

Mathematics Level 7

Chapter 1 — People, place and environment

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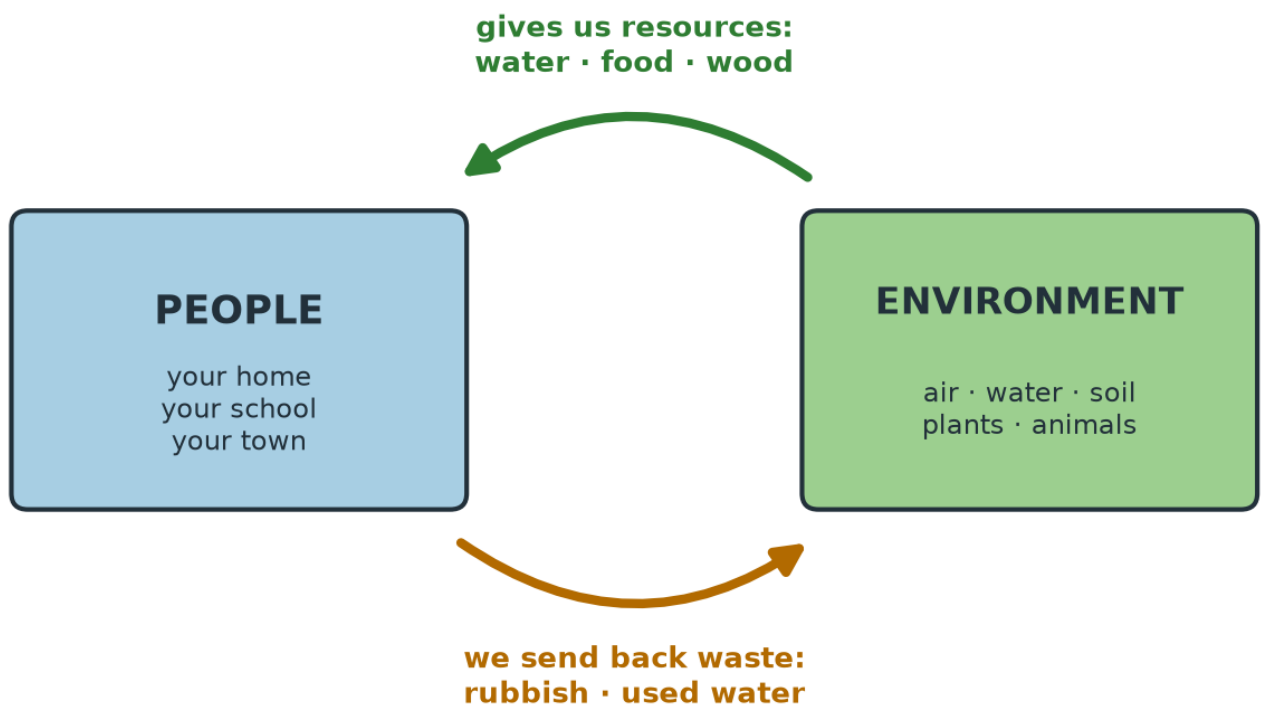
People, their place and its environment: how we depend on it and how it supports us

Code VC2HG4K01 · Geography, Levels 3 and 4 · Draws on E01 and E02

Theory

Everything you can see around you right now — the air in the room, the water in your drink bottle, the wood in your desk — comes from the environment. **The environment** is everything around us that is not made by people: the air, the water, the soil, the plants and the animals. Your place — your home, your school, your town — sits inside the environment. This section is about the link between people and their place: how we depend on the environment, and how it supports us.

People and the environment: what goes between us



Two boxes joined by two curved arrows. The green arrow points from the environment box to the people box and says “gives us resources: water, food, wood”. The brown arrow points from the people box back to the environment box and says “we send back waste: rubbish, used water”.

1. The environment gives us resources.

A **resource** is anything we get from the environment and use. Water to drink, food to eat, wood to build with, air to breathe — all resources. Every object you use in a school day began as something in the environment.

A school day, traced to the environment	Where it began
Your desk and chair	wood from trees in a forest
The water in your drink bottle	rain, stored in big water stores
An apple at lunch	fruit from an orchard
Your paper and books	wood, made into paper

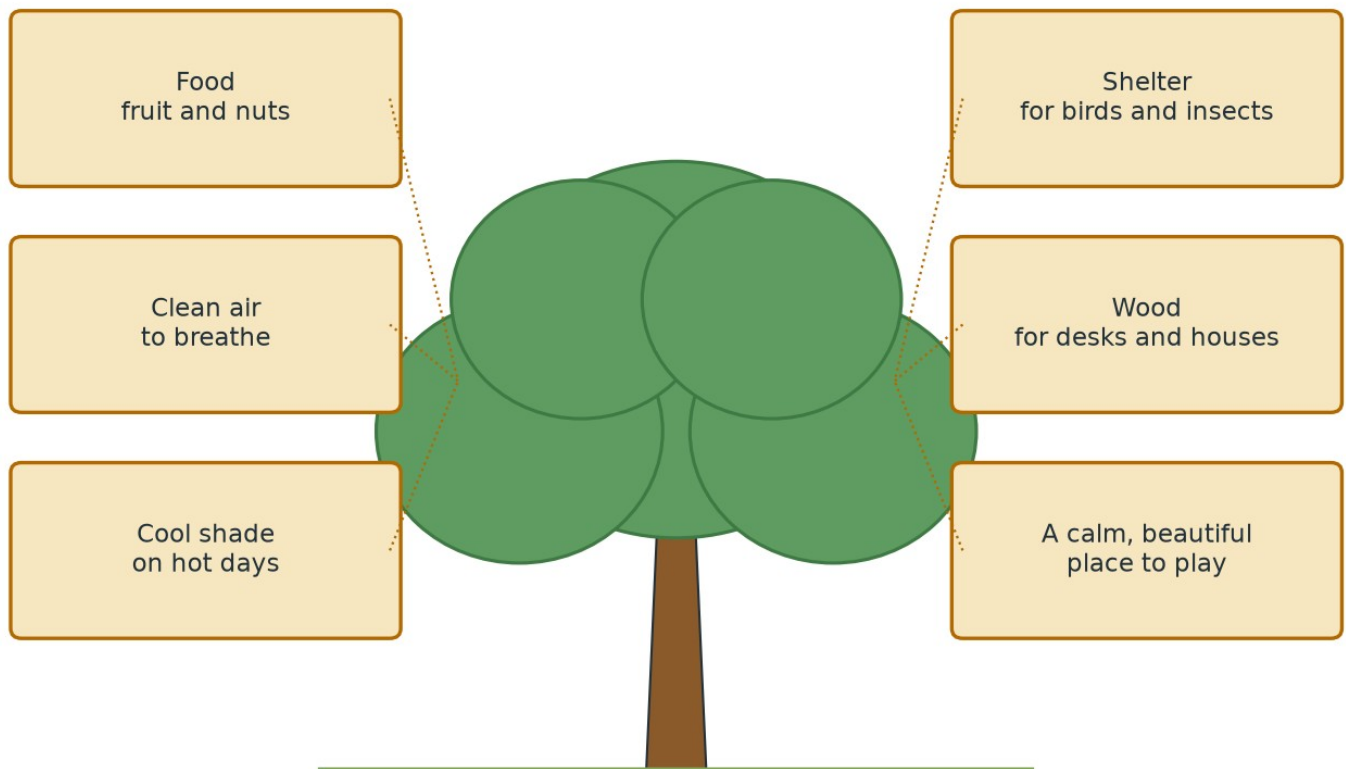
2. The environment takes back our waste.

Everything we throw away or wash away goes back into the environment: rubbish, and used water down the drain. That is why we take care with it — the same environment that gives us our water and our food takes back what we send. Look at the two arrows in the figure above: one way comes resources, the other way goes waste.

3. Vegetation supports our lives.

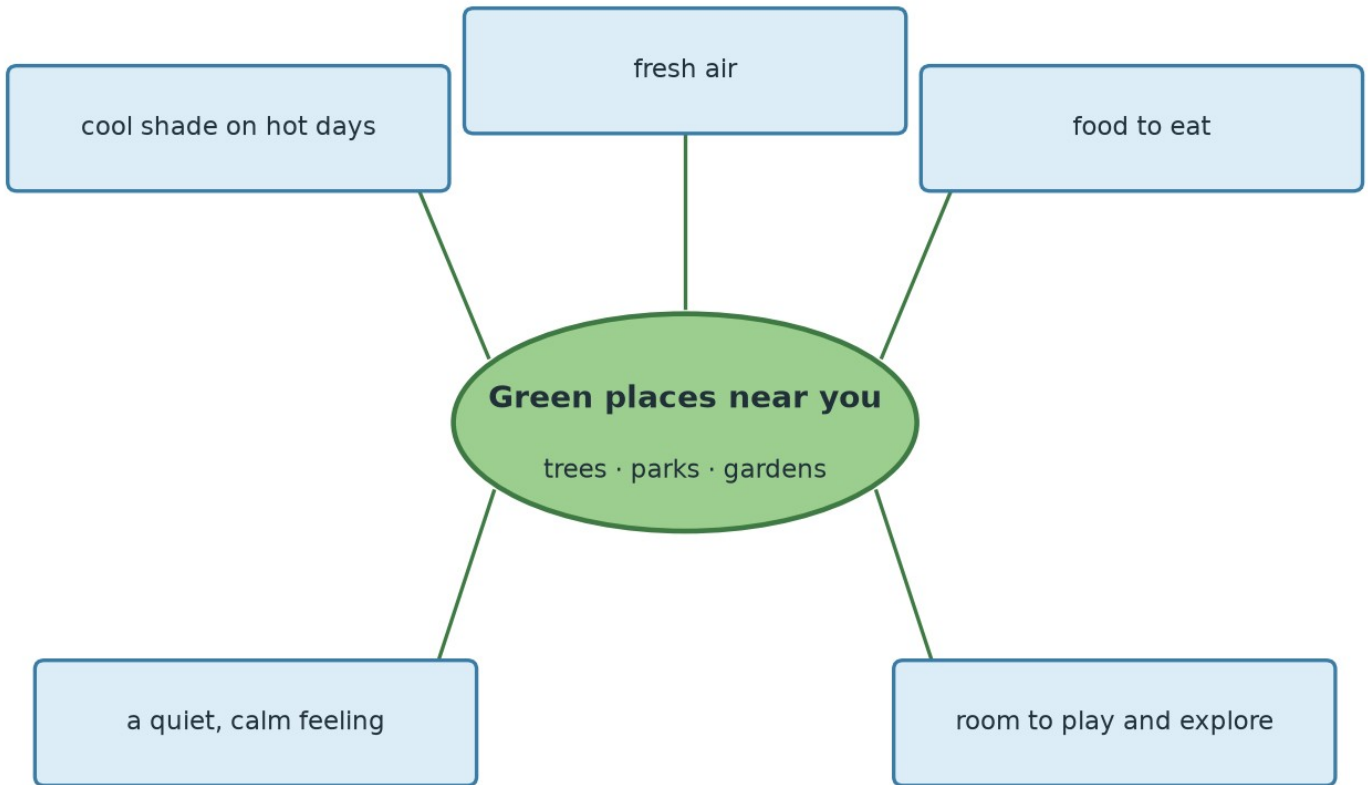
Vegetation is the plants of a place — trees, grasses, shrubs and flowers. Vegetation is not just there to look nice. It supports our lives and our **wellbeing** — how well we live, in our bodies and in our minds. The tree below is giving six gifts at once.

