adjectives (describers).

The Great Barrier Reef is a remarkable World Heritage Listed environment. The 2,300 kilometre reef forms the world's largest coral reef ecosystem and comprises around 3,000 separate coral reefs and 900 islands over an area of 344,000 square kilometres. The Great Barrier Reef is a globally significant area for its diversity of reef formations, unique and spectacular corals and mangroves. The area has extensive biodiversity for over 1,500 species of fish and breeding colonies of seabirds and turtles. Due to its appeal to tourists, the Great Barrier Reef supports 64,000 jobs and contributes around $5 billion per year to the Australian economy. The area is popular for swimming, diving, fishing and vacations and it is highly valued for its natural beauty. It is also culturally significant for 70 clan groups of Aboriginal and Torres Strait Islander Peoples.

What is the evidence of these types of value of the Great Barrier Reef environment?

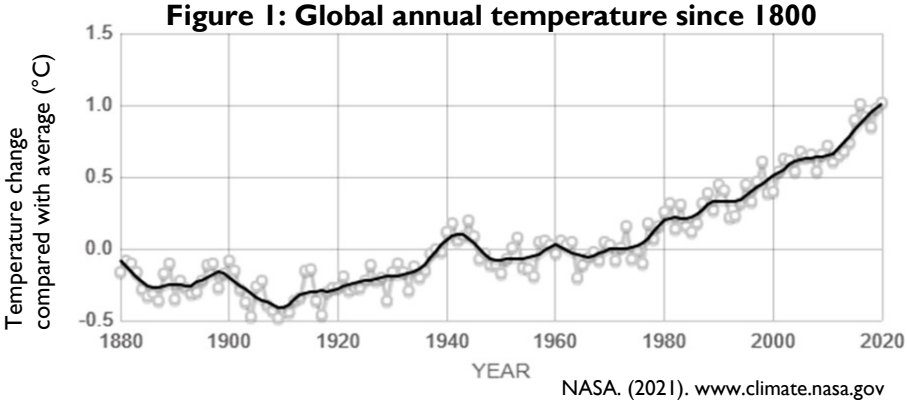
environmental value	
cultural value	
economic value	

Writing about data displays

Geographers use data displays (tables, graphs, charts and infographics) and showing verbs (in the box below) to provide evidence for statements and to support viewpoints. The data displays on this page relate to climate change.

showing verbs		
shows	indicates	demonstrates
reveals	highlights	proves

Figure 1: Global annual temperature since 1800

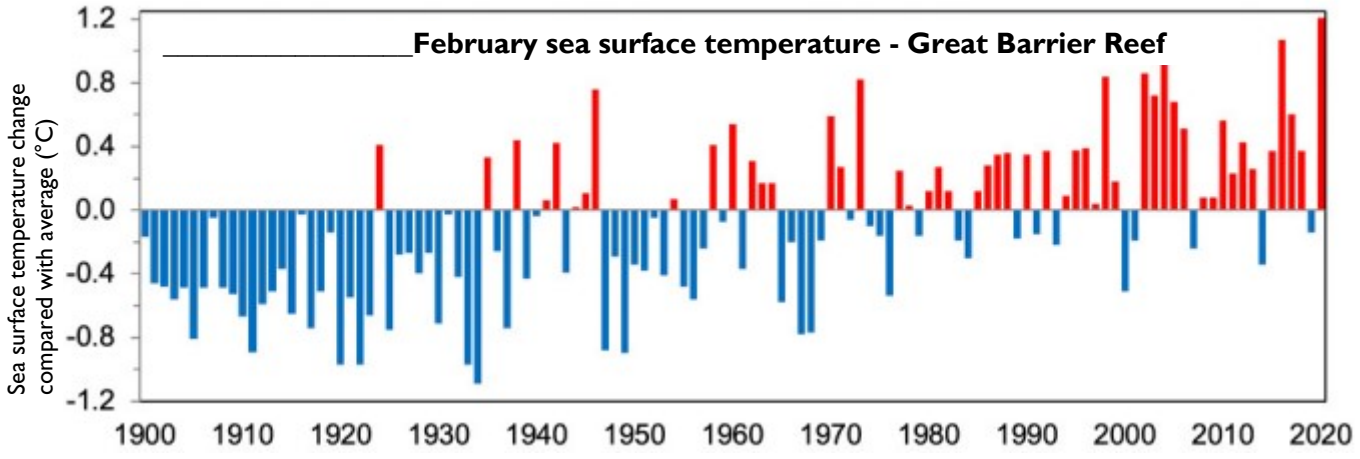


NASA. (2021). www.climate.nasa.gov

Read the four steps below about how to write about data displays.

Step 1	Choose a relevant and reputable source and a data display that is easy to understand. Create a **title** for the display that is relevant to your topic or assignment. For a chart or graph, call it a **figure** and number it. A table is usually called a table, not a figure. Add the source below.	Figure 1: Global annual temperature since 1800 *Underneath the figure:* NASA www.climate.nasa.gov
Step 2	Name the figure/table, use a showing verb (see box above), then state the main trend or overall meaning of the data.	Figure 1 **shows** how the Earth has warmed over the past 100 years.
Step 3	Elaborate (tell us more) about what the source means. Do not make the reader work out the meaning of the data on their own.	Compared with average temperatures, the global temperature has risen by more than 1°C since 1800.
Step 4	Identify the most important part of the figure or table.	In the past 20 years, the rise in global temperature has been steep, around 0.5°C.

Follow the 4 steps above to write about the data display below.

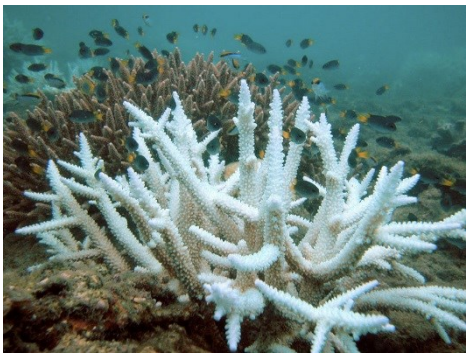


Bureau of Meteorology. (2020). www.bom.gov.au/2020-GBR-marine-heatwave

Step 2	Name the figure/table, use a showing verb (see box above), then state the main trend or overall meaning of the data.	_____ _____
Step 3	Elaborate (tell us more) about what the source means. Do not make the reader work out the meaning of the data on their own.	_____ _____ _____
Step 4	Identify the most important part of the figure or table.	_____ _____

Factors that impact coral reefs

Coral bleaching occurs when corals become stressed and expel the zooxanthellae algae that live inside their tissues. Without the algae to provide colour, corals appear transparent and reveal their white skeletons. Prolonged coral bleaching can lead to the death of corals.



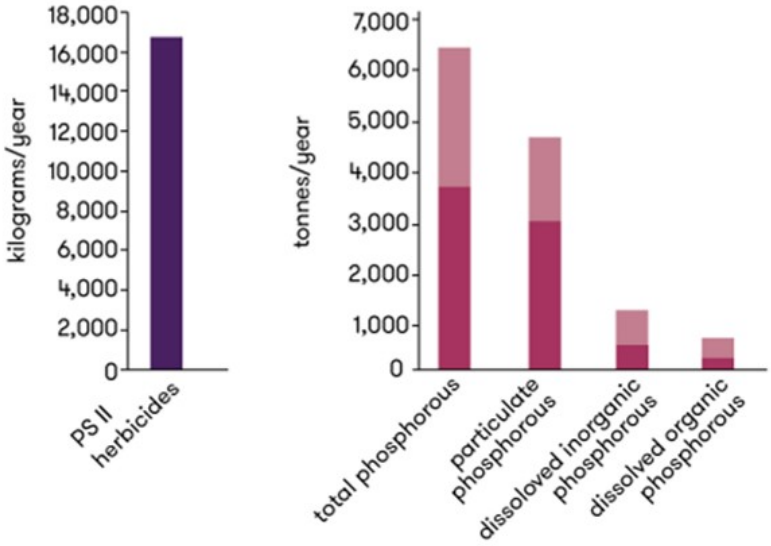
Refer to the data displays on the previous page to add evidence to this paragraph about the factors that cause coral bleaching.

Climate change is a significant factor that damages coral reefs and causes coral bleaching. If sea temperatures are above average (only by around 1°C), coral bleaching can occur. If bleaching continues for a long time, coral can starve and die (Great Barrier Reef Marine Park Authority, 2021). Scientific evidence demonstrates that the Earth's atmosphere and oceans have increased in temperature as a consequence of global warming.

This data highlights that coral reefs are in danger of permanent damage due to increased temperatures.

Analyse the data display below and follow the four steps on the previous page to complete a paragraph about another factor that impacts on coral reefs: pollution.

River runoff to the Great Barrier Reef



Australian Academy of Science. (2021). https://www.science.org.au/earth-environment/great-barrier-reef-threats

River runoff from grazing lands near the Great Barrier Reef pumps excess nutrients and herbicides into the sea. These damage the algae in coral reefs and reduce water quality (Great Barrier Reef Marine Park Authority, 2021).

This data shows that

Write a final sentence that links back to the topic of factors that impact coral reefs.

Australian Academy of Science. (2021). *Keeping our Great Barrier Reef great.* https://www.science.org.au/curious/earth-environment/great-barrier-reef-threats
Great Barrier Reef Marine Park Authority. (2021). *Coral Bleaching 101.* Available: https://www.gbrmpa.gov.au/the-reef/reef-health/coral-bleaching-101

Perspectives on Lake Victoria

Above left: Lake Victoria.

Right: Embankments built to contain lake water.
Photos: Murray-Darling Basin Authority

Lake Victoria Facts
shallow
remote
with an area of 122 km²
in NSW
freshwater
in an arid region
near Vic and SA borders
large

Expert writers in Geography pack information into a sentence using an expanded noun group.

Write an expanded noun group in the table below by adding all of the information in the box on the left.

	is	a							
Name of the lake	*relating verb*	*article*	*what size?*	*what is it like?*	*what type of water?*	*what type of landform?*	*where?*	*where?*	*what size?*
		expanded noun group							

Read the information below and answer the questions.

In the 1800s, non-Indigenous Australians built dams and embankments to raise the water level by 70m. They used Lake Victoria for water storage. The area around the lake was used for stock grazing leading to loss of vegetation and soil erosion.

Lake Victoria is a significant area for the Barkindji people who have been living in the area for 45,000 years. There are many burial sites around the lake. In 1994, the water level was lowered for maintenance and many ancient tools and burial sites were discovered. Since then, Indigenous Australians have been managing the area in partnership with the Murray-Darling Basin Authority.

Indigenous Australians monitor the area and provide daily advice to engineers and managers. They assist with revegetation of the area which has halted soil erosion. The area was barren but it is becoming green again. Traditional burial sites are maintained. Barkindji elders advise on varying water levels to flow into rivers downstream or hold floodwater from upstream. This also promotes vegetation growth and controls salinity.

1 How did non-Indigenous Australians manage the site in the past?

_____

_____

2 What was their environmental worldview?

_____

_____

3 What was the impact on sustainability?

_____

_____

4 What knowledge do the Barkindji people have about the Lake Victoria area?

_____

_____

5 How could you describe their environmental worldview?

_____

_____

6 What is the impact of their knowledge on sustainability?

_____

_____

_____

Functions of the environment

Imagine that you have been given the assignment prompt below. Let's explore how to deal with it.

We need to write is a Consequential Explanation (*explain, impact*)

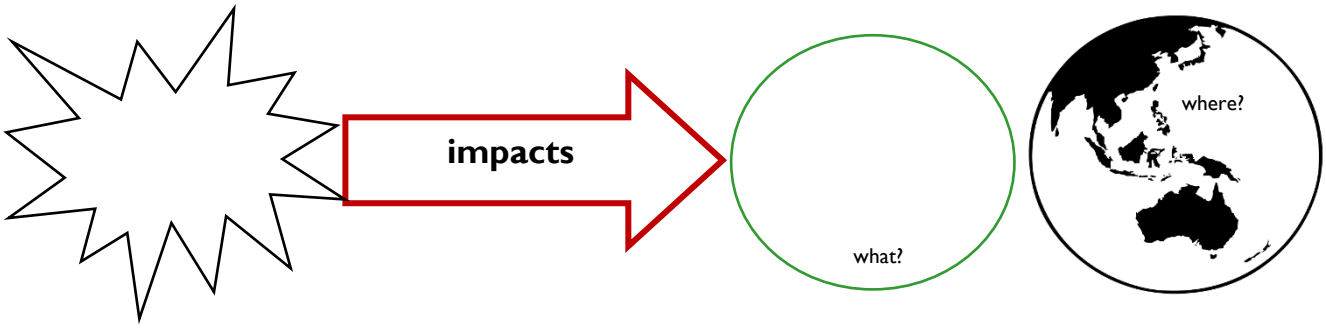
We need to choose one environmental change caused by humans

Explain the **impact** of a human-induced environmental change on the sustainability of functions of the environment. Use a case study.

We need to choose one case study environment.

The phenomenon that is being impacted is the sustainability of functions of the environment

Fill in this diagram showing what this assignment question is asking you to explain.



The next pages will take you through the process of understanding the elements of the assignment and then weaving them together in a Consequential Explanation. We will start with the functions of the environment.

Draw a line below to match the environment function with its definition

source	gives living things resources for surviving, growing, developing, working
sink	recreational, spiritual and aesthetic value
service	absorbs waste and pollution
spiritual	supports all life on Earth

Functions of the environment

Think of an example of an environment. Write a short paragraph explaining how your chosen environment performs each function. Use cause and effect language (see box on the right).

Cause and effect language	
Conjunctions	because, as, since, so, if
Prepositions	due to, as a result of
Verbs	lead to, result in, cause
Text connectives	Therefore, As a consequence As a result, Consequently

Hidden cause and effect language

Explanations use cause and effect language. In Geography, sometimes cause and effect relationships are **explicit:**

e.g. **since, so, because**.

Sometimes cause and effect might be **hidden** or implicit:

e.g. human-**induced** change.

Human-induced means humans caused it.

Explicit cause and effect language
Conjunctions: as, since, so Verbs: leads to, results in, causes, caused by, impacts Text connectives: Therefore, As a consequence, As a result

Each of the examples below contains cause and effect language. Underline the word or words that show cause and effect. Change, reorganise and rewrite each sentence using explicit cause and effect language from the box above.

1 Human-induced climate change is one of the most urgent problems facing the world. _____

_____

2 A rise in global temperature has brought about a range of interconnected environmental problems. _____

_____

3 The main source of higher global temperatures is rising greenhouse gas emissions. _____

_____

4 Burning of fossil fuels is a major agent in global warming. _____

_____

5 Another anthropogenic influence on global warming is deforestation. _____

_____

6 The loss of trees that absorb carbon dioxide is a factor in global warming. _____

_____

Each of the examples below contains explicit cause and effect language. Rewrite the sentence using cause and effect language from the box.

cause and effect language
Verbs: contribute to, is shaped by, instigates, is instigated by, originated, generates Nouns: origin, outcome, repercussion

7 Human actions lead to pollution of water which negatively impacts aquatic environments and ecosystems.

_____

8 Human activities damage the environment and this can cause loss of biodiversity. _____

_____

9 Deforestation results in land and water degradation. _____

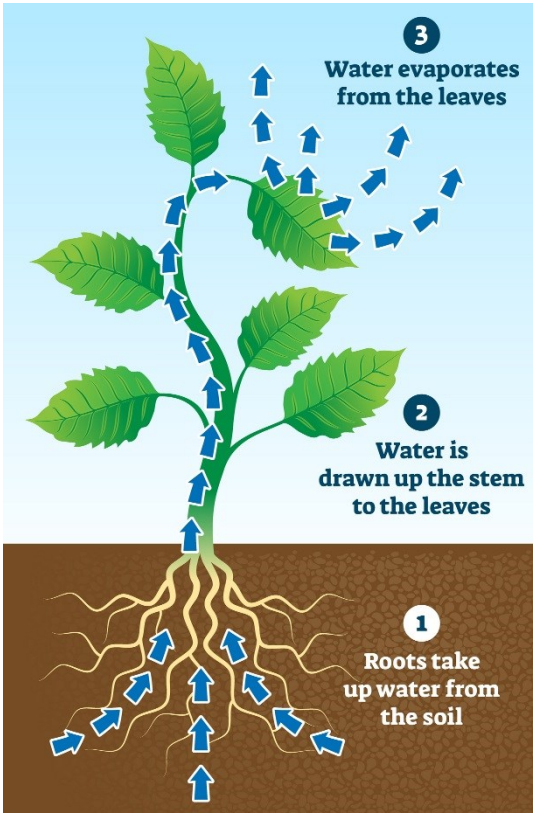
_____

10 Introduced species can interfere with food webs and, therefore, biodiversity is lost. _____

_____

Explain biophysical processes

Biophysical processes in Geography involving living and non-living things. They can be explained in a Sequential Explanation that shows cause and effect relationships. One event causes the next event. Look at the diagram below and the steps in the transpiration process.



Roots take water from the soil.

then

Water is drawn up the stem to the leaves.

then

Water evaporates from the leaves through stomata (openings in the leaves).

The process of transpiration is important for understanding salinity. Natural salts occur in many landscapes and they are dissolved in groundwater. Read the implication sequence below about how some plants process water.

Trees with deep roots absorb water.

then

Their roots pump water up into their branches and leaves.

then

Trees transpire (convert water from liquid to gas).

then

Water evaporates.

We can combine the sequences using a sentence structure like the one below. Read the example. Finish the sentence.

When _____ **happens,**	_____ **happens**
When trees with deep roots absorb water,	the roots pump water up into their branches and leaves.
When trees transpire,	

Land clearing is a major cause of salinity because it causes the water table to rise. The water table is boundary between the soil and groundwater. Read these steps in the process and convert the steps to sentences using 'when _____' structures.

Trees with deep roots are cleared.

then

More water leaks down through soil into the groundwater.

then

There is more underground water and the water table rises.

then

Natural salts are brought to the surface dissolved in saline water.

then

Water evaporates.

then

Salt is left behind and salinity increases.

Causes and effects of salinity

Read the paragraph below about another cause of salinity: irrigation. Use the information to fill in the sequence on the right.

Irrigation is another cause of salinity. Excess crop irrigation water leaks down through the root zone of shallow plants into the groundwater. This results in more water underground and a rising water table. When the water table rises, saline water is brought to the surface. When saline water evaporates, salt is left behind. This increases soil salinity. Surface salt can also be washed from the surface into rivers and waterways, increasing river salinity.

Irrigators water crops.

then

then

then

then

then

then

then

River salinity increases.

Fill in the sequence below to show how pollution increases salinity in rivers. Use the information to write two sentences using cause and effect language

Industries pump out wastewater containing salt.

then

Polluted and salty water flows into waterways.

then

Rivers become more saline.

then

The quality of water declines.

Salinity has many negative effects. Fill in the diagram below and write a short paragraph explaining the impacts of salinity on the environment and living organisms. Give additional reasons why the effects occur.

effects of salinity

- damage to land and water ecosystems
- loss of biodiversity
- lower quality of water for drinking

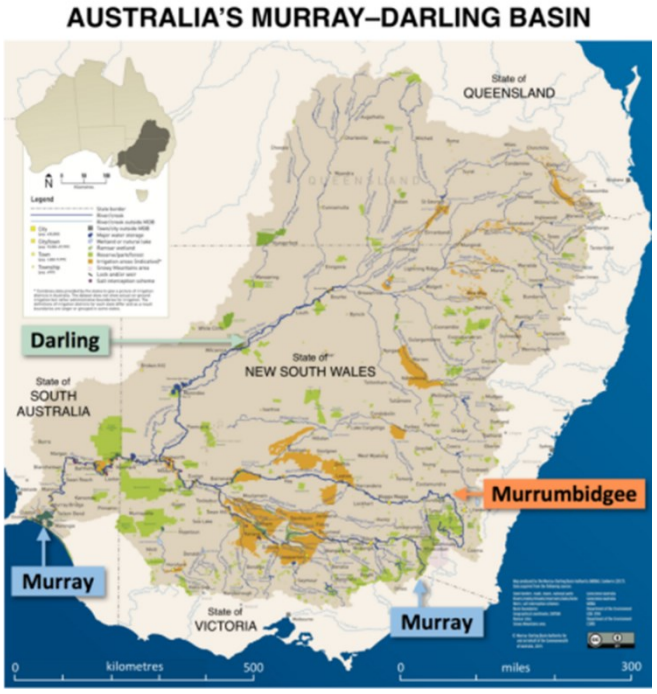
Explain impacts of environmental change

In this unit, the assignment prompt is:
Explain the impact of a human-induced environmental change on the sustainability of functions of the environment. Use a case study.

Our case study will be the **Murray-Darling Basin**. The Murray-Darling Basin is a huge area of south-eastern Australia. It is a network of connected rivers, lakes and wetlands that cover four states and more than a million square kilometres. See the map on the right.

In order to explain the impacts, we will write a Consequential Explanation. The stages are:

- Phenomenon to be explained
- Explanation
- General statement.



Government of South Australia. CC 4.0 Available from www.mdba.gov.au

Before starting this lesson, teachers could revisit the assignment prompt. Students have already devised a

Phenomenon to be explained

Human-induced environmental changes such as rising salinity have _____ impacts on the sustainability of the functions of environments. Environments have four different functions: _____ These functions must be sustainable which means _____

_____

These functions can be analysed in the inland river environments of the Murray-Darling Basin in eastern Australia. _____

_____

_____

_____ has a _____ impact on the sustainability of the functions of the Murray-Darling Basin environment.

Evaluate the impact on the sustainability of functions of the environment.

Name the functions of the environment.
Define sustainability.

Write a sentence or two describing the Murray-Darling Basin.

Identify the human-induced change and evaluate the impact.

The first explanation paragraph is about salinity. Using the information on the previous pages, define salinity and briefly explain the main causes.

Salt build up at Buronga NSW. Photo Arthur Mostead. www.mdba.gov.au

Explaining source and sink functions

Explanation paragraphs have different sections called phases. In this particular Consequential Explanation, explanation paragraphs have five phases:

1. Identify the human-induced change and the environment function.
2. Define the environment function.
3. Give an example from the case study.
4. Explain the impact of change on the environment.
5. Evaluate the impact on sustainability.