What a tree gives us



A labelled drawing of a tree with six gift boxes joined to it by dotted lines: food (fruit and nuts); clean air to breathe; cool shade on hot days; shelter for birds and insects; wood for desks and houses; a calm, beautiful place to play.

How green places help us live well



A web diagram. In the middle is an oval that says “Green places near you: trees, parks, gardens”. Five boxes link to it: cool shade on hot days; fresh air; food to eat; a quiet, calm feeling; room to play.

4. Your place.

Think of the place you know best — your home, your school, your town. It has its own air, its own water, its own plants. In the tasks below, when we say *your place*, we mean that place.

Worked examples

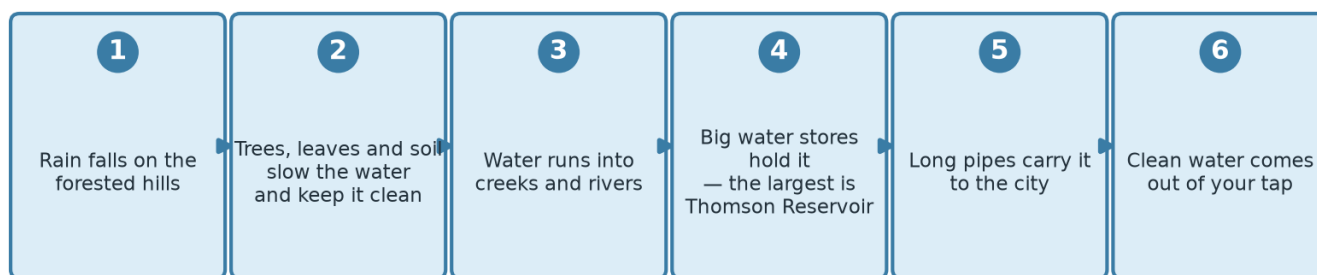
Example 1 — Follow Melbourne’s water from the sky to your tap.

Melbourne is one of only two big cities in the world whose drinking water comes most of all from protected forest hills. Here is how the journey works, step by step.

Working	Comment
1. Rain falls on the forested hills east of Melbourne, in the Yarra Ranges.	The forests are protected, so people cannot build there or make the water dirty.
2. The trees, leaves and soil slow the rain and keep it clean — a natural filter.	The environment does the first cleaning job for free.
3. The water runs down creeks and rivers into ten big water stores.	A reservoir is a big water store made by building a dam across a river. The biggest is Thomson Reservoir.
4. About 1 100 km of pipes carry the water to the city.	That is about as far as Melbourne to Sydney.
5. Thirteen treatment plants check and clean the water before it reaches taps.	A megalitre (ML) is 1 000 000 litres — about half an Olympic swimming pool. A gigalitre (GL) is 1 000 ML. About 1 250 ML of water go to homes every day.

So the environment is the source: rain, forest and rivers give Melbourne its water, and people look after the forest so the water stays clean. The figure below shows the same journey in one line.

The journey of Melbourne's drinking water



The forests in the Yarra Ranges catch the rain that fills Melbourne's water stores.

Six numbered boxes in a row, joined by arrows: 1 rain falls on the forested hills; 2 trees, leaves and soil slow the water and keep it clean; 3 water runs into creeks and rivers; 4 big water stores hold it, the biggest is Thomson Reservoir; 5 long pipes carry it to the city; 6 clean water comes out of your tap.

Example 2 — Where does used water go?

The environment is also a sink: it takes back what we send. Used water — the water that goes down the drain from showers, toilets and sinks — is about 99% water. Here is its journey in Melbourne.

Working	Comment
1. Used water goes down the drain and into sewers — more than 400 km of pipes under the streets.	A sewer is a pipe that carries used water away.
2. It flows to a treatment plant. Melbourne's biggest is the Western Treatment Plant at Werribee.	That one plant is about the same size as Phillip Island.
3. The plant cleans the water — some of it in big ponds called lagoons.	Cleaning takes out the dirt so the water is safe to send on.
4. The clean water goes back to rivers and bays, or is used again on farms.	The Werribee plant cleans more than 200 000 ML a year — more than half of Melbourne's used water.

The same rule as Example 1: what we send back goes into the environment, so we clean it first.

Where does used water go?



Melbourne's biggest treatment plant is the Western Treatment Plant at Werribee — about the size of Phillip Island.

Five numbered boxes in a row, joined by arrows: 1 used water goes down the drain; 2 it flows through pipes under the streets; 3 it reaches a treatment plant; 4 it is cleaned, some plants use big ponds called lagoons; 5 clean water goes back to nature, or is used again.

Practice questions

Practice with help

Q1. Here is a word bank. Sort each thing into the correct column of the table: does it come *from* the environment to us (resource), or does it go *from* us back to the environment (waste)? The first one is done for you.

Word bank: clean water · used water · an apple · an apple core · wood · rubbish · fresh air · dirty water from the sink

From the environment to us (resource)

From us back to the environment (waste)

clean water ✓

Q2. Look at the figure “The journey of Melbourne’s drinking water” in Example 1. The stages below are the same six stages, mixed up. Write the numbers 1–6 next to them to put them in order.

_____ Water runs into creeks and rivers.

_____ Clean water comes out of your tap.

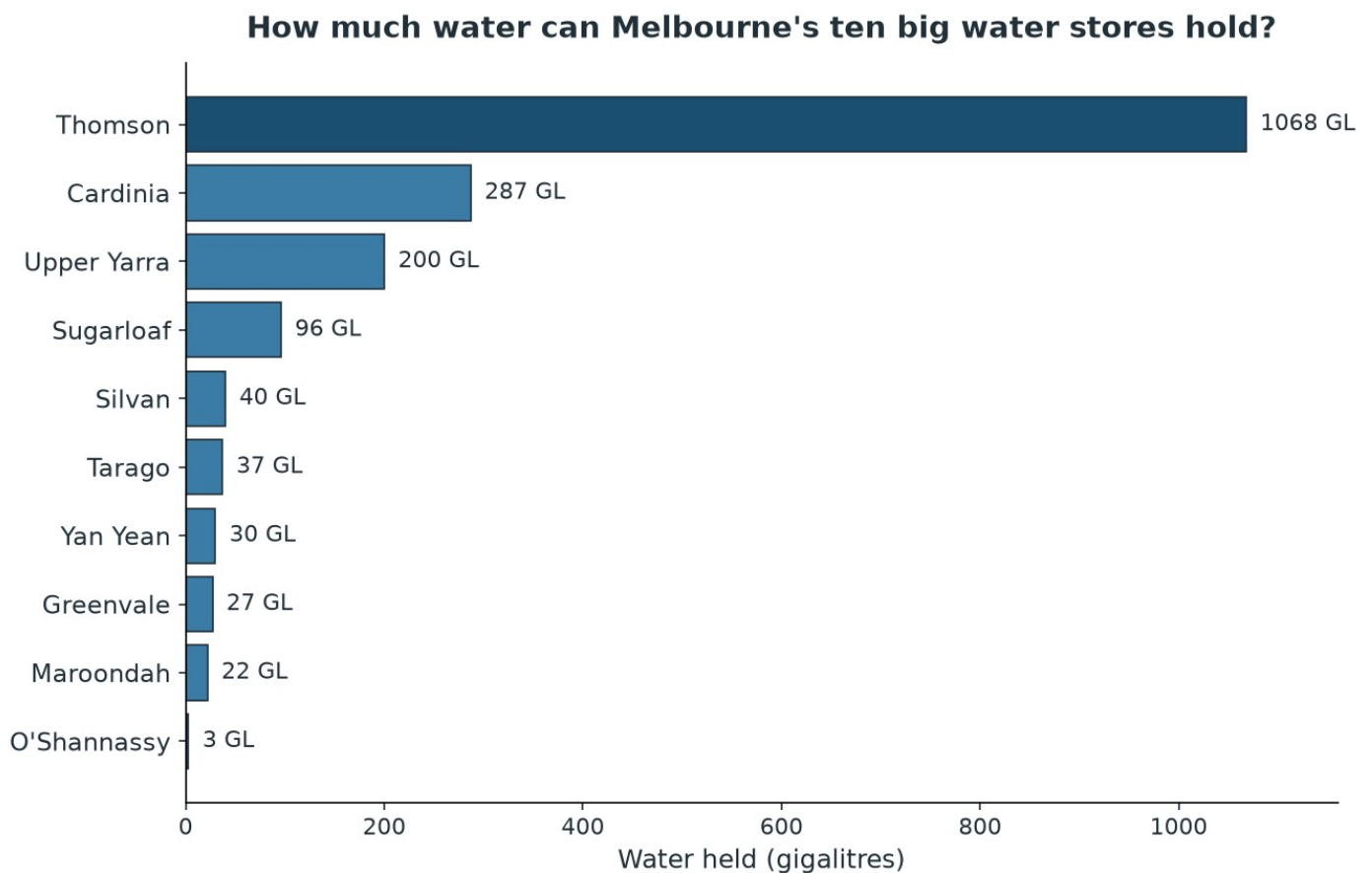
_____ Rain falls on the forested hills.

_____ Long pipes carry the water to the city.

_____ Trees, leaves and soil slow the water and keep it clean.

_____ Big water stores hold the water.

Q3. The bar chart shows how much water each of Melbourne's ten big water stores can hold.

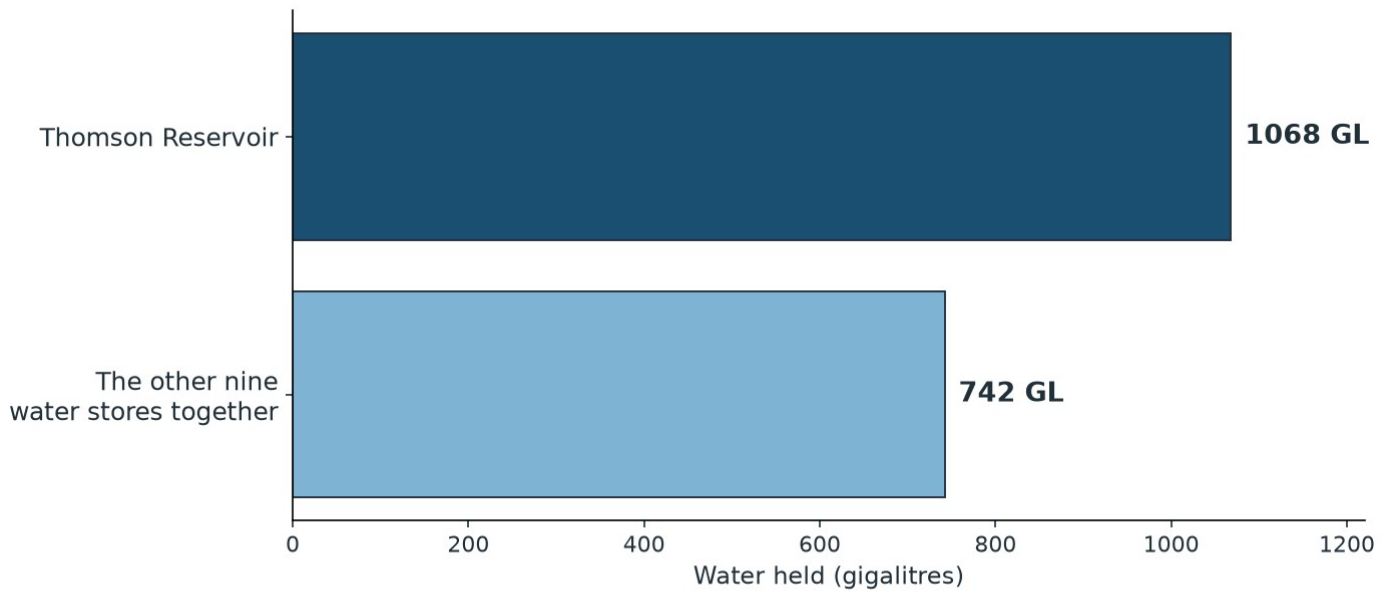


A gigalitre (GL) is 1 000 000 000 litres. Source: Melbourne Water, 2026.

A horizontal bar chart of ten named water stores and how much water each can hold, in gigalitres. The longest bar is 1068 gigalitres and the bars get shorter down the chart to the shortest bar, 3 gigalitres.

- Which water store holds the most water? How many gigalitres does it hold?
- Which water store holds the least?
- Now look at the second chart. Does Thomson hold more or less water than the other nine water stores all added together?

One giant water store



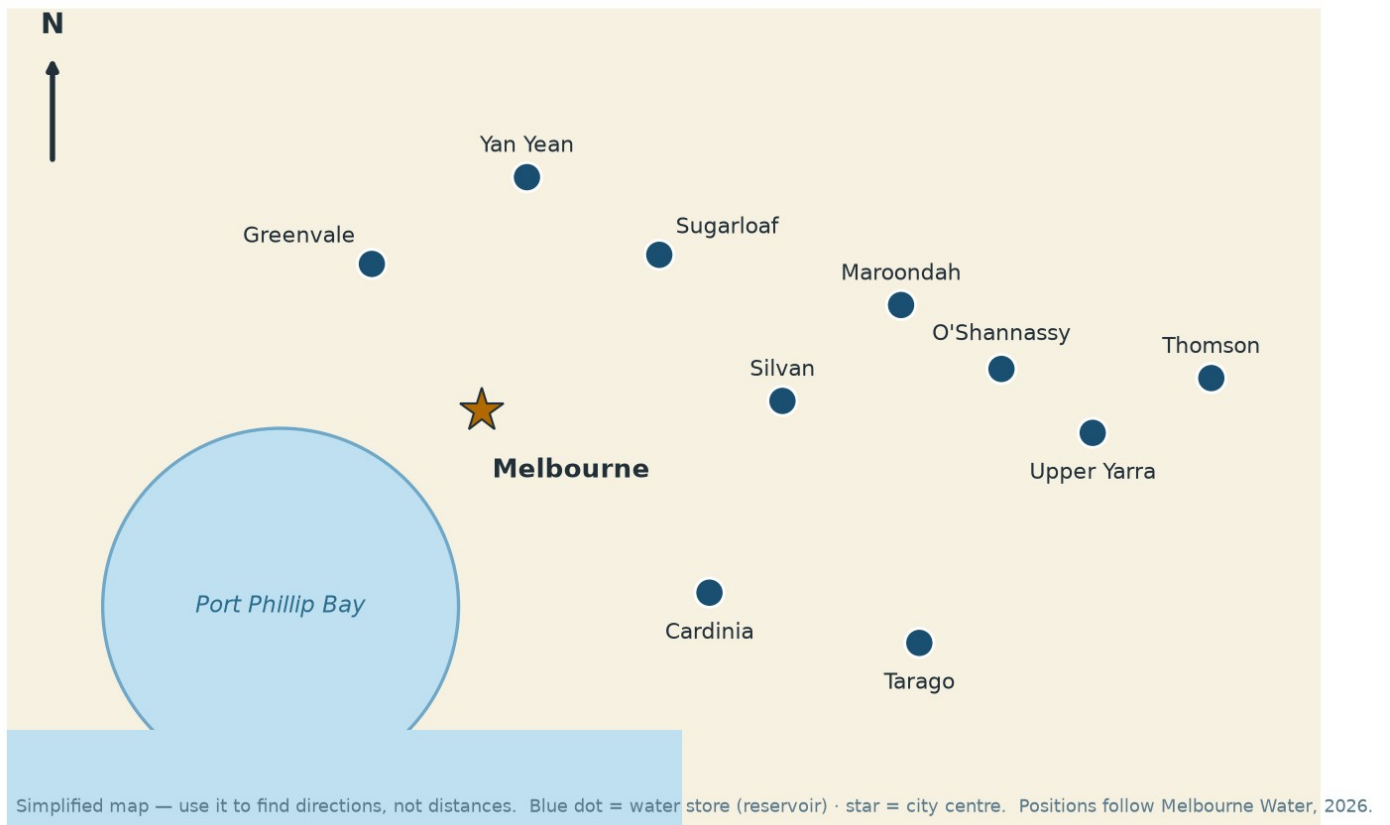
Worked out from Melbourne Water storage figures, 2026.

A bar chart with two bars: Thomson Reservoir, 1068 gigalitres, and the other nine water stores together, 742 gigalitres.

- d) A gigalitre is 1 000 000 000 litres. Circle the closest number to how many litres Thomson can hold: 1 000 000 · 1 000 000 000 · 1 000 000 000 000
- e) Melbourne uses about 1 250 ML of water a day, and Thomson holds about 1 068 000 ML. Circle the closest guess for how many days Thomson could supply the city on its own: 85 · 854 · 8 540

Q4. Use the map to answer with direction words (north, south, east, west).

Where are Melbourne's ten big water stores?



A simple map of Melbourne and the water stores around it. A star marks the city centre and ten blue dots mark the water stores, each with its name. A north arrow points to the top of the map.

- Which water store is north-west of Melbourne?
- Is Cardinia north or south of the city?
- Name two water stores that are east of Melbourne.
- Which is closer to the city: Greenvale or Thomson?

Q5. The tree figure in the Theory matches each gift to a tree. Now match each gift to your school day. Write the letter next to the matching number.

A. cool shade · B. wood · C. clean air · D. fruit and nuts · E. a calm, beautiful place

- _____ the desk you write on
- _____ playing outside on a hot day
- _____ apples at lunch
- _____ breathing on a nature walk
- _____ reading quietly under a tree

Q6. Read this short source, then answer the questions below it.

Source — How Melbourne gets its water (a short summary; facts from Melbourne Water, 2026)

Rain falls on protected forests in the hills east of Melbourne. The forests catch the rain and keep it clean, so the water runs down into creeks and rivers. The rivers fill ten big water stores. The biggest, Thomson Reservoir, holds 1068 gigalitres — more than the other nine stores together. All up, the protected forests cover about 163 000 hectares. A hectare is about as big as a football oval and a half. Melbourne is one of only two big cities in the world that gets its water this way. Every day, about 1 250 ML of water travel to more than 5 000 000 people.

- a) Why are the forest hills protected? Use the source in your answer.
- b) How many big water stores are there? Name the biggest one.
- c) “One of only two big cities in the world” — what does this tell you about Melbourne’s water supply?

Practice on your own

Q7. Look around your classroom, or your home. Name five things that began as resources in the environment. For each one, say what it came from — for example, “my desk is wood, from trees in a forest”. Use your place for this question.

Q8. In one or two sentences, explain why Melbourne protects the forest hills that catch its rain. Use the words *resource* and *clean* in your answer.

Q9. Draw your favourite outdoor place in your town. On your drawing, label two things the environment gives people there — for example: shade, food, a place to play, clean air.

Q10. Imagine Melbourne’s big water stores ran empty for a year.