Salinity around the Murray River, South Australia. South Australia Department for Environment and Water. CC3.0. www.https://www.environment.sa.gov.au

Read the paragraph below and notice the five phases and the language hints for each phase.

Identify the change and the function	Human-induced environmental changes such as rising salinity can have **serious** impacts on the source function of environments.	***Evaluative language*** *for the extent or type of impact. The function is identified.*
Define function	The source function of environments refers to natural resources that come directly from the environment. Environments are the source of life itself, and they provide oxygen, nutrients and food for organisms.	*The function is defined.*
Example	For example, clean drinking water for humans is essential, which the Murray-Darling provides for 3.6 million people.	*The example of the function in the case study is provided.*
Explain the impact of change	If salinity rises in the river, water becomes unsuitable for human and animal consumption. Salinity damages aquatic ecosystems and kills the organisms that inhabit the rivers and their surrounding environments. In the 1960s, salinity rose high enough make the water dangerous for human consumption. As a result, the water supply to Adelaide became degraded and toxic.	*The impact of the change on the function is explained.* *Cause and effect language* *Examples and evidence*
Evaluate the impact on sustainability	In this way, salinity can have a **serious negative** impact on the sustainability of the source function in an environment like the Murray-Darling Basin.	*The overall impact of change on sustainability of the function is evaluated using* ***evaluative language***

Draw a line to match the phase name with the sentences that match. Highlight and underline the language features shown above.

Identify the change and the function	Environments perform the significant role of absorbing wastes, known as the sink function. Wastes and pollution are stored, absorbed, broken down and processed by the environment.
Define function	Increased salinity damages wetland ecosystems by hindering the growth of plants that process and absorb toxins and waste. Therefore, more wastes and pollution enter the waterways. Salinity near the river can kill trees which leads to increased greenhouse gas emissions.
Example	The sink function of environments is also compromised by salinity.
Explain the impact of change	Consequently, salinity reduces the capacity of the Murray-Darling Basin environment to perform its vital sink function.
Evaluate the impact on sustainability	Wetland ecosystems in the Murray-Darling Basin absorb carbon dioxide as well as adding oxygen to the water. They also absorb toxic chemicals like nitrogen and phosphorous, preventing these chemicals from poisoning fish stocks. The trees near the river are carbon sinks that absorb and store greenhouse gases like carbon dioxide.

Explaining service and spiritual functions

The third explanation paragraph is about the service function. Fill in the gaps to complete it. Use the hints to help you.

Identify the change and the function	Another _____ environment function is the _____ function which is also degraded by human-induced _____.	*Use evaluative language. Identify the function and human-induced change.*
Environment function	_____ _____ _____	*Define the service function*
Example	Water from the Murray-Darling Basin provides irrigation for 9,200 agricultural businesses which contribute $24 billion to Australia's economy. _____ _____ _____ _____	*How else does the environment provide service?*
Explain the impact of change	_____ In the early 1980s, high salinity meant that farmers in NSW and Victoria could no longer safely use water for irrigation as the land became waterlogged and degraded. _____ _____	*Explain the impact of the change on the function. Use cause and effect language. What would be the consequence of this event?*
Evaluate the impact	_____ _____ _____	*Evaluate the impact of change on sustainability of the function. Use* ***evaluative language.***

The fourth explanation paragraph is about the spiritual function. Write a continuous paragraph below. Use the fact box to help.

Facts: Murray-Darling Basin
More than 40 First Nations groups live in the area. The rivers are popular for boating, swimming and recreational fishing.

Identify the change and the function	_____ _____
Environment function	_____ _____ _____
Example	_____ _____
Explain the impact of change	_____ _____ _____ _____
Evaluate the impact	_____ _____ _____ _____ _____

Explanation: the final paragraph

The final paragraph of a Consequential Explanation is called a General Statement which:

- summarises the main explanations and makes an overall evaluation of the human-induced change and its impact on the environment
- makes any recommendations for solving problems that have been identified.

Review the excerpts below of the Consequential Explanation we have written. Answer the questions then follow the hints to write the General Statement.

1 What is your overall evaluation of salinity and its impact on environments? Use evaluative language. _____

_____

2 What are some recommendations you could make to address the problems of salinity in the Murray-Darling Basin? _____

_____

Phenomenon to be explained	Environmental changes such as rising salinity have serious impacts on the sustainability of the functions of environments. Environments have four different functions: source, sink, service and spiritual functions. These functions must be sustainable which means they have an ongoing capacity to continue without compromising the future. Each function operates in the inland river environment of the Murray-Darling Basin in eastern Australia… Salinity has a serous impact on the sustainability of the functions of the Murray-Darling Basin environment.
Explanation *Explanation of salinity*	Salinity means that salt has built up to the point where it damages the environment. Inefficient irrigation in farms can lead to increased salinity. As a result, the water table rises and saline water is brought to the surface. In addition, pollution by saline wastewater can make waterways more saline.
Consequences for source function	Human-induced environmental changes such as rising salinity can have serious impacts on the source function of environments. The source function of environments refers to natural resources that come directly from the environment … In this way, salinity can have a major negative impact on the sustainability of the source function in an environment like the Murray-Darling Basin.
sink function	The sink function of environments is also compromised by salinity. Environments perform the significant role of absorbing wastes, known as the sink function. In environments, wastes and pollution are stored, absorbed, broken down and processed by the environment so that it is not toxic to organisms … Increased salinity damages wetland ecosystems by hindering the growth of plants that process and absorb toxins and waste … Consequently, salinity reduces the capacity of the Murray-Darling Basin environment to perform its vital sink function.
service function	Another vital environment function is service which is also degraded by human-induced salinity. Natural processes in environments sustain life on the planet. The resources in the environment provide food and energy to live .... As the service function of environments is essential for the survival and wellbeing of people, plants and the economy, human-induced impacts such as salinity are a serious risk.
spiritual function	The final function is the vital spiritual role of environments and this role can be damaged by human-induced change like salinity... If salinity increases in rivers, the environment loses its aesthetic appeal because it is too salty and degraded, and also because people cannot safely enjoy leisure and recreation in the rivers … For these reasons, salinity can have a damaging impact on the capacity of the environment to sustain its spiritual function.
General statement	_____ _____ _____ _____ _____ _____

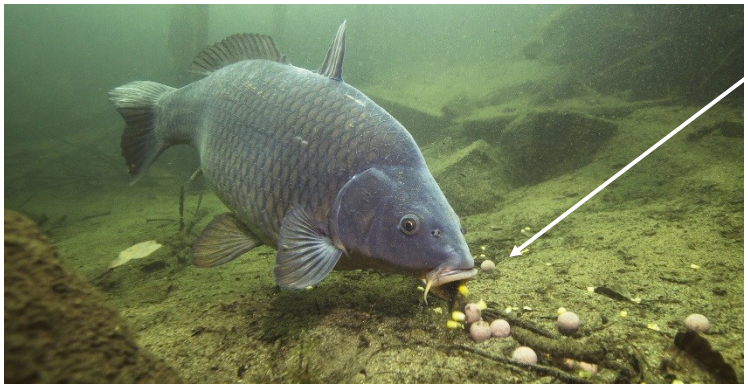
State your overall evaluation of the human-induced change of salinity. How does this impact on the functions of environments? What should be done to deal with salinity in the Murray-Darling Basin?

Explaining human-induced change: carp

Freshwater carp (cyprinium carpio) is a freshwater fish that was introduced to Australia from Europe and Asia in the 1800s. Here are two fact boxes about carp.

Carp Fact Box

- carp dominate the Murray-Darling Basin wetlands
- currently up to 90% of the aquatic biomass
- highly adaptable so they take over ecosystems
- they breed quickly
- eat eggs of other fish species and food of other fish
- juvenile carp eat zooplankton
- zooplankton usually feed on algae
- without zooplankton, algae grows causing toxic blue green algae blooms



- the carp feeding method of **syphoning** is destructive
- they suck up mud and sediment, filter out food items and eject sediment
- stirs up silt (fine particles)
- makes the water muddy and dark
- blocks sunlight to aquatic vegetation
- native birds cannot see their food sources in the water

Fill in these different graphic organisers to help explain the impact of carp on aquatic environments like the Murray-Darling Basin.

Explain the syphoning process

carp suck in mud and sediment

then

then

then

then

Main impacts of carp

carp

Consequences of carp eating zooplankton

Carp eat zooplankton → so → so → so

Write a Consequential Explanation

Refer to the information about carp on the previous page. Use the explanation of salinity as a model text. Write a Consequential Explanation below and use extra pages if you need more room.

Explain the impact of a human-induced environmental change on the sustainability of functions of the environment. Use a case study.

Phenomenon to be explained		*Evaluate the impact on the sustainability of functions of the environment* *Name the functions of the environment* *Define sustainability* *Write a sentence or two describing the Murray-Darling Basin.* *Identify the human-induced change and evaluate the impact*
Explanation *Explanation of carp* *Consequences for source function* *sink function* *service function* *spiritual function*		*Explain what carp are and how they cause problems for the environment.* Each explanation paragraph has these phases: *Identify the change and the function* *Environment function* *Example* *Explain the impact of change* *Evaluate the impact* *Refer to all the language features of a Consequential Explanation on the previous pages*
General statement		*State your overall evaluation of the human-induced change of carp. How does this impact the functions of environments? What should be done to deal with carp in the Murray-Darling Basin?*

Carp management strategies

Many strategies have been proposed to deal with the problem of carp in Australian waterways. There are many pros and cons of each strategy, depending on the criteria for evaluating success.

Right: electrofishing from a boat; an electric current stuns fish then they are caught in a net

Read the information in the table below.

	How it works	Environmental	Economic	Social	Effectiveness	Evidence
Carp fishing competitions	fishing competition where people fish for carp	targets larger fish not juveniles	minimal cost	popular with community fishing groups	ineffective	reduces carp population by 1-2%; no lasting reduction
Commercial harvesting	electrofishing: carp are stunned by electricity then netted	other fish species may also be caught; nets are not effective in waterways where there are snags; electro-fishing is not effective in deep water	not viable; low market price for carp ($1.50 per kilo); carp used for fish oil, pet food, fertiliser; electrofishing is expensive	Australians do not like to eat carp so there is little incentive for commercial fishing; risk of electrocution for fishers	effective where there is a high density of carp	commercial fishing is only effective in some areas and it is expensive
Poison	rotenone is a fish poison; carp are baited with the poison	kills all fish not only carp; carp do not like rotenone baits	moderate financial cost; high labour cost	human labour needed	effective but high labour costs	carp do not like floating baits; poisons are highly regulated as they kill other fish
Separation cages	cages catch carp when they jump	carp are jumping fish; cages capture larger fish only; native fish do not jump so are not caught; difficult to dispose of captured carp in remote areas	moderate cost $45,000 per fishway; ongoing monitoring and disposal of fish needed	human resource intensive; needs monitoring and disposal of carp	effective in some areas	cages catch 90% of carp; approx. 289,000 fish per day; cannot be installed in remote areas; need large flows of water
Carp virus	Cyprinid herpesvirus-3 is a naturally occurring virus that kills carp	carp virus is contagious to carp via skin and gills; does not kill other native fish or transfer to humans; huge quantities of dead carp damage the environment	very expensive; highest cost due to large quantities of dead carp to be removed	public fear of a virus spreading	could eliminate carp altogether	currently being researched

Rate the highest (best) and lowest (worst) strategy for each of these criteria.