- a) Name two things people would not be able to do.
 - b) What does this tell you about how people and the environment are linked?
-

Answers

Q1. Resource column: clean water, an apple, wood, fresh air. Waste column: used water, an apple core, rubbish, dirty water from the sink.

Q2. $3 \cdot 6 \cdot 1 \cdot 4 \cdot 2 \cdot 5$ (in the order the lines are printed).

Q3. a) Thomson, 1068 giganlitres. b) O'Shannassy, 3 giganlitres. c) More — 1068 is bigger than 742. d) 1 000 000 000 000. e) 854.

Q4. a) Greenvale. b) South. c) Any two of Silvan, Maroondah, O'Shannassy, Thomson. d) Greenvale.

Q5. A–2 · B–1 · C–4 · D–3 · E–5.

Q6. a) So the forests can catch the rain and keep it clean for the city's water supply. b) Ten; Thomson Reservoir. c) It is rare and special — only one other city in the world gets its water this way, so it is worth looking after.

Q7. Answers will vary. A model set: paper — wood from trees; an apple — an orchard; tap water — rain stored in reservoirs; a cotton jumper — the cotton plant; a glass window — sand.

Q8. Model: The forest hills are a resource because they catch and filter the rain that becomes our drinking water. Protecting them keeps the water clean.

Q9. Check your drawing shows an outdoor place in your town and labels two gifts from the environment.

Q10. a) Any two, e.g. fill a drink bottle from the tap; have a shower; water farms and gardens. b) People depend on the environment every day, so we must look after it.

Fully-worked solutions

Q1. Sort by asking one question: which way is it travelling? Things travelling *from* the environment to people are resources: clean water, an apple (fruit from a tree), wood (from trees), fresh air. Things travelling *from* people back to the environment are waste: used water, an apple core (food waste), rubbish, dirty water from the sink.

Q2. Read the journey figure from left to right: rain first (1), then the forest cleaning it (2), creeks and rivers (3), the big water stores (4), pipes to the city (5), your tap (6). Matching that order to the printed lines gives $3 \cdot 6 \cdot 1 \cdot 4 \cdot 2 \cdot 5$.

Q3. a) The longest bar is Thomson, at 1068 giganlitres. b) The shortest bar is O'Shannassy, at 3 giganlitres. c) The second chart does the adding for us: the other nine stores together hold 742 giganlitres, and $1068 > 742$, so Thomson alone holds more. d) $1068 \text{ giganlitres} = 1068 \times 1\,000\,000\,000 \text{ litres}$, which is a little more than 1 000 000 000 000 litres — so that is the closest number. e) $1\,068\,000 \text{ ML} \div 1\,250 \text{ ML a day} \approx 854 \text{ days}$ — a bit over two years.

Q4. Put your finger on the star (Melbourne) and use the north arrow. a) Up and to the left (north-west) is Greenvale. b) Cardinia sits below the star, so it is south. c) To the right of the star (east) are Silvan, Maroondah, O'Shannassy and Thomson — any two. d) Greenvale's dot is a short way from the star; Thomson's is far away at the right edge — Greenvale is closer.

Q5. B–1: desks are made of wood. A–2: shade makes hot-day play possible. D–3: apples are fruit and nuts from trees. C–4: trees help keep the air clean to breathe. E–5: a quiet spot under a tree is a calm, beautiful place to read.

Q6. a) The source says the forests “catch the rain and keep it clean” — they are protected so the city's water stays clean. b) “The rivers fill ten big water stores”; the biggest is Thomson Reservoir. c) Only one other city in the world gets its water this way, so Melbourne's supply is rare — a reason to take care of the forests.

Q8. A full answer joins both ideas in one or two sentences: the forest hills are a **resource** (they catch and filter the rain that becomes drinking water), and protecting them keeps the water **clean** for the people who depend on it.

Q10. a) Any two things that need water: drinking from the tap, showering, watering farms and gardens. b) People depend on the environment: it is the source of the water they use every day, so if the source fails, their lives are affected — which is why we look after it.

Sources

- Melbourne Water, *Our water supply system*, melbournewater.com.au — retrieved 25 August 2026.
- Melbourne Water, *Water storage reservoirs*, melbournewater.com.au — retrieved 25 August 2026.
- Melbourne Water, *Melbourne's sewerage system*, melbournewater.com.au — retrieved 25 August 2026.

Local activities and why they are there

Owns: VC2HG4K02

Draws on: VC2HG4K02.E01, VC2HG4K02.E02

Learn

A place is a part of the world that people know and use. In this section, your local place means the town or suburb your school is in. Every place has activities — the things people do there. Some activities happen in every place.

Six kinds of activities. The Victorian Curriculum names six kinds. Here is what each word means in this section:

- **Retail** — selling things to people (shops and markets).
- **Recreation** — play, sport, rest and fun (parks, pools, ovals, beaches).
- **Manufacturing** — making things in factories.
- **Farming** — growing food on the land.
- **Education** — learning and teaching (schools).
- **Commercial** — offices and services where people do business (banks, offices).

Six kinds of activities in the places where people live

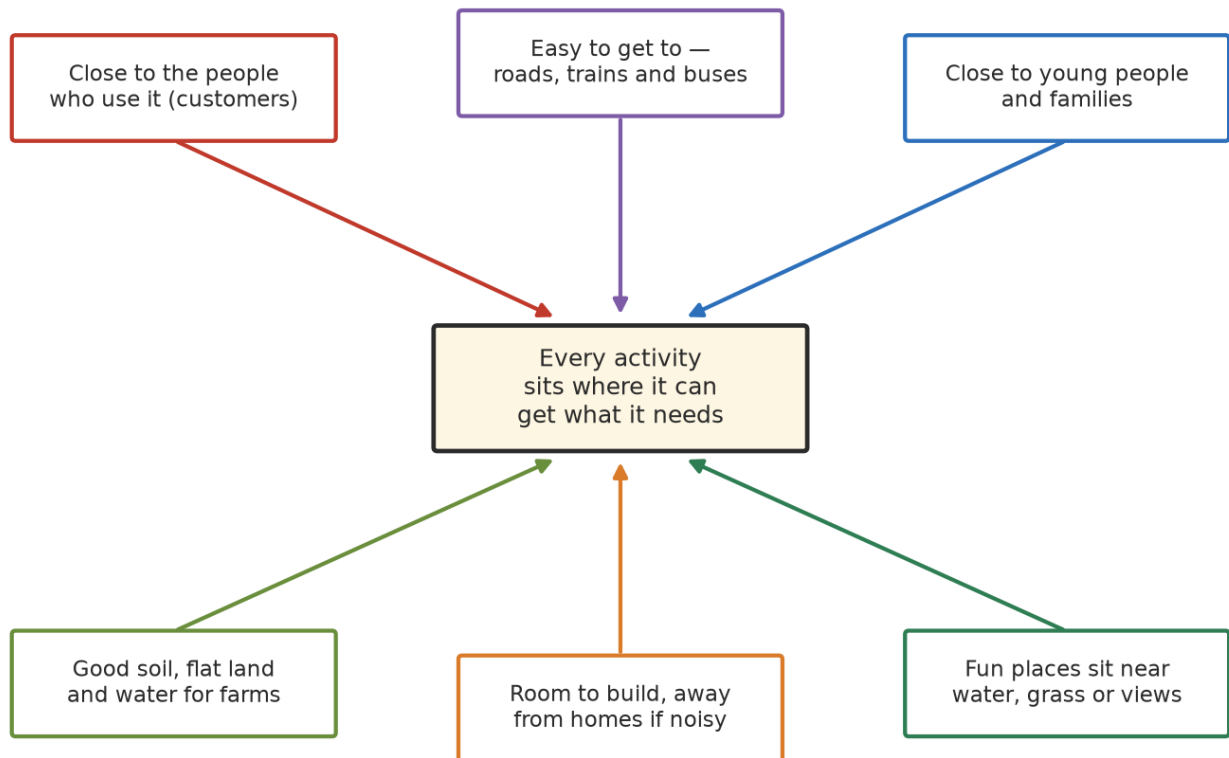
Activity	What people do	Real examples in Victoria
Retail	Selling things to people	Shops and markets — Queen Victoria Market, Melbourne
Recreation	Play, sport, rest and fun	Parks, pools and beaches — Eastern Beach, Geelong
Manufacturing	Making things in factories	The SPC fruit factory in Shepparton
Farming	Growing food on the land	Grape and orange farms near Mildura
Education	Learning and teaching	Your school, and universities
Commercial	Offices and services — business	Banks and offices in city centres

Each activity type needs different things from a place — so each one sits where it can get them.

Table of the six activity types with what people do and real examples in Victoria

Why is each activity where it is? An activity sits where it can get what it needs. Here are the big reasons:

Why are activities located where they are?



One activity can have more than one reason for its location.

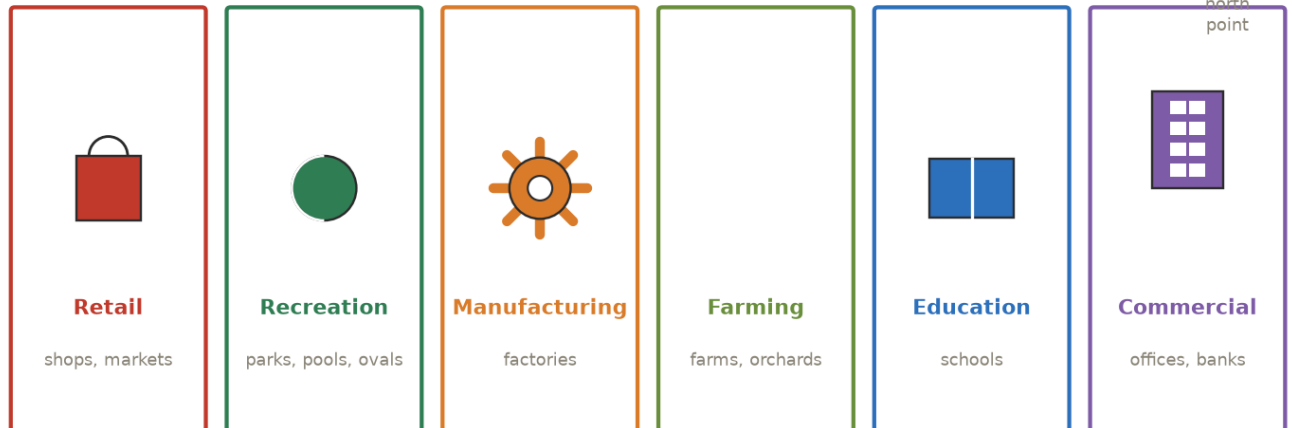
Diagram of six reasons why activities are located where they are

- **Close to the people who use it.** A shop needs customers — people who buy things.
- **Easy to get to.** The word for this is **accessibility** — how easy it is for people to get to a place. Places near good roads, trains and buses have good accessibility.
- **Close to what it needs.** A factory that cans fruit sits near the farms that grow the fruit.
- **Good soil, flat land and water.** Farms need these, so farming sits where the land gives them.
- **Room to build.** Factories need big, flat ground, and they sit away from homes if they are noisy or smelly.
- **Close to young people and families.** Schools and pools sit near the people who use them most.