	Environmental	Economic	Social	Effectiveness
highest rated	best for the environment (except for carp)	cheapest; uses minimal resources	most widely accepted; best for people	kills the most carp
lowest rated	worst for the environment	most expensive	negative impact on people	kills the least carp

Evaluating management strategies

Evaluating is judging something according to criteria. When we evaluate environmental management strategies, we need to use language to convey a **nuanced** evaluation, which means a thoughtful and informed evaluation. We have to take a position but also to show that we understand positive and negative aspects of the strategies. Geographers use three language features to evaluate: evaluative language, adverbials and modal language.

Evaluative language helps a writer to show an opinion or judgement. Each topic has different evaluative language. Fill in the box on the right to show positive and negative evaluative language for environmental management strategies.

Positive	Negative
sustainable	expensive

Adverbials help us take a position on the effectiveness scale below. Adverbials are words like 'very' or 'somewhat'. For example, a strategy may be somewhat effective if it has some positive and negative aspects.

effectiveness scale

not at all effective/ **ineffective**	not very effective/ **quite** ineffective	somewhat effective	moderately effective	**highly** effective **very** effective

Choose three of the carp management strategies from the previous page. Write sentences that evaluate their overall effectiveness below.

_____ **is/are** _____ **effective because** _____

name of strategy | evaluate effectiveness | give reasons

e.g. Fishing competitions are ineffective because they only reduce carp by 1- 2%.

1 _____ is/are _____ effective because _____

2 _____ is/are _____ effective because _____

3 _____ is/are _____ effective because _____

Modal language helps us take a weaker or stronger position on an issue. Geographers use low modality (e.g. may, could, perhaps). Low modality shows that we are open to new research or more information.

Change these sentences to lower modality.

1. The carp virus is definitely the best strategy for managing carp.

_____

2. Poison must be used to control carp. _____

3. Separation cages are completely effective in all areas. _____

_____

Evaluate carp management strategies

Imagine that you have an assignment prompt below.

We need to write an evaluation (a persuasive text)

We need to discuss different management strategies

We need to focus on one environmental change (carp in river environments)

Evaluate management responses to an environmental change using environmental, economic and social **criteria**.

We need to use these three criteria for evaluating the strategies

An evaluation makes a judgement about something according to criteria. It is a persuasive text because it takes a position and has a point of view.

The stages of an evaluation are:
- Issue to be evaluated
- Criteria (environmental, economic and social)
- Evaluation and Recommendation

Let's work on the criteria paragraphs. Read the model below for one of the criteria (environmental). The paragraph has four phases or sub-sections (shown on the left).

Identify criteria	Environmental criteria for carp management strategies involve the impact on other native fish and the environment.	*State the criteria being evaluated*
Elaborate	Sustainable environmental strategies can kill carp or remove them from the environment while also promoting biodiversity and minimising damage to organisms and environments.	*Define the criteria and use evaluative language for why these are important*
Explain pros and cons of different strategies	Carp fishing has the least environmental impact but it is also ineffective. Commercial harvesting and poison have the potential to harm or kill native fish so they are not sustainable for the environment. In contrast, separation cages are the most environmentally friendly as they capture 90% of carp while releasing native species. The carp virus is also positive for the environment since it can potentially eliminate carp which damage the environment. However, large quantities of dead carp from the virus could pose another environmental threat unless they can be safely removed.	*Use conjunctions to compare and contrast each strategy (e.g. but, however)* *Use evidence*
Evaluate strategies	The most effective strategy from an environmental perspective is the use of separation cages due to the large numbers of carp that can be eliminated from the environment without damage to other species or huge quantities of dead fish to clean up.	*Evaluate the best strategy* *Use evaluative language* *Give a reason for the evaluation*

Plan a paragraph about the economic criterion. Write your paragraph on the next page as part of the full evaluation text.

1 What does economic mean in relation to environment management strategies? _____

_____

2 What makes a strategy sustainable from an economic perspective? _____

_____

3 What are the top three carp management strategies from an economic criterion? _____

_____

4 What are the problems with the most economically viable strategies? _____

5 Which is the best economic strategy? Why? _____

_____

_____

Evaluate carp management strategies

Write an evaluation of carp management strategies using the hints in the right-hand column. Use more paper if you need it.

Issue to be evaluated *Carp problem* *Management strategies* *Criteria for evaluation*		*Write one or two sentences that explain why carp is a problem for environments.* *Identify the five management strategies to be evaluated.* *Identify the three criteria for evaluation.*
Evaluation positions *Environmental (excerpt)*	Environmental criteria for carp management strategies involve the impact on other native fish and the environment… The most effective strategy from an environmental perspective is the use of separation cages due to the large numbers of carp that can be eliminated from the environment without damage to other species or huge quantities of dead fish to clean up.	
Economic	Economic perspectives on carp management strategies involve	*Follow the phases of each paragraph:* *Identify criteria* *Elaborate* *Explain pros and cons of different strategies* *Evaluate strategies* *Use the language features covered in this unit.*
Social		*Plan and write a paragraph about social criteria using the same phases and language features.*
Overall evaluation and recommendation		*State your overall evaluation of the most effective management strategy overall. Give reasons.* *Give recommendations for what should happen.*

Human wellbeing

Human Development Index

The Human Development Index (HDI) is one way of measuring human wellbeing. It was developed by the United Nations to compare the development of different countries and to assist nations to develop better policies. The three dimensions of the HDI are: a long and healthy life; knowledge (education); and a decent standard of living. Each dimension has its own indicators and indexes for measuring them, as shown below.

Draw connecting lines to match the dimension of the HDI with indicators and the index for measuring the dimension.

Long and healthy life

Knowledge

A decent standard of living

expected number of years of schooling for children

Gross National Income (GNI) index

how long the average person lives

average years of schooling that adults have received

Life expectancy index

Education index

life expectancy

total amount of money earned by people and businesses in a nation, divided by the number of people

Use the information above to fill in this table about the Human Development Index.

Dimensions	Long and healthy life	Knowledge	A decent standard of living
Indicators			
Index			

Answer these questions using cause and effect language e.g. because, since, if, when

1 Why is a long and healthy life an indicator of wellbeing? _____

_____

_____

2 Why are knowledge and education indicators of wellbeing? _____

_____

_____

3 A decent standard of living is an economic measure. Why is this an indicator of wellbeing? _____

_____

_____

Gender and education data

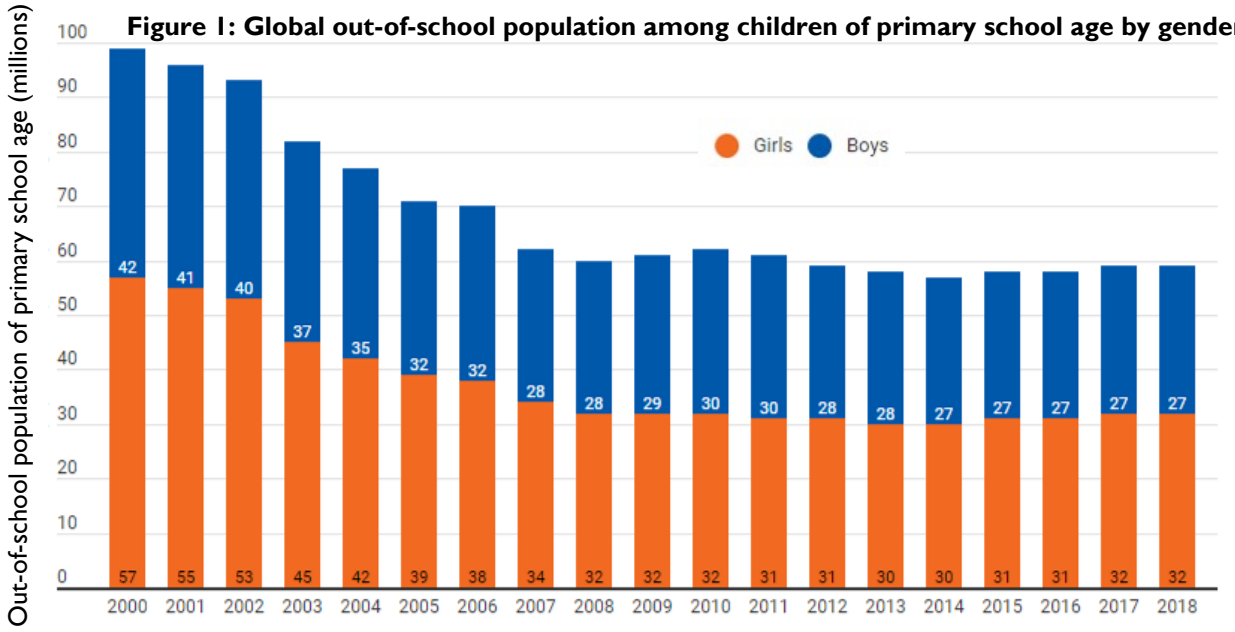
Education of females is also an indicator of wellbeing and human development. All children, females and males, have a right to education. However, in many places, girls are disadvantaged and receive little or no education. In addition to gender equality, other benefits of education of females are shown in the box.

Better educated females:

- are more informed about nutrition and healthcare
- are more likely to be in paid employment and earn higher incomes
- give birth to fewer children at a later age
- can lift households and communities out of poverty.

Analyse the data displays below from UNESCO and answer the questions.

Figure 1: Global out-of-school population among children of primary school age by gender



1 What is the data about? _____

2 What is the overall trend or pattern? _____

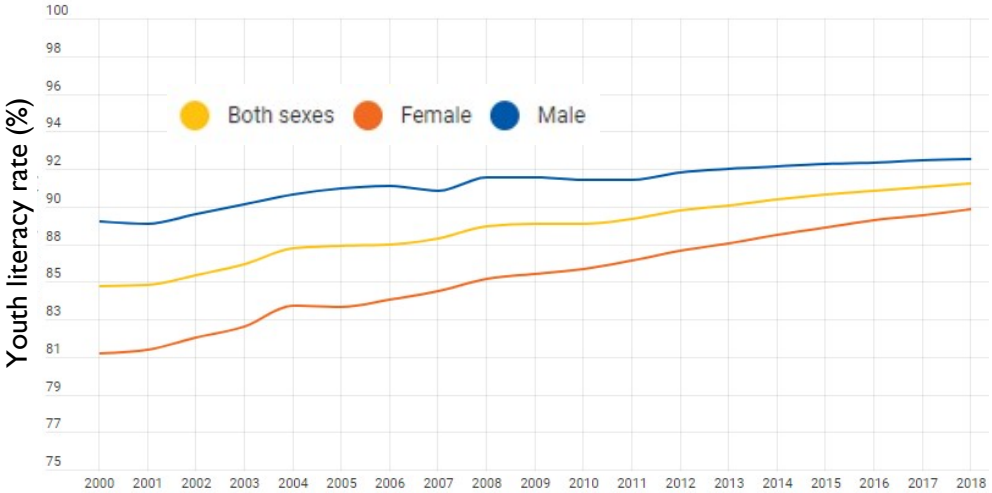
3 What is positive or promising regarding education of females? _____

_____

4 What is negative or worrying regarding education of females? _____

_____

Figure 2: Global youth literacy rate (ages 15 to 24 years) by gender



Answer the four questions above about Figure 2:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Source: UNESCO (2020). CC3.0. Gender and education. https://data.unicef.org/topic/gender/gender-disparities-in-education/

Sustainable development goals

In Geography, we can write using active voice sentences or passive voice sentences. Both are correct. Expert writers use a combination of active and passive voice to arrange their ideas.