Maps show these patterns. A map looks down on a place from high above. Every map you draw needs a **title** (what the map shows), a **key** (what the symbols mean) and a **north point** (which way is north). A **pictorial map** uses little pictures as symbols.

Symbols you can use on your own pictorial map

A symbol is a small picture that stands for something real.



Every map you draw also needs a title and a key.

Six map symbols (retail, recreation, manufacturing, farming, education, commercial) and a north point

Accessibility: how easy is it to get there?

A place is accessible when people can get to it easily.

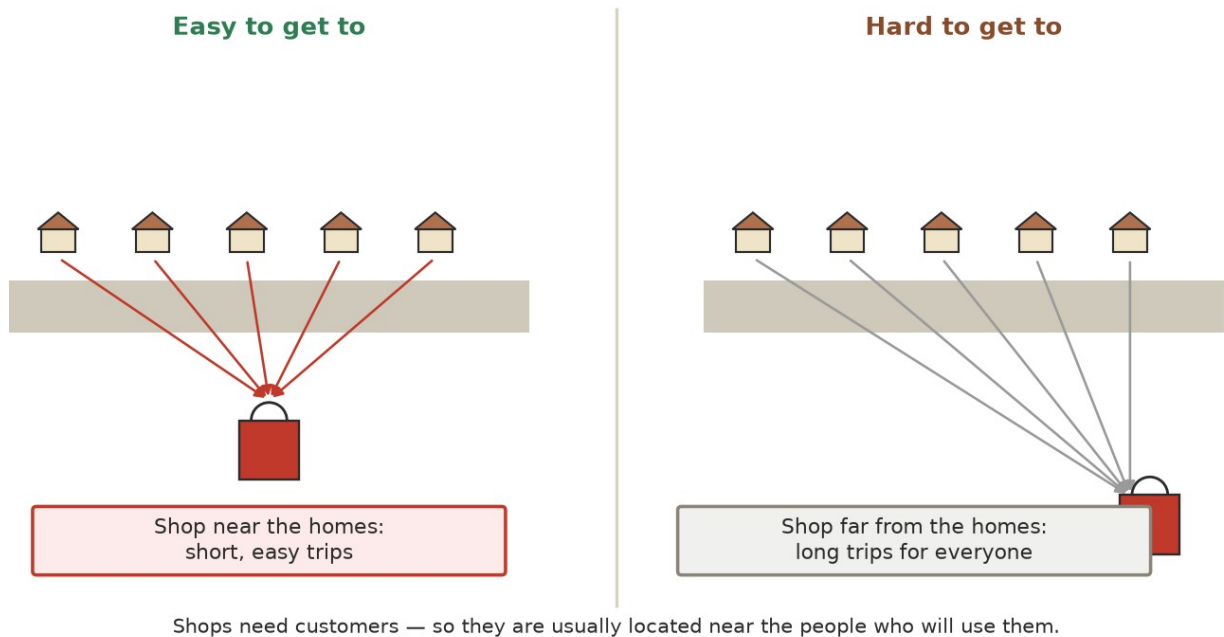


Diagram comparing a shop near homes, easy to get to, with a shop far from homes, hard to get to

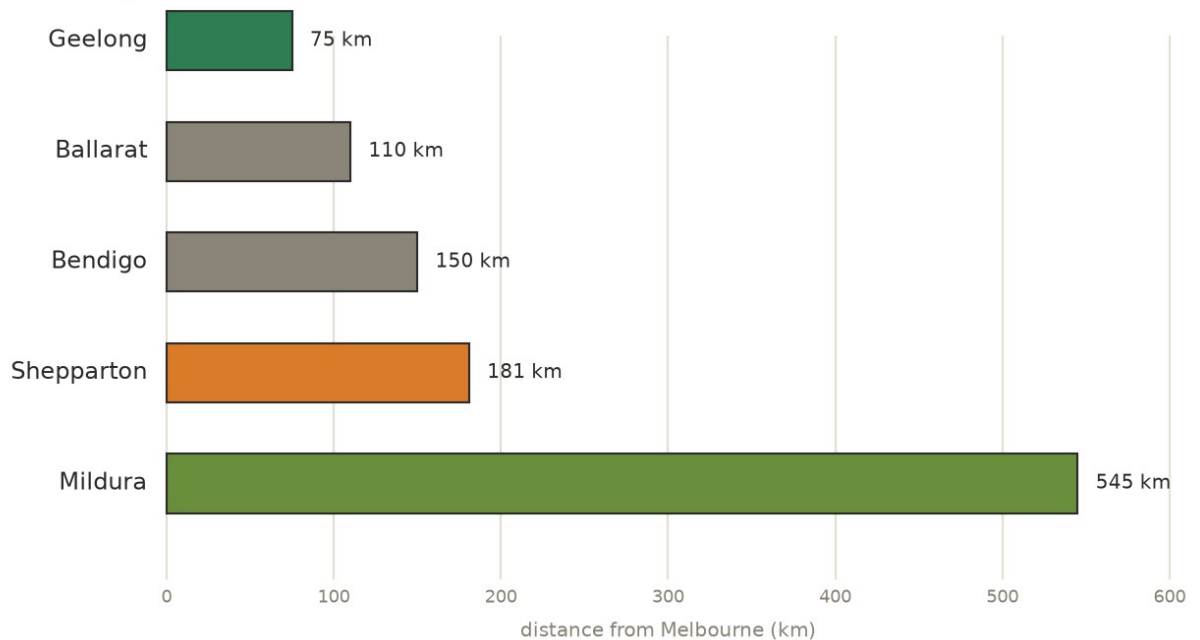
Real places, real reasons. Every place in this section is real. This map shows where they are in Victoria:



Simple outline map of Victoria showing Melbourne, Geelong, Ballarat, Bendigo, Shepparton and Mildura

How far are these places from Melbourne?

Distance in a straight line, in kilometres (km)

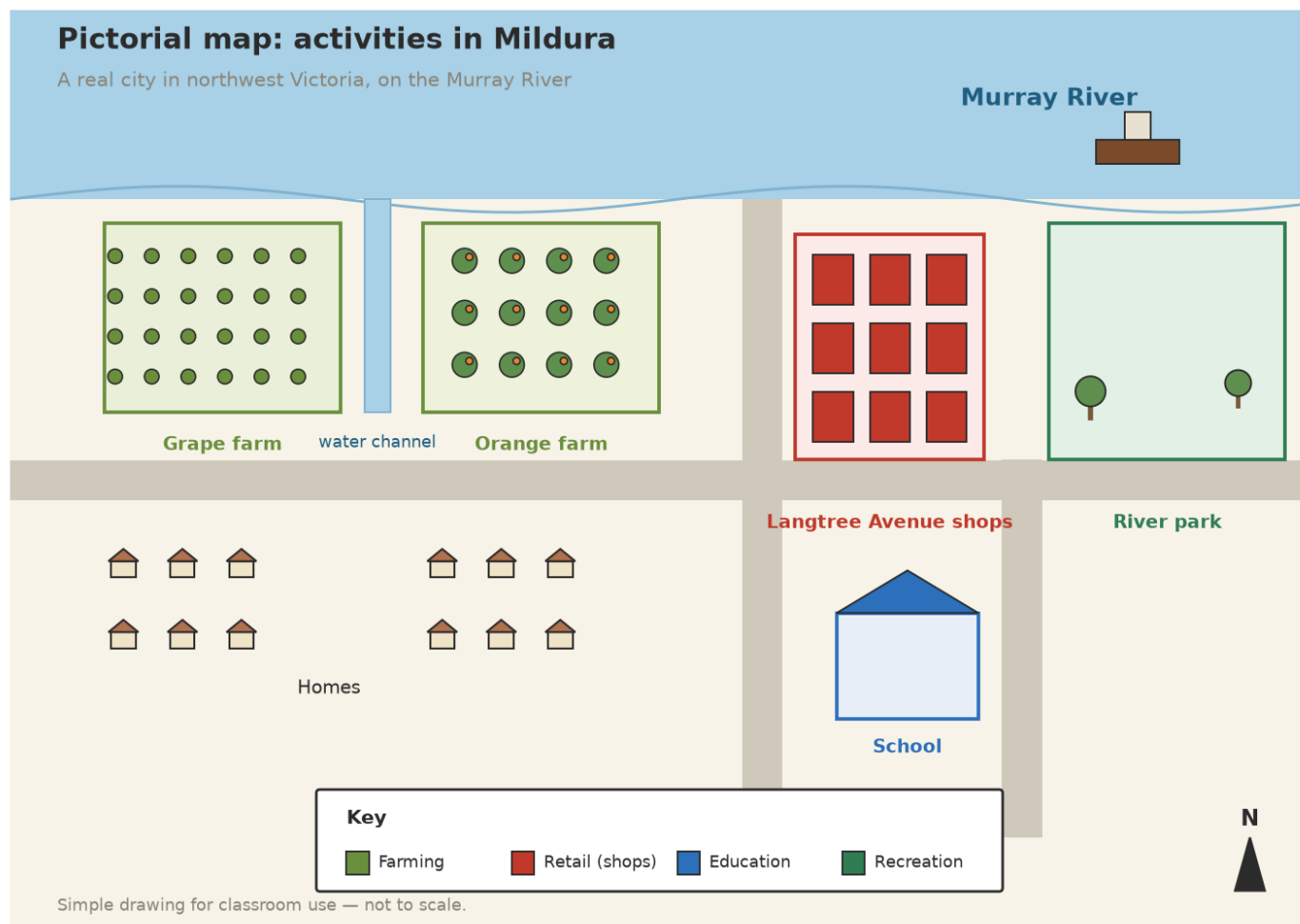


Bar chart of the distance in kilometres from Melbourne to Geelong, Ballarat, Bendigo, Shepparton and Mildura

Worked examples

Example 1 — guided

Read the pictorial map of **Mildura**, a real city on the Murray River in northwest Victoria. For each part of the map, name the activity and give one reason for its location.