ACTIVE voice
We know who or what is doing it.

War	causes	poverty	in many countries.
Doer (who/what did it?)	*Verb (what it did)*	*Done to (what did war cause?)*	*Where?*

PASSIVE voice
The 'doer' is at the end or left out.

Poverty	is	caused	by war	in many countries.
Done to	*Auxiliary (helping verb: is, are, was, were)*	*Verb (past participle)*	*Add 'by' before the Doer, or you can leave it out altogether*	*Where? Leave extra information in the same place.*

Finish the sentences below by adding an auxiliary then a verb.

	Verbs	Passive voice sentences
1	**define**	Sustainable development _____ as development that meets the needs of the present and also allows future generations to meet their needs.
2	**manage**	The 17 Sustainable Development Goals _____ by the United Nations.
3	**invite**	Governments, global organisations and businesses _____ by the United Nations to work in partnership to achieve the goals.

Rewrite the active sentences below as passive sentences in the past tense.

	Active voice sentence (with verbs in bold)	Passive voice sentence
4	The UN **identified** poverty and climate change as urgent problems.	Poverty and climate change _____
5	The pandemic **caused** increased poverty.	_____
6	The UN **grouped** the Sustainable Development Goals into five categories: People, Planet, Prosperity, Peace and Partnerships.	_____

In the paragraph below, the sentence starters 'The United Nations' or 'people' are repetitive. Rewrite this paragraph to add some passive voice sentences so that the problems and solutions are the focus of the sentence starters.

The United Nations set Zero Hunger as the second Sustainable Development Goal. The United Nations predicts increased global hunger and malnourishment. Nearly 690 million people experience hunger. Around 2 billion people face malnutrition every day. The United Nations recommends urgent food and aid for suffering regions. The United Nations proposes changes to global food and agriculture systems. People need access to safe, nutritious, affordable food.

Indicators of human wellbeing

This activity explores aspects of human wellbeing and how these can become causes of spatial inequality.

Follow your teacher's instructions to fill in one table in an expert group, then share your information with other students in mixed groups.

Economic	Income, employment, production and consumption of goods and services
Positive economic indicators *How can you tell if an economy is strong?*	low unemployment high household income and high wages

Negative economic indicators *How can you tell if an economy is weak?*	unemployment

Social	Related to the quality of life and wellbeing of people: education, health, social
Positive social indicators *How can you tell if people in a society experience educational, health and social wellbeing?*	no poverty or hunger

Negative social indicators *How can you tell if people in a society do not experience educational, health and social wellbeing?*	poverty and hunger

Indicators of human wellbeing

Technological	Technology, internet access and innovation
Positive economic indicators *How can you tell if a nation has effective technology?*	affordable access to reliable internet and computers by all residents
Negative technological indicators *How can you tell if a nation has ineffective technology?*	limited access to technology

Environmental	Quality and sustainability of the physical environment
Positive environmental indicators *How can you determine high quality environment?*	good air quality
Negative environmental indicators *How can you determine poor environmental quality?*	poor air quality, polluted air

Political	Government, rights and freedoms, peace and war
Positive political indicators *How can you tell if a nation has good government?*	stable government
Negative political indicators *How can you tell if a nation has ineffective government?*	war

Causes of spatial inequality

Some of the negative indicators that you have identified in the previous pages are actually causes of spatial inequality in wellbeing. They can help explain why some regions have better wellbeing than other places.

Fill in these cause and effect chains to show some of the factors that impact the wellbeing of people in a region or nation. Then combine the information in the chain into 1-2 sentences using a range of cause and effect language from the box below.

results in, resulting in	causes, causing	This can lead to	leading to
impacts on, impacting on	As a result	As a consequence	Consequently

Economic
Many people do not have jobs

so → ____ so → ____ so → ____ so → ____

High unemployment leads to _____ This can result in

_____

Social
There are not enough hospitals or doctors

so → ____ so → ____ so → ____ so → ____

_____

_____

Technological
Business owners do not have access to the internet

so → ____ so → ____ so → ____ so → ____

_____

_____

Environmental
The environment is polluted

so → ____ so → ____ so → ____ so → ____

_____

_____

Political
The government is unstable and corrupt

so → ____ so → ____ so → ____ so → ____

_____

_____

Explain spatial variation in Africa

The table below compares two African countries: Botswana and Democratic Republic of Congo (DR Congo).

Above left
Tourism in a national park in Botswana

Below left:
Mountain gorillas in a rainforest in DR Congo

Right
Map of southern Africa showing DR Congo in the middle and Botswana in the south

	Botswana	Democratic Republic of the Congo
HDI ranking	100th (high development)	175th (low development)
HDI Value	0.735	0.480
Life expectancy	69.6 years	60.7 years
Gross National Income (GNI)	$16,437 per person	$1,063 per person
Population	2.2 million; 12% of the population live in the capital city, Gaborone	72 million
Topography	flat, tablelands, lakes, desert	dense rainforest, mountains, lakes
Climate	hot, dry, low rainfall	hot, high rainfall (tropical, equatorial)
Resources	diamonds, coal; tourism; cattle	cobalt, diamonds, copper
Government	stable, peaceful democracy; independent legal system; good policymaking	since 2006 it has been a Presidential democracy; before 2006: dictatorships, unstable government, wars with neighbouring countries, tribal violence; millions of deaths; corruption; conflict continues
Economy	fastest growth in the world; government owns 50% of diamond industry; government invested wealth from diamonds in infrastructure, overseas investment and six-year National Development plans; tourism is popular	richest mineral wealth in the world; poorest citizens; economic mismanagement; government corruption; corrupt private companies own mines
Infrastructure	good roads, rail, airports; produces coal for electricity; 95% of the population have access to safe drinking water	poor; infrastructure is poorly maintained, poor roads and rail; little access to safe water
Healthcare	95% of the population live within 5km of healthcare; diseases are a problem (HIV/AIDS) for 20% of adults; some malnutrition	very poor; diseases such as Ebola, malaria, yellow fever, measles; world's second highest rate of child mortality; half of children are malnourished
Education	all students have 10 years of basic education, secondary education not compulsory	primary school education is not compulsory; during the wars, few children received an education
Society	civil liberties and human rights are respected	major problems: child soldiers, violence against women; conflict; child labour in mines

Data from United Nations Human Development Index (hdr.undp.org) and World Bank (worldbank.org)

Explain causes of spatial variation in Africa

Read the model paragraph below that explains economic causes of spatial inequality between Botswana and DR Congo. Notice and highlight the language features.

Identify type of cause	The spatial variation between Botswana and DR Congo can be explained by economic causes.	*Identify the type of cause*
Define	Economic causes refer to income, employment, production and consumption of goods and services	*Write a definition*
Explain similarities	Both Botswana and DR Congo are rich in natural resources. Botswana has diamonds and coal and DR Congo has cobalt, diamonds and copper.	*Use language for comparing: both, also, similarly*
Explain differences in wellbeing	However, the main difference is in the economic management of mineral resources by the governments. Botswana's government owns half of the diamonds and have invested money in infrastructure and foreign investment. In Botswana, there are good roads, rail and airports, and 95% of the population has access to safe water. **As a result**, the people have benefited from a higher standard of living. In contrast, DR Congo's government was corrupt and mismanaged the resources and sold the mines to corrupt private companies. **Therefore**, the people did not receive any benefit at all. There is little or no infrastructure for the people, and little access to safe drinking water. DR Congo's people are the poorest in the world, with a Gross National Income (GNI) of $1,063 per person, whereas Botswana's people have a GNI of $16,437, which is 16 times higher.	*Use language for contrasting: however, but, in contrast, difference, whereas* *Evidence and statistics* *Use **cause and effect language** for explaining* *Evidence and statistics*
Summarise the economic causes of spatial inequality and the impact on the HDI ranking	The economic mismanagement of DR Congo's mineral wealth has **resulted in** huge profits for companies and corrupt government officials whereas DR Congo's citizens are the poorest in the world. In contrast, good policymaking from the Botswanan government has provided infrastructure and services for its people, **leading to** a higher standard of living and a high HDI ranking.	*Summarise the main cause of spatial inequality and the main impact on wellbeing for each country*

Fill in the gaps and follow the hints to complete a paragraph about political causes.

Identify type of cause	Another way of explaining the spatial variation between Botswana and DR Congo is by examining _____ causes.	*Identify the type of cause*
Define	_____ _____	*Write a definition*
Explain similarities	_____ _____	*Use language for comparing*
Explain differences in wellbeing	However, the political situation in Botswana and DR Congo is different. _____ _____ _____ _____ _____ _____ _____ _____ _____	*Use language for contrasting: however, but, in contrast, difference, whereas* *Use evidence and statistics* *Use cause and effect language for explaining*
Summarise the political causes of spatial inequality and the impact on the HDI ranking	War, conflict and violence have led to severe problems in_____ whereas _____ _____ _____ _____	*Summarise the main cause of spatial inequality and the main impact on wellbeing for each country*

Explain spatial variation in Africa

Follow the hints to write a paragraph about the social causes of spatial inequality in wellbeing. Focus on health, education and other social factors.

School children in Botswana celebrate Independence Day

Children working in a mine in DR Congo

Identify type of cause		*Identify the type of cause.*
Define		*Write a definition*
Explain similarities		*What is a similar problem that both countries face? Give examples*
Explain differences in wellbeing:		*Use language for contrasting: however, but, in contrast, difference, whereas*
- health		*Use evidence and statistics*
- education		*Use cause and effect language for explaining*
- society		
Summarise the social causes of spatial inequality and the impact on the HDI ranking		*Summarise the main cause of spatial inequality and the main impact on wellbeing for each country*

Explain malnutrition in India

Read the following paragraph about the causes and consequences of malnutrition in India. Underline the cause and effect language. Then use the information to fill in the graphic organiser below. Draw arrows to link cause and effect relationships.

Malnutrition occurs when someone does not have sufficient quality or quantity of nutrients. India has more than a third of the world's most malnourished children. Malnutrition is caused by insufficient food or low quality food. Children may also be malnourished if they experience illness and disease, such as diarrhoea or respiratory diseases, which cause them to lose weight. Consequences of malnutrition for an individual are slow physical growth, physical weakness and low immunity to infections and disease. Another effect of malnutrition is damaged cognitive development which means that the individual has less capacity to learn and receive a good education and highly-paid employment. In severe cases, it also causes death. The impacts of malnutrition for society include increased healthcare costs, reduced productivity, slower economic growth and greater poverty. Overall, malnutrition leads to lower wellbeing for individuals and society.

causes

malnutrition

for individuals

for society

definition

consequences

Interpret malnutrition data

India is becoming an urbanised society with several mega-cities with a population of more than 10 million people each. Many urban dwellers live in slums. Slums are densely-populated areas with poor housing conditions, no sanitation, no clean water or services.