Pictorial map of Mildura showing the Murray River, two farms, shops on Langtree Avenue, homes, a school and a river park, with a key and north point

Working

The grape farm and the orange farm sit along the Murray River.

The red blocks on Langtree Avenue are shops.

The blue building sits near the homes.

The green space sits on the river.

Thinking

Farming. The farms need water. The river gives water to the crops.

Retail. Langtree Avenue is the shopping street of Mildura. The shops sit close to the people who buy things.

Education. It is a school. Children can walk there — it is close to families.

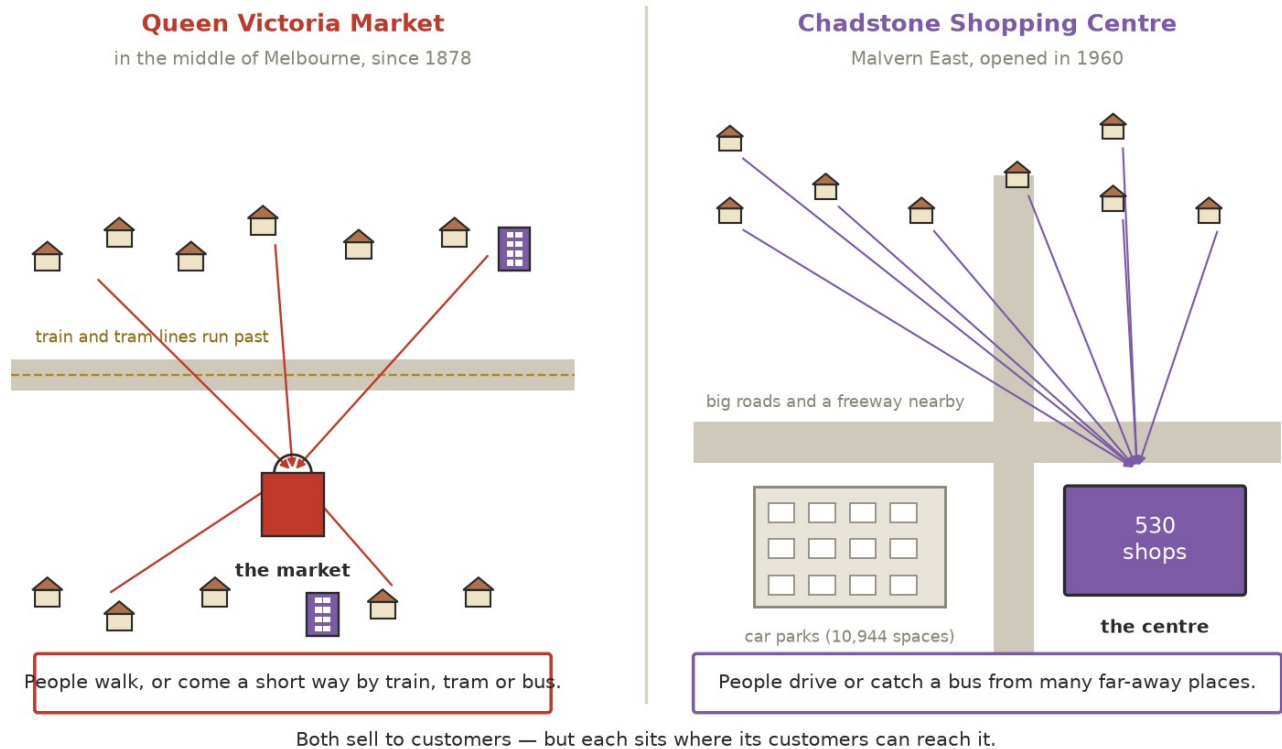
Recreation. The river park is for fun. People swim, boat and walk by the water.

So each activity sits where it can get what it needs: the farms need the river's water, the shops need customers, the school needs families, and the park wants the river.

Example 2 — guided

Two real retail places in Melbourne. Are they located where they are for the same reason?

Two real retail places — two ways to reach the customers



Two pictures comparing how people reach Queen Victoria Market in the city and Chadstone Shopping Centre near big roads

Working

Queen Victoria Market opened in 1878 in the middle of Melbourne. It is one of the biggest open-air markets in Australia.

Chadstone Shopping Centre opened in 1960 in Malvern East, in the south-east. It is the biggest shopping centre in Australia — 530 shops and 10,944 car parks.

Both are retail. Both need customers.

Thinking

It sits where lots of people live, work and visit. People walk there, or come a short way by train or bus. Good accessibility on foot.

It sits beside big roads, so people drive or catch a bus from far away. Good accessibility by car.

Same activity, two different ways to be close to customers. Each one is located where its customers can reach it.

Practice questions

Guided

Q1. Use the pictorial map of Mildura in Example 1. (a) What activity do the red blocks on Langtree Avenue show? (b) Name the river at the top of the map. (c) Give one reason the farms sit along the river. (d) Which activity uses the green space by the water?

Q2. Use the symbols figure in Learn. Which symbol would you draw for: (a) your school; (b) a factory; (c) a swimming pool; (d) a market; (e) an orchard; (f) a bank?

Q3. Match each real place to its activity type (retail, recreation, manufacturing, farming, education or commercial): (a) Eastern Beach at Geelong, with its old sea baths; (b) the SPC fruit factory at Shepparton; (c) Queen Victoria Market, Melbourne; (d) grape farms near Mildura; (e) the place where you learn on school days; (f) a bank in a city centre.

- Q4.** Use the bar chart of distances from Melbourne. (a) Which city is closest to Melbourne? (b) Which city is the longest way from Melbourne? (c) Is Shepparton closer to Melbourne than Mildura is? How does the chart show this? (d) Fruit from Mildura travels to Melbourne. Is that a short trip or a long trip?
- Q5.** Use the reasons diagram in Learn. Pick the best reason for each location: (a) a swimming pool near lots of homes; (b) a farm on flat land beside a river; (c) a big factory on cheap, open land away from homes.
- Q6.** Use the sentence frame in the figure below to write one sentence about a place you know.

Writing about location: use because

Sentence frame:

_____ is located at _____ because _____.

Worked example (real place):

Grape and orange farms are located near Mildura
because the farms need water from the Murray River.

Good starters:

It is close to ... People can get there by ...
It needs ... It sits away from ...

A sentence frame for writing about location with because, with a worked example about farms near Mildura

On your own

- Q7.** Think of a shop near your school. Which of the six activity types is it? Give one reason it is located where it is.
- Q8.** Your town wants to build a new skate park for young people. Choose a place for it. Give one reason that place is a good one.
- Q9.** Look again at the pictorial map of Mildura. Which two activities on the map need to be near the water? Say why for each.
- Q10.** A town is choosing a spot for a noisy factory. Person A says: *put it next to the homes, so workers can walk to work and jobs stay close to families*. Person B says: *put it away from the homes, so the noise and smell do not trouble people, and trucks have room*. Give the best reason you can for **each** side. Then say which spot you would pick, and why.

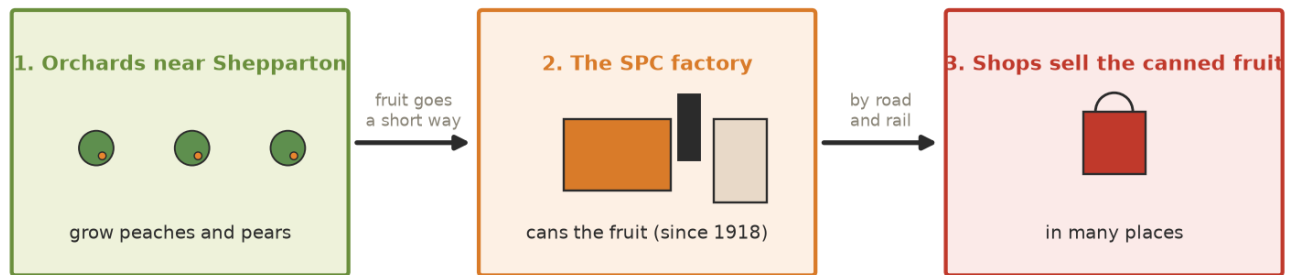
A source to read and question

Source — fruit from the Goulburn Valley

Shepparton is a city about 181 km north-north-east of Melbourne. It sits on the Goulburn River. Water is brought to the farms around it through channels, so crops can grow. It is one of the biggest areas like this in Australia. Farms there grow peaches, pears and apricots, and dairy farms make milk.

In 1917, a group of fruit growers started a company to can their fruit. It began canning pears and peaches in 1918. Today the company is called SPC, and its factory is still in Shepparton. The factory sits close to the orchards, so the fruit has a short trip and stays fresh. Canned fruit then goes by road and rail to shops in many places.

From orchard to factory to shop — SPC, Shepparton



The factory is located close to the farms that grow the fruit.

Fruit goes bad fast — a short trip to the factory keeps it fresh.

Flow diagram from orchards near Shepparton to the SPC factory to shops

Q11. Canning fruit is which activity type?

Q12. Give one reason the SPC factory is located in Shepparton.

Q13. How does the canned fruit get from the factory to shops?