Mumbai is an Indian megacity with 20 million inhabitants. There is inequality between rich and poor people in the city. Around half the population lives in slums. There are also many rich people, millionaires and billionaires living close to slums.

Slums in Mumbai near new building developments for the rich.

Analyse the health data below that compares child nutrition in richer urban areas of India compared with poor urban areas and slums. Answer the questions below.

Percentage of children under five years who experienced malnutrition in urban India, 2015–16

Indicators of malnutrition	urban areas non-poor	urban areas poor
stunting - children who are short for their age, reflects chronic (ongoing) malnutrition and poverty	28.5	46.4
underweight - low weight for age, caused by inadequate nutrition	26.7	44.4
wasting - children who have suffered recent and severe weight loss due to illness	19.4	23.6

1 Malnutrition has three indicators. Children who are underweight can be stunted or wasted or both. Define each indicator.

2 What are the causes of stunting?

3 What are the causes of being underweight?

4 What are the causes of wasting? Give an example.

5 What percentage of children in poor urban areas are stunted? Roughly what proportion of children is this?

6 Why are children in non-poor urban areas less stunted than those in poor areas?

7 What indicator has the smallest differential between poor and non-poor areas? Why do you think this is?

8 Why is the World Health Organisation most concerned about indicators for malnutrition in children rather than adults?

9 What strategies could the government put in place to help solve the problem of malnutrition?

Explain spatial inequality in India

Follow the prompts below to write an explanation about the causes and consequences of spatial inequality in poor and non-poor urban areas in India.

Explain causes and consequences of spatial variation in wellbeing using indicators of malnutrition in poor and non-poor urban areas in India.

Phenomenon to be explained	This text will explain _____	*State that malnutrition of children is a problem in India.* *Provide background on spatial variation in poor and non-poor urban areas.* *State the purpose of the explanation.*
Causes *Paragraph 1: Causes of malnutrition* *Paragraph 2: Explain reasons for spatial variation*		*Define malnutrition and indicators of malnutrition.* *Explain causes of stunting and wasting.* *Write a topic sentence: state that there is spatial inequality of malnutrition indicators between poor and non-poor urban areas in India.* *State the main statistics for malnutrition in poor and non-poor urban areas.* *Explain why indicators are worse in poor areas and better in non-poor areas.*
Consequences *Paragraph 1: Consequences of malnutrition* *Paragraph 2: Explain consequences of spatial variation*		*Explain consequence of malnutrition for individuals and society.* *Explain the consequences of malnutrition for poor and non-poor people* *Explain why wellbeing outcomes are different for poor and non-poor areas.*
General statement		*State that malnutrition is an important indicator of wellbeing.* *Restate the spatial inequality between poor and non-poor areas.* *Recommend what the government should do.*

Causes of poverty in Australia

Poverty in Australia refers to relative poverty, which means people who have less than half the median disposable income.

The jumbled text on this page is a Factorial Explanation of causes of poverty in Australia. Cut the text into sections. Underline the topic sentences of each paragraph. Arrange the text in sequence. Highlight or underline the cause and effect language.

Lack of employment or insufficient employment is one of the main causes of poverty in Australia. The unemployment rate in Australia is only 4.6% but many people are underemployed, which means that they are only working casually or for a few hours per week. Since these jobs receive low wages, these people may experience poverty even though they are employed. Many other Australians rely on social security payments for their income. Social security payments are low so they are unlikely to have enough money for basic needs such as rent, clothing and food.

The factors that cause poverty are complex and interrelated. Structural factors such as discrimination and disadvantage can result in situations where people find it hard to obtain employment and good healthcare. Consequently, issues such as unemployment, high housing costs and health problems can make it hard to break the poverty cycle.

Many people experience relative poverty as a consequence of health issues. Poor health due to a disability or mental health issues can lead to poverty because people are unable to find work or continue their education. Health issues may also give rise to poverty due to expensive hospital visits, treatments or medication not covered by Medicare. For these reasons, people experiencing health issues may be trapped on inadequate social welfare payments and unable to find suitable housing, social support or health services. Thus, poverty becomes worse.

Poverty is a concept used to describe the people in a society who cannot afford the essentials that most people take for granted. In Australia, poverty refers to people living in relative poverty: those whose living standards fall below an overall community standard. The Organisation for Economic Co-operation and Development (OECD) defines poverty as having less than 50 per cent of the median household income. According to Australian Council of Social Service (ACOSS) statistics released in 2020, there are an estimated 3.24 million people living below the poverty line in Australia, including 774,000 children (ACOSS, 2020). Causes of poverty in Australia are related to employment, housing, health and social/structural issues.

Structural factors can cause poverty as well as making poverty worse. Structural factors are economic and social factors that are a context for poverty, such as discrimination, marginalisation and injustice. People who belong to marginalised groups, such as Indigenous Australians, refugees and non-English speakers, are more likely to experience poverty because of many disadvantages, including low income, lack of education and poor health. Therefore, structural factors can cause poverty and also prevent people from breaking out of poverty.

Housing costs in Australia are high and these can lead to poverty. Overall housing costs rose by an average of 4% a year from 2007 to 2017. According to ACOSS (2020), 13.2% of Australian households in 2015-16 were estimated to be in poverty when housing costs were deducted from their incomes. Housing costs are high in some areas for rentals. Mortgage costs are high for home owners as a consequence of Australia's high house prices. Due to the fact that housing prices are high, many people cannot live near work opportunities in the centre of cities. As a result, they are even less likely to find employment opportunities, making poverty worse or contributing to intergenerational unemployment.

ACOSS. (2020). *Poverty and inequality*. https://povertyandinequality.acoss.org.au/poverty/

Spatial inequality in Australia

Read the paragraph below and answer the questions in pairs. Discuss with the class.

What are the two most common options for paying for housing?

What is a household? Give some examples of different kinds of households.

What is disposable income?

What does spatial distribution mean?

In Australia, the main causes of poverty are low income and high housing costs. According to ACOSS (Australian Council of Social Service), a household is experiencing relative poverty if their income is at or below 50% of median disposable income minus housing costs. Australia has some of the most expensive housing in the world. The map below shows the spatial distribution of poverty in Australia. The areas in red have the highest rates of relative poverty after housing costs.

What does 'after housing costs' mean?

ACOSS is a national research and advocacy group that aims to reduce poverty and inequality. Is this is a reliable source?

What is the median? What is the average? Calculate the median and average of these 5 numbers: 7 8 9 15 21

Which areas in Australia have the most expensive housing? Why?

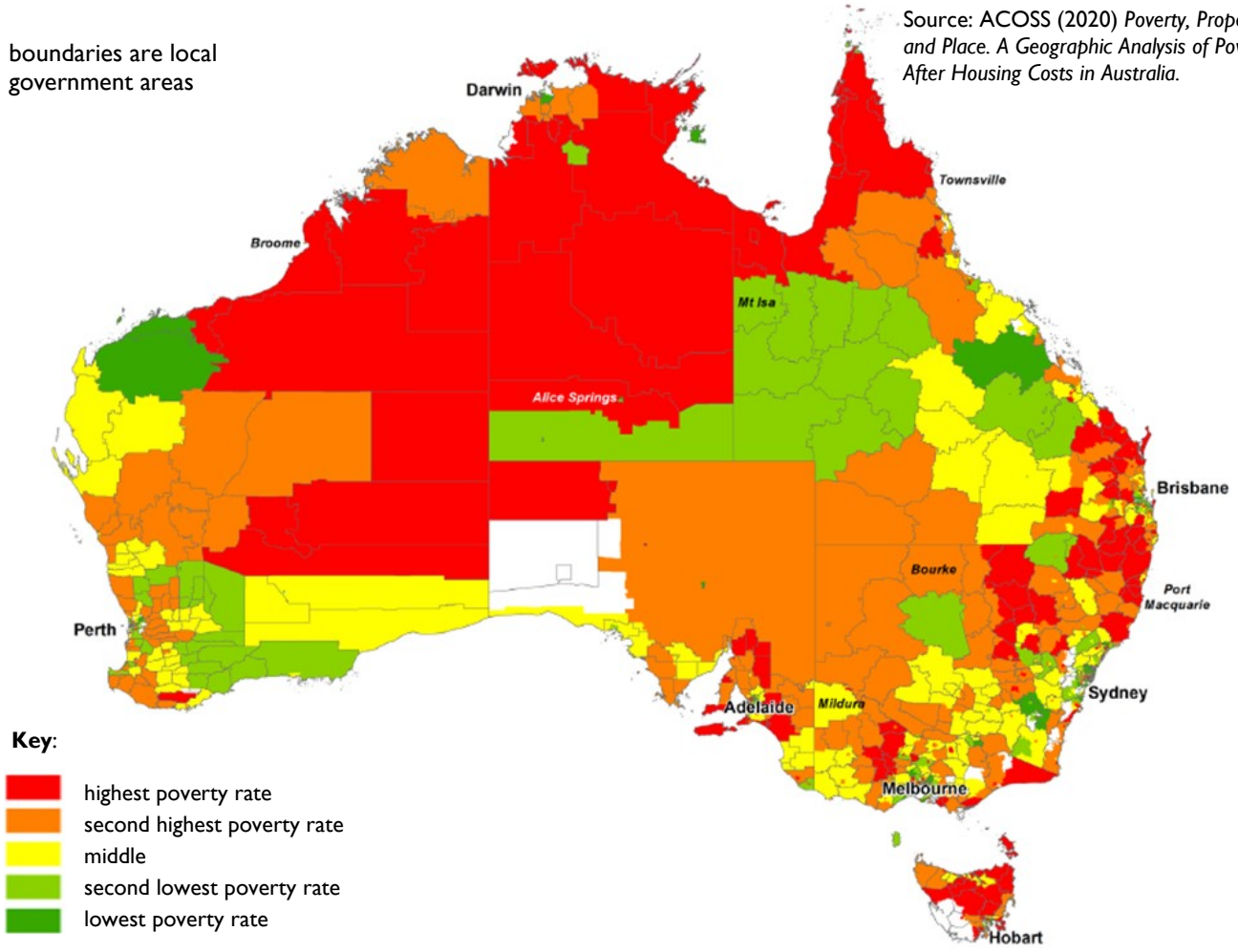
Define relative poverty. Give an example if the median income of a single person is $856 per week and they pay $75 rent.

Analyse the map below, especially related to your location. Circle the areas that are likely to have low housing costs. Draw a square around areas with high housing costs.