Answers

Q1. (a) Retail. (b) The Murray River. (c) The farms need water from the river for the crops. (d) Recreation. **Q2.** (a) book; (b) cog; (c) ball; (d) shopping bag; (e) wheat; (f) office building. **Q3.** (a) recreation; (b) manufacturing; (c) retail; (d) farming; (e) education; (f) commercial. **Q4.** (a) Geelong. (b) Mildura. (c) Yes — its bar is much shorter (181 km vs 545 km). (d) A long trip (545 km). **Q5.** (a) Close to the people who use it — and close to young people and families. (b) Good soil, flat land and water. (c) Room to build, away from homes if noisy. **Q6.** Answers will vary. **Q7–Q10.** Answers will vary; see model answers. **Q11.** Manufacturing. **Q12.** It is close to the orchards that grow the fruit. **Q13.** By road and rail.

Model answers

Q6. *My school is located at my street because children can walk there from home.*

Q7. *The shop near my school is retail. It is located there because the families who live near the school are its customers.*

Q8. *The skate park should sit near the homes and the school. Young people live there, so it has good accessibility for the people who will use it.*

Q9. *Farming — the farms need the river's water for the crops. Recreation — the river park is by the water because people swim and boat there.*

Q10. *Best reason for Person A: workers can walk to work, so jobs are easy to get to. Best reason for Person B: the noise and smell stay away from homes, and the trucks have room. I would pick Person B's spot, because homes need quiet, and the workers can still get there by bus. (Other choices are fine — the reasons are what count.)*

Q11. Manufacturing — the factory makes a new thing (canned fruit) from the farm's fruit.

Q12. The factory is close to the orchards, so the fruit has a short trip and stays fresh.

Q13. By road and rail.

Sources (for the teacher)

Real facts used in this section, with the date each page was checked:

- Wikipedia, *Queen Victoria Market* — opened in March 1878; it fills the space between four streets — Victoria, Peel, Franklin and Elizabeth; described as the largest open-air market in the Southern Hemisphere. Checked 25 August 2026.
- Wikipedia, *Chadstone Shopping Centre* — opened 3 October 1960 at Malvern East; 530 stores; 10,944 car parks; described as the largest shopping centre in Australia. Checked 25 August 2026.
- Wikipedia, *Mildura* — on the Murray River in northwest Victoria; farm area started by the Chaffey brothers in 1887, with river water brought to the farms through channels; Langtree Avenue is the main shopping street; the area grows about 80% of Victoria's grapes and most of Australia's dried vine fruit; the river is used for boats and water fun. Checked 25 August 2026.
- Wikipedia, *Shepparton* — about 181 km north-north-east of Melbourne, on the Goulburn River; centre of the Goulburn Valley fruit-farm area; peaches, pears and apricots; strong dairy. Checked 25 August 2026.
- Wikipedia, *SPC Ardmona* — started by fruit growers in 1917; canning began February 1918; factory at Shepparton. Checked 25 August 2026.
- Wikipedia, *Eastern Beach, Geelong* — sea baths on Corio Bay, opened 28 March 1939, Art Deco style. Checked 25 August 2026.
- Wikipedia, *Geelong / Ballarat / Bendigo* — about 75 km southwest, 110 km northwest and about 150 km northwest of Melbourne. Checked 25 August 2026.

Distance figures in the bar chart are the straight-line distances given on those pages. Every map and diagram in this section is an original classroom drawing made for this book; outlines are simple and not to scale.

Why environments matter: vegetation and water for people and animals

Code

VC2HG4K03

Strand

Geographical Knowledge and Understanding

Draws on

.E01 .E02 .E03 .E04

Learn

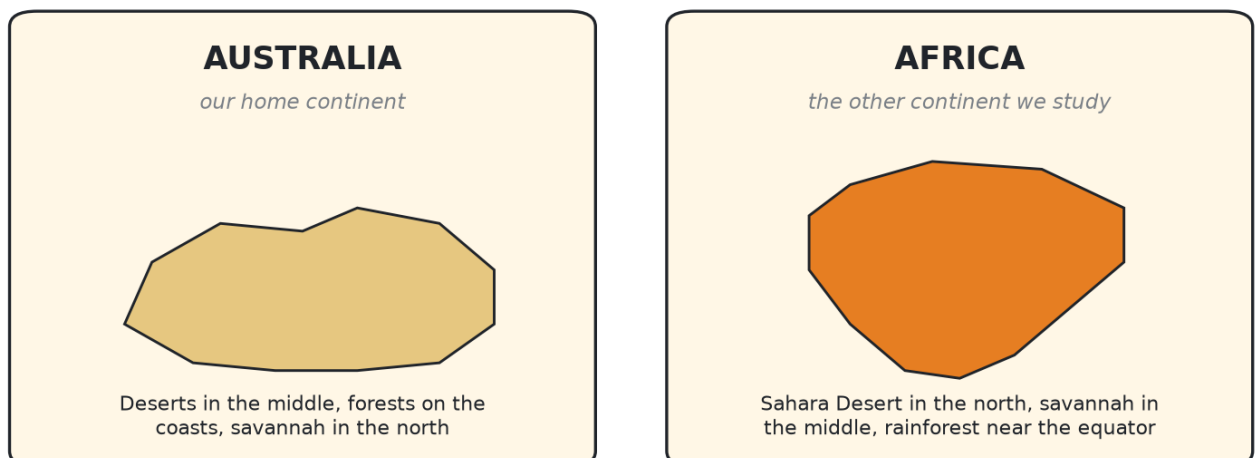
What is an environment?

An *environment* is the natural world around us. It is the land, the water, the plants and the animals. Two of the biggest gifts an environment gives are *natural vegetation* (the plants that grow wild) and *water*.

In this section we look at our home, **Australia**, and one other *continent*, **Africa**. A continent is one of the great land masses of the world.

Two continents, one big question

Why do environments matter to people and animals?



Shapes are simplified and NOT to scale. We compare what environments give people and animals on both continents.

Two panels, one for Australia and one for Africa, the two continents we compare.

The five main types of vegetation

Natural vegetation comes in five main types: **forest**, **woodland**, **savannah**, **grassland** and **desert**.

The five main types of vegetation

Natural vegetation is the plants that grow in a place without people planting them.

Type	What it is like	An Australian example	An African example
 Forest	Many tall trees growing close together	Mountain ash forest, Victoria	Congo rainforest
 Woodland	Trees spread out, with grass between them	Gum woodland, central Victoria	Miombo woodland
 Savannah	Tall grasses with a few scattered trees	Tropical savannah, north Queensland	Serengeti, Tanzania
 Grassland	Mostly grasses, very few trees	Grasslands near Melbourne	East African grasslands
 Desert	Very dry, with only a few plants	Simpson Desert, central Australia	Sahara Desert

The Victorian Curriculum names these five types: forest, woodland, savannah, grassland and desert.

A table of the five main types of vegetation with an example from Australia and from Africa for each.

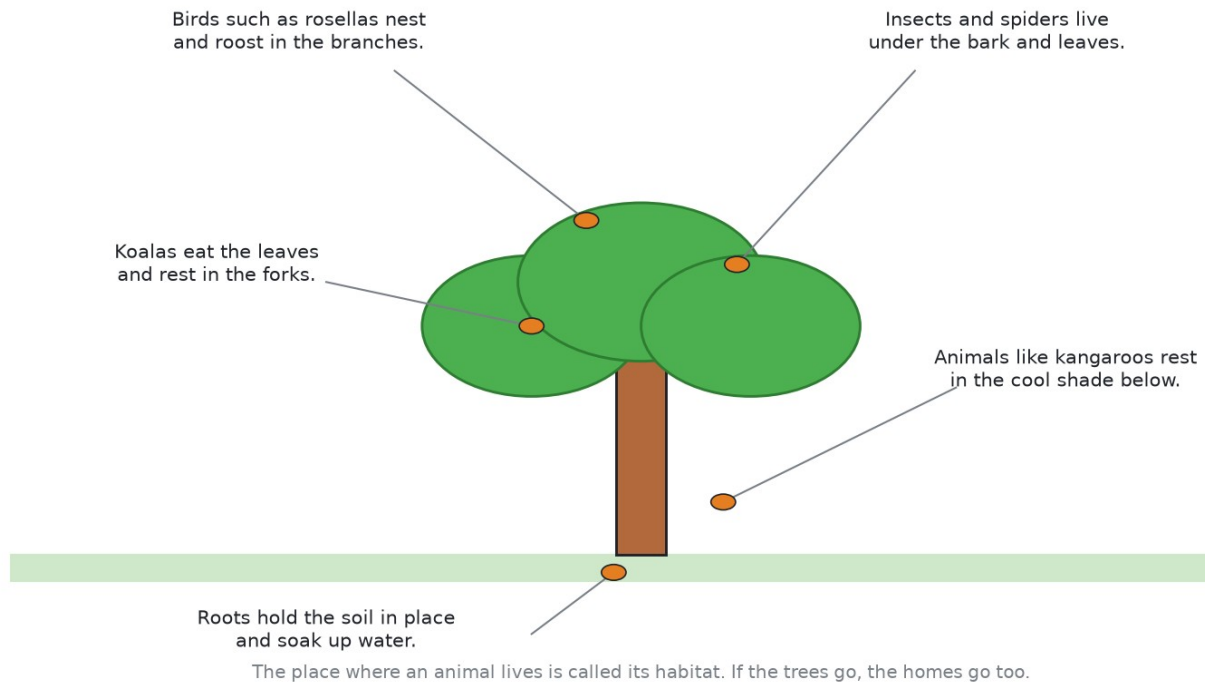
A **forest** has many tall trees close together. A **woodland** has trees spread out with grass between them. A **savannah** is tall grass with a few trees here and there. A **grassland** is almost all grass, with very few trees. A **desert** is very dry and has only a few plants.

Vegetation is a home

Plants are not just nice to look at. They are a home. The place where an animal lives is called its *habitat*. Trees give animals food, shade and a safe place to raise their young.

A tree is a whole neighbourhood

One eucalypt tree gives homes to many animals.