Figure 1: Poverty after housing costs, Australia, 2015-16

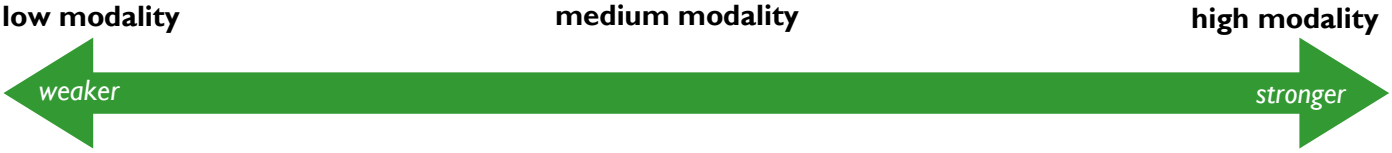
boundaries are local government areas

Source: ACOSS (2020) *Poverty, Property and Place. A Geographic Analysis of Poverty After Housing Costs in Australia.*



Explaining spatial inequality in Australia

Modal language helps the writer to take a position or present a point of view.
Stronger language has **higher modality**, e.g. must, should, definitely
Weaker language has **lower modality**, e.g. may, could, perhaps
In Geography, we often use low modality to show that we cannot be 100% certain of our position.



possible may, could, might suggests implies	can probable, probably, likely indicates shows	(no modal verb)	will definite, certain definitely, certainly proves, demonstrates
*Low income **may** cause poverty.* *It is **possible** that low income causes poverty.* *The data **suggests** that low income causes poverty.*	*Low income **probably** causes poverty.* *It is **likely** that low income causes poverty.* *Data **shows** that low income causes poverty.*	*Low income causes poverty.*	*It is **certain** that low income causes poverty.* *Data **proves** that low income causes poverty.*

Use the data on the previous page to answer these questions using modal language. Provide a reason for your answer using cause and effect language (e.g. because, as, if).

1 Is poverty caused by low income? _____

2 Is poverty caused by high housing costs? _____

3 What happens if someone has low income and also lives in an area with high housing costs? _____
_____

4 Are large areas of rural Western Australia, Northern Territory and Queensland experiencing poverty due to high housing costs or low incomes? _____
_____

5 Why do some areas within capital cities experience poverty? _____
_____

6 Why do some rural areas experience low poverty (e.g. the Pilbara in Western Australia where there are mines and Mackay in Queensland where there is a port)? _____
_____

7 Does this map show evidence of poverty in Australia? _____
_____

The table below shows areas within capital cities that experience high levels of poverty. Use your local knowledge to explain why these areas experience poverty.

Suburbs with high rates of poverty:
- In Melbourne: Carlton, Dandenong and Melton
- In Adelaide: Elizabeth, Christie Downs
- In Hobart: Bridgewater, Risdon Vale, Rokeby
- In Sydney: Lakemba, Mt Druitt, Penrith, Cabramatta
- In Brisbane: Logan, Caboolture
- In Perth: Armadale, Girraween
- In Darwin: Palmerston
- In ACT: Canberra East

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Evaluation of Closing the Gap

These activities will help you write an evaluation of a program that aims to improve the wellbeing of a group of people. Closing the Gap is an Australian government strategy that aims to improve the wellbeing of Aboriginal and Torres Strait Islander people. Non-Indigenous Australians tend to have better wellbeing outcomes for health, employment and education, compared with Indigenous Australians. The difference in outcomes is called 'the gap'. These activities evaluate the first Closing the Gap strategy that started in 2008 and ended in 2018.

To evaluate means to judge something according to criteria. The stages of this Evaluation are:

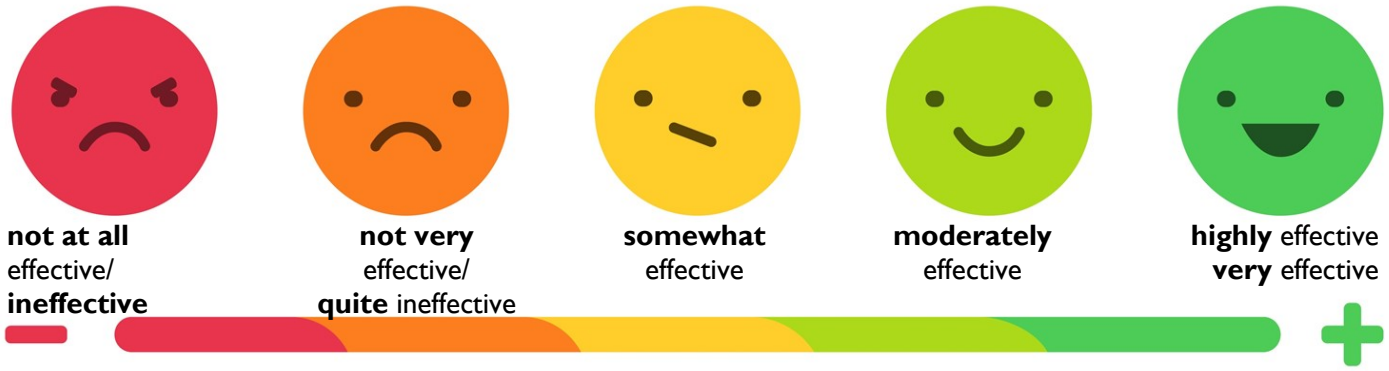
- Phenomenon to be evaluated
- Evaluations
- Overall evaluation

The language features of an Evaluation include:

1. evaluative language to take a position
2. use of evidence, statistics and references to support evaluations
3. cause and effect language to explain why progress has or has not been made
4. language for comparing and contrasting to show the gaps.

The overall evaluation of Closing the Gap could range from not effective to effective along a scale. Add the evaluative wordings below to a suitable place on the scale.

some progress has been made
no progress has been made
the target is on track
the target is not on track
the target is partly on track
most results did not improve
the gap has widened
there has been moderate improvement
the gap has narrowed substantially



Evaluation of the life expectancy gap

Imagine that you have been given the assignment prompt below**.** Let's explore how to deal with it.

We need to write an evaluation and present a judgement about how effective it was.

We need to choose three of the targets in Closing the Gap.

Evaluate the **effectiveness** of the Closing the Gap strategy based on three targets. Refer to **specific programs** that were aimed to help meet the targets.

We need to refer to specific programs for each target we choose.

Before we make an overall evaluation, we need to research and write about three targets and strategies without those targets. Closing the Gap 2008-2018 had seven targets. The three targets we choose to evaluate are:

1. Close the life expectancy gap within a generation by 2031.
2. Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians by 2018.
3. Enrol 95 per cent of all Indigenous four year-olds in early childhood education by 2025.

Read the evaluation of the first criterion (life expectancy). Notice the paragraph phases and language features. Underline evaluative language that shows the evaluation of this target.

Heading	**Close the life expectancy gap by 2018**	Identify the target
Describe the results for the gap	Life expectancy refers to how long someone is expected to live at the time of their birth. The life expectancy gap between Indigenous and non-Indigenous Australians is around 8 years. In 2015-2017, life expectancy was 71.6 years for males (8.6 years less than non-Indigenous males) and 75.6 years for females (7.8 years less than non-Indigenous females). Between 2006 and 2018, life expectancy improved by 10% for Indigenous Australians. However, life expectancy also improved during this period for non-Indigenous Australians, so the gap did not close. Since 2006, mortality rates for circulatory disease have reduced (heart disease and stroke) but there has been an increase in cancers. As a consequence, the life expectancy gap is widening**.**	Define the target Provide statistics and data about the target. Describe relevant data Explain progress or lack of progress Use language for contrasting ideas (however, but) Use cause and effect language for explaining Finish with an overall evaluation
Evaluate an individual program that aimed to narrow the gap	One of the programs aimed at improving life expectancy was to reduce smoking. Smoking is a serious health risk and reduces life expectancy. The Tackling Indigenous Smoking (TIS) program provided online resources for health and community organisations to help smokers to quit and to encourage young people not to start smoking. Daily smoking among Indigenous Australians over 15 years old decreased from 41% in 2012-2013 to 37% in 2018-2019. Although these reductions are positive, the smoking rate is still too high, with more than a third of Indigenous adults smoking, compared with 11% of all Australian adults (AIHW, 2018). The TIS program made some progress but far more needs to be done to impact life expectancy.	Describe a program that aimed to help reach the target Were there improvements? Use references to give authority to statements Evaluate the progress
Evaluate the gap	These results show that the life expectancy gap is widening and that this target has not been met.	Give an overall evaluation of the target

Evaluation of the employment gap

Write an evaluation of another target of Closing the Gap using the model on the previous page and the fact box to help you.

Target: Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians by 2018

- In 2018, 49% of Indigenous Australians aged 15-64 years were employed; 75% of non-Indigenous Australians were employed
- From 2008-2018, there was a slight improvement of 1% in the employment rate for Indigenous Australians
- Non-Indigenous employment also improved a little so there was no change in the gap
- Employment in remote areas is even lower (39% of Indigenous Australians are employed)
- VTEC (Vocational Education Training and Employment) program aims to prepare jobseekers for long-term employment and train industry employers.
- Research into multiple employment programs including VTEC by Deloitte (2021) found many problems and challenges, no fully effective programs; the report recommended longer programs that have been co-designed with Indigenous communities.

Heading		Identify the target
Describe the results for the gap		Define the target Provide statistics and data about the target Describe relevant data Explain progress or lack of progress Finish with an overall evaluation
Evaluate an individual program that aimed to narrow the gap		Describe a program that aimed to help reach the target. What is the evaluation? Evaluate the progress
Evaluate the gap		Give an overall evaluation of the target.

Evaluation of early childhood education

Write an evaluation of another target using the model on the previous page and the fact box to help you.

Target: Enrol 95 per cent of all Indigenous four year-olds in early childhood education by 2025

- In 2018, 86.4% of Indigenous four-year-olds were enrolled in early childhood education (ECE); 91.3% of non-Indigenous children enrolled in ECE.
- From 2016-2018, Indigenous ECE improved by 10% (from 76.7% to 86.4%)
- Target is on track to close the gap
- Program example is Aboriginal Child and Family Centres (ACFCs): 38 Aboriginal and Torres Strait Islander Family Centres across Australia offer health support, childcare, community programs, early childhood education programs
- ACFCs very successful in engaging the entire community and improving access to early childhood education (SNAICC, 2018).

Heading		Identify the target
Describe the results for the gap		Define the target Provide statistics and data about the target. Describe relevant data Explain progress or lack of progress Finish with an overall evaluation
Evaluate an individual program that aimed to narrow the gap		Describe a program that aimed to help reach the target What is the evaluation? Evaluate the progress
Evaluate the target		Give an overall evaluation of the target.

Source: Secretariat of National Aboriginal and Islander Child Care (SNAICC). (2018). *Profiles of Aboriginal and Torres Strait Islander Child and Family Centres.* https://www.snaicc.org.au/

Write a statement in each box below to summarise the evaluations of the three targets and Closing the Gap overall.

Target 1: longevity	
Target 2: employment	
Target 3: early childhood education	
Overall evaluation of Closing the Gap	

Evaluation of Closing the Gap

Follow the instructions below to write the first and final paragraphs of the evaluation.

Evaluate the effectiveness of the Closing the Gap strategy based on three targets. Refer to specific programs that were aimed to help meet the targets.

Phenomenon to be evaluated

_____

_____

_____

The first phase of Closing the Gap ran from 2008-2018 with seven targets to close the gap in wellbeing outcomes between Indigenous and non-Indigenous Australians. Three targets will be evaluated involving

_____

Define Closing the Gap

Preview which three targets will be evaluated

Evaluations

(excerpts)

Target 1: longevity

Target 1. Close the life expectancy gap within a generation by 2031

Life expectancy refers to how long someone is expected to live at the time of their birth. .. Between 2006 and 2018, life expectancy improved by 10% for Indigenous Australians. However, life expectancy also improved during this period for non-Indigenous Australians, so the gap did not narrow ... The TIS program made some progress but far more needs to be done to impact life expectancy. These results show that the life expectancy gap is widening and that this target has not been met.

Target 2: employment

Target 2. Halve the gap in employment outcomes between Indigenous and non-Indigenous Australians by 2018

Employment outcomes mean whether someone has a job that provides income … Over the decade from 2008-2018, there was a slight improvement in the employment rate for Indigenous Australians (1%) but non-Indigenous employment also improved a little. Therefore, the gap has not changed ... A review of multiple Indigenous employment programs including VTEC by Deloitte (2021) found that there were many problems and challenges with the programs and no fully effective programs ... These results show that current employment programs are not effective in improving Indigenous employment.

Target 3: early childhood education

Target 3. Enrol 95 per cent of all Indigenous four year-olds enrolled in early childhood education by 2025

Early childhood education is important because it helps with the cognitive and social development of the child and helps them to perform well in their schooling … In the period between 2016 and 2018, Indigenous early childhood education improved by 10% (from 76.7% to 86.4%). These figures show that the target is on track to be met. An example of a highly effective program that encouraged early childhood education was the establishment of 38 Aboriginal and Torres Strait Islander Family Centres (ACFCs) … In the important area of education, the target of enrolling 95% of four year olds in early childhood education is on track.

Overall evaluation

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Provide an overall evaluation of the program

Has it lived up to its name and closed the gap? Why/ why not?

Which targets were not met and which were met?

Make recommendations about what should happen in the future

References

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Fact Sheet 1: Cause and effect language in Geography

Students of Geography need to understand cause and effect. The words 'cause' and 'effect' and 'explain' are found many times in the curriculum. Geography students need to learn how to explain effectively and to use cause and effect language in a sophisticated way. The list below shows some of the language resources that Geographers use to express cause and effect. This is a reference list for teachers and it is not recommended to give students all of these options at once. Instead, teachers can introduce them gradually, throughout Years 7-10, as shown in this book.

Cause and effect relationships can be shown in different ways through language:

conjunctions	e.g. because	People migrated to the city **because** they needed to find work.
preposition phrases	e.g. due to	People migrated to the city **due to** the need for work.
verb or verb groups	e.g. caused	The need for work **caused** people to move to migrate to the city.
nouns	e.g. reason	The **reason** people migrated to the city was to find work.
text connectives	e.g. therefore	People needed to find work. **Therefore**, they migrated to the city.

The table below is a handy list of common explaining language for Geography.

conjunctions for linking ideas within a sentence	(to show a reason) as, because, since, as a result of, so (to show a purpose) so that, in order to, so as to, in order that (conditional) as long as, if, in case, unless, on condition that (sequential explanation) when (*x happens, y happens)*
prepositions for starting a phrase	because of, due to, as a result of, for, through
verb group explains what is happening	causes, leads to, results in, contributes to, creates, makes … happen, gives rise to, generates, means, brings about, shapes, affects, influences, enables, allows for, impacts, induces, helps to, achieves, gains, interconnects with, is interdependent with, depends on, is dependent on, originated *(Cause and effect is also shown through these verb forms)* to + (verb) e g. to protect … (means 'in order to protect') by + (-ing verb) e.g. by protecting … through + (-ing verb) e.g. through protecting …
noun a thing	*(a cause)* cause, factor, influence, consideration, agent (*an effect)* effect, consequence, result, outcome, repercussion, impact (*cause and effect relationship)* interconnection, dependency, interdependency *(a reason)* reason, motive, purpose, motivation, rationale, origin (*a purpose)* purpose, goal, aim, objective, intention, plan, strategy
text connectives for linking sentences or longer sections of a text	therefore, so, consequently, for that reason, because of this, as a result, thus

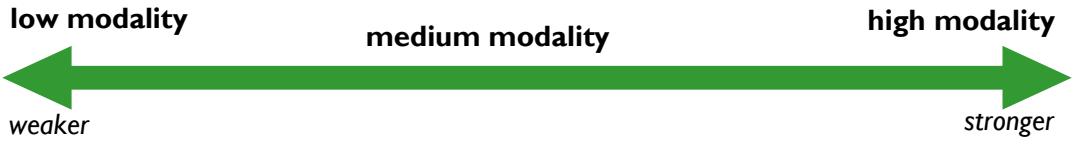
Source: Halliday, M. A. K., & Matthiessen, C. (2004). *An introduction to functional grammar (3rd ed.).* London: Continuum

Fact Sheet 2: Modal language in Geography

Modal language helps the writer to take a position or present a point of view.

Stronger language has **higher modality**, e.g. must, should, definitely
Weaker language has **lower modality**, e.g. may, could, perhaps

In Geography, we often use low modality to show that we may not have all the evidence about a phenomenon or issue. Also, new evidence, unpredicted events or technology may change what will happen in unexpected ways. We can use high modality for statements that have a weight of convincing evidence supporting them.



modal verbs *(note: modal verbs are combined with other verbs, e.g. must go, will go, can go)*	may, could, might *Carbon trading **may** reduce greenhouse gases.*	can, will, would, should (or no modal verb) *Carbon trading **will** reduce greenhouse gases.*	must, ought to, need to, has to, had to, are required to *Carbon trading **must** reduce greenhouse gases.*
showing verbs	suggests, implies	shows, means, indicates	proves, demonstrates, finds, reveals
saying verbs (what people can do or say)	suggest, hypothesise, infer, think	explain, point out, acknowledge	assert, prove, demonstrate, state, discover, find, discover
modal adverbials *(adverbials give us more information about what is happening)*	possibly, perhaps, maybe, potentially *Carbon trading will **possibly** reduce greenhouse gases.*	probably, usually, generally, likely, unlikely *Carbon trading will **probably** reduce greenhouse gases.*	certainly, definitely, always, never, absolutely, completely, without doubt, surely, conclusively *Carbon trading will **definitely** reduce greenhouse gases.*
modal nouns (*a thing, person, place or concept)*	possibility, suggestion, potential *There is a **possibility** that carbon trading will reduce greenhouse gases.*	probability, likelihood *There is a **probability** that carbon trading will reduce greenhouse gases.*	certainty, necessity, requirement, obligation *There is **certainty** that carbon trading will reduce greenhouse gases.*
modal adjectives *(a describer)*	possible, feasible *It is **possible** that carbon trading will reduce greenhouse gases.*	probable, likely, unlikely, reasonable, plausible, believable *It is **probable** that carbon trading will reduce greenhouse gases.*	certain, sure, doubtless, positive, convincing, impossible *It is **definite** that carbon trading will reduce greenhouse gases.*
useful sentence starters	It is possible that… This suggests that…. Some evidence indicates that... *This **suggests** that carbon trading will reduce greenhouse gases.*	It is likely that… Most of the evidence shows that... *Most of the evidence **shows** that carbon trading will reduce greenhouse gases.*	It is definite that… It is certain that… It is obvious that… There is no doubt that.. Evidence proves/shows that *Evidence **proves** that carbon trading will reduce greenhouse gases.*

Fact Sheet 3: Advanced evaluative language

Geographers use a range of evaluative language for evaluations, persuasive texts and recommending strategies to address environmental problems. This page shows positive and negative evaluative language that is suitable for a range of topics in Geography.

Useful evaluative language

Topics	positive	negative
general	effective useful efficient sustainable reliable solution important realistic appropriate clear easy cheap	ineffective damaging inefficient unsustainable exploited problem unsuitable difficult inappropriate unclear difficult expensive
energy / environment	efficient renewable sustainable healthy natural clean remediation	inefficient non-renewable unsustainable fossil fuels pollution dirty polluted toxic hazardous
community/ migration	inclusive, inclusion diverse, diversity respectful, respect activism tolerant flexible growth understanding interesting expand opportunities benefits success, successful well-being	disengagement apathy exploitation exploited discriminatory discrimination prejudice criticism burden concern inadequate unfair overcrowding

Evaluative language for human impacts on environments

positive	negative
minor very little effect no impact less impact positive	serious effect major impact large effect more impact
positive verbs	**negative verbs**
support sustain restore develop help renew recycle reuse grow enable remediate heal	restrict pollute damage disrupt interfere degrade destroy harm devalue diminish compromise limit
positive nouns	**negative nouns**
importance significance value sustainability safety wellbeing biodiversity restoration quality nature solution	exploitation pollution problem crisis monoculture danger inability disease loss waste

Adverbials can make evaluative language more specific and nuanced	minimally slightly a little somewhat moderately very extremely

Fact Sheet 4: Conjunctions and text connectives

Conjunctions and text connectives are linking words.

Conjunctions are used within sentences and connect words and clauses.

Text connectives are signposts for the reader in longer stretches of texts, e.g. sections or paragraphs.

Common conjunctions

Purpose	Examples
Adding	and, besides, as well as
Time and sequencing	then, next, afterwards, first, finally, last of all, lastly meanwhile, all that time, until then, up to that point, at this moment, next, secondly, first, next, soon, after a while, on another occasion, that year
Causality	so, for, because, since, so that, then, therefore, as a consequence, consequently, as a result,, on account of this, for that reason, for that purpose, because of this
Contrast	but, yet, however, although, though, whereas, while, even if, even though, despite

Common text connectives

Purpose		Examples
Elaborating	restating in other words	in other words, that is, to put it another way
	giving examples	for example, for instance, thus, to illustrate
Clarifying	correcting	or rather, to be more precise
	being specific	in particular
	summarising	in short, to sum up, in conclusion, briefly, in summary
	giving facts	actually, as a matter of fact, in fact
Adding	positive	moreover, in addition
	contrasting ideas	on the other hand, however, on the contrary, instead, in contrast
Varying	giving exceptions	apart from that, except for that
	giving alternatives	alternatively
Space and time	see list above	
Manner	comparing	likewise, similarly, in a different way
	means	thus, thereby, by, by some means
Cause and effect	general	so, then, therefore, consequently, hence, because of that, for
	result	in consequence, as a result,
	reason	on account of this, for that reason
	purpose	for that purpose, with this in view
	conditional	then, in that case, in that event, under the circumstances, otherwise
	concession	despite this, however, even so, nevertheless

Source: Halliday, M. A. K., & Matthiessen, C. (2004). *An introduction to functional grammar (3rd ed.).* London: Continuum

References and further reading

The resources on this page are references for this book and also useful further reading on Systemic Functional Linguistics and scaffolding pedagogy.

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About the author

Dr Trish Weekes is a literacy consultant, researcher and teacher-educator. Trish is an experienced teacher and is a specialist in developing literacy skills and teaching resources in specific subject areas. She holds a Ph.D. in literacy education in secondary schooling and has authored numerous papers and book chapters in conjunction with leading academics across Australia and internationally in the field of literacy. In developing Literacy Works for Geography, Trish has worked closely with Geography teachers and hopes the resources will support literacy education across our country.

For more literacy resources, visit www.literacyworks.com.au