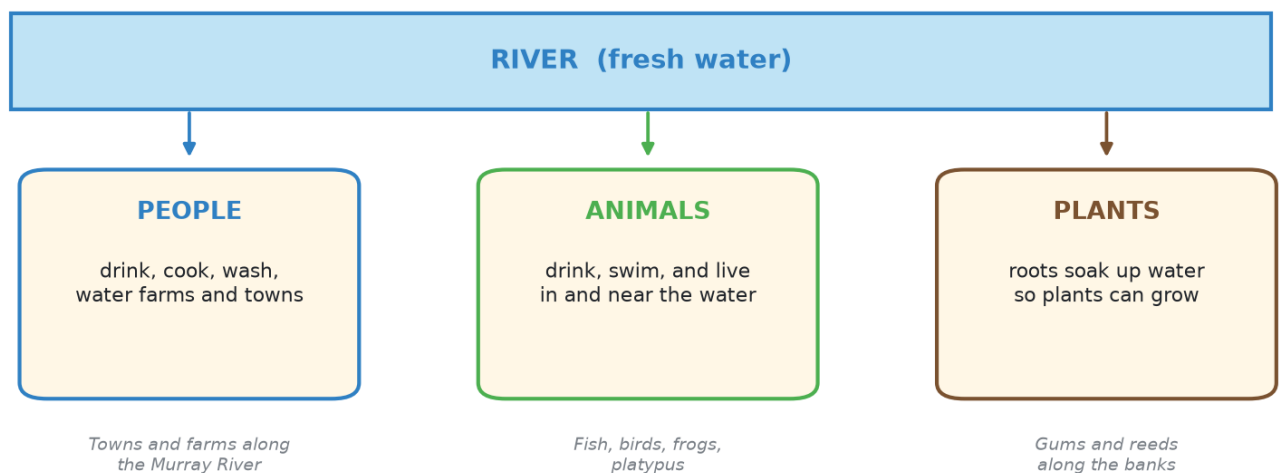
A labelled diagram of a eucalypt tree showing the birds, insects and animals that live on it.

Water matters

Every living thing needs water. People need it to drink, cook and wash, and to water farms. Animals need it to drink and to live in. Plants need it to grow.

One river, many thirsty users

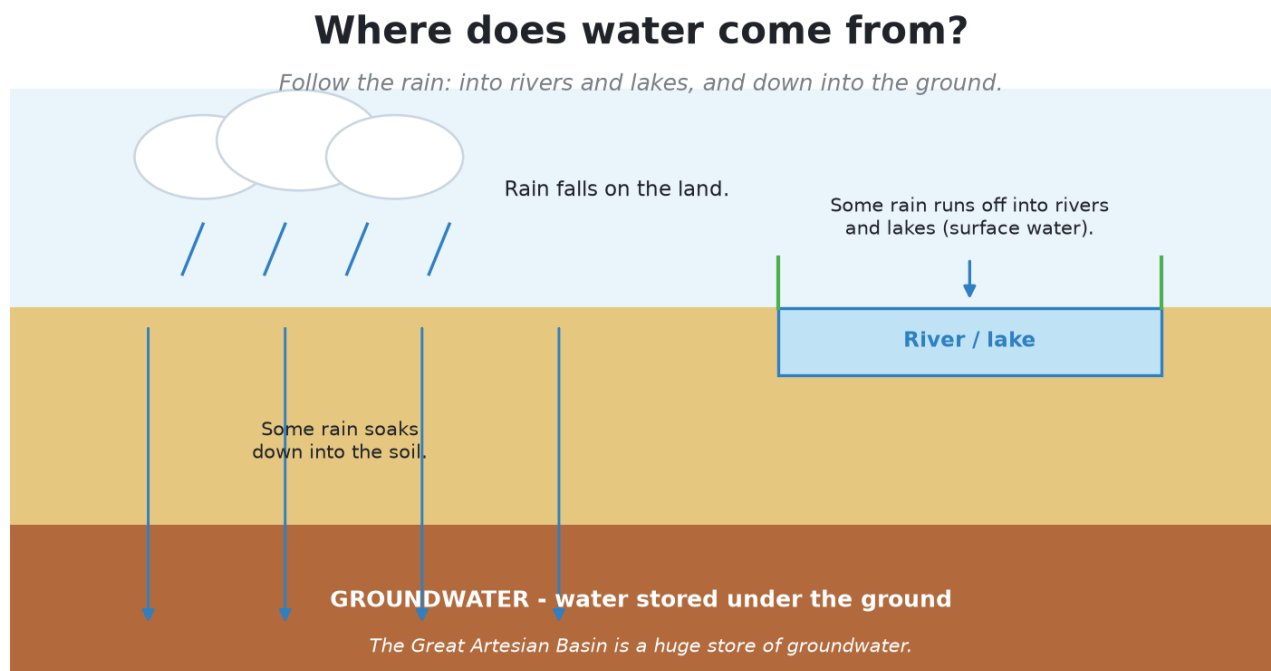
A river such as the Murray River gives water to people, animals and plants.



Water is precious in Australia, the driest inhabited continent. When a river runs low, every user feels it.

A diagram showing a river giving water to people, animals and plants.

Water comes from two main stores. *Surface water* is the water we can see, in rivers and lakes. *Groundwater* is water stored under the ground.



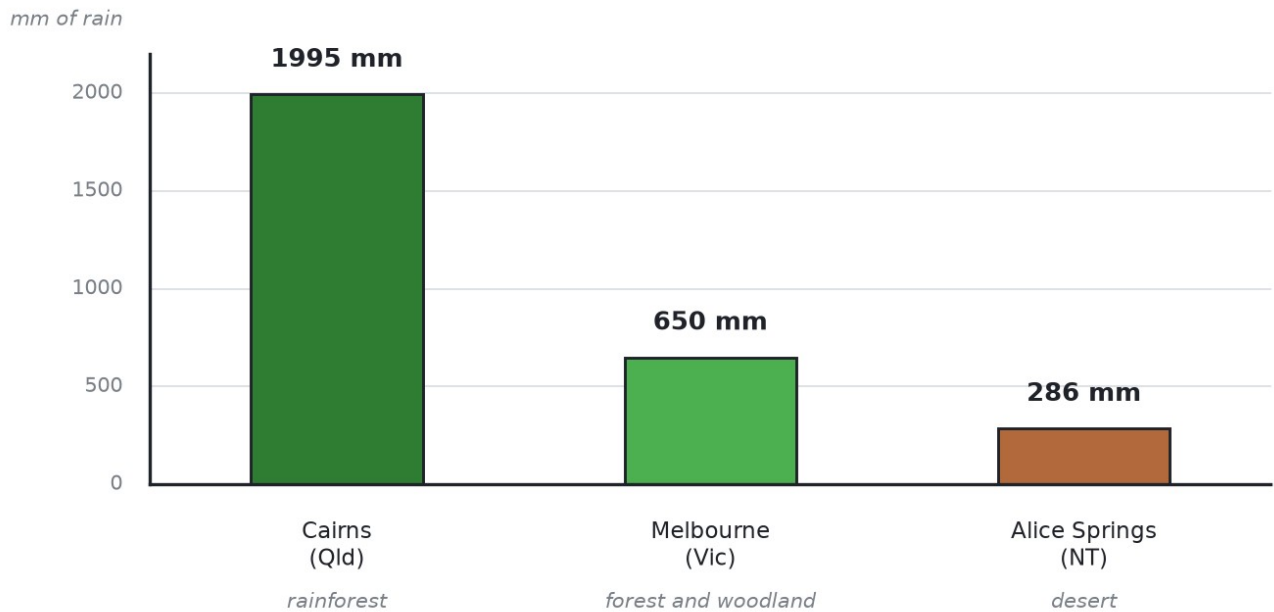
Surface water (rivers, lakes) and groundwater (under the ground) are the two stores of fresh water people and animals rely on.

A cross-section showing rain running into rivers and lakes and soaking down into groundwater.

Australia is the driest continent where people live, so water is precious. How much rain a place gets helps decide what can grow there.

More rain, more plants

Average rainfall in a year at three Australian places



Rainfall: Bureau of Meteorology long-term averages (retrieved 25 August 2026). Wet places grow forests; dry places are desert.

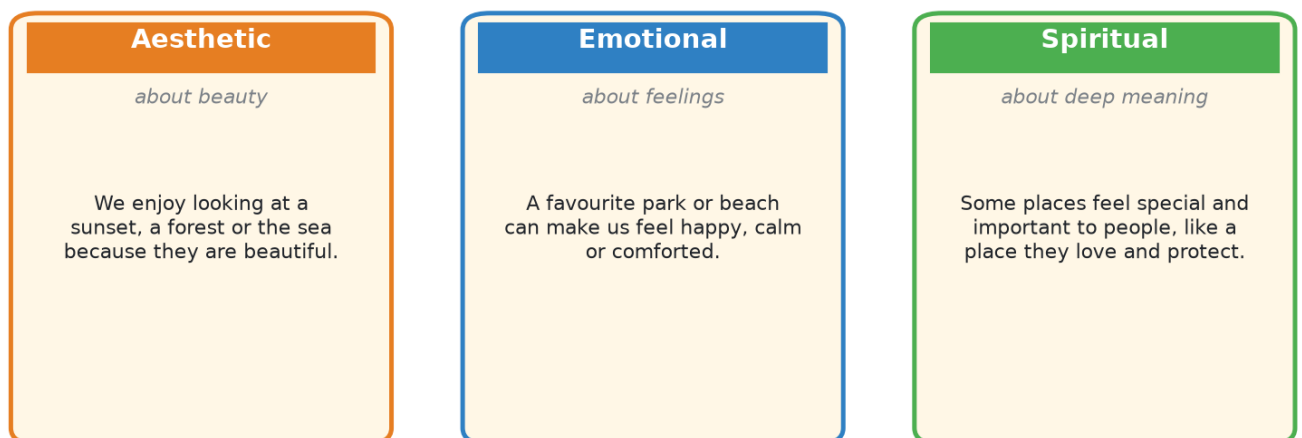
A bar chart of rainfall in a year for Cairns, Melbourne and Alice Springs, matched to the vegetation that grows there.

More than useful: how people feel about places

Environments matter to people for reasons that go beyond food and water. People can feel connected to a place in three ways.

More than useful: how people feel about places

People value environments for reasons that are not just about food or water.



Different people can feel connected to the same place in different ways.

Three panels showing aesthetic, emotional and spiritual connections people have with places.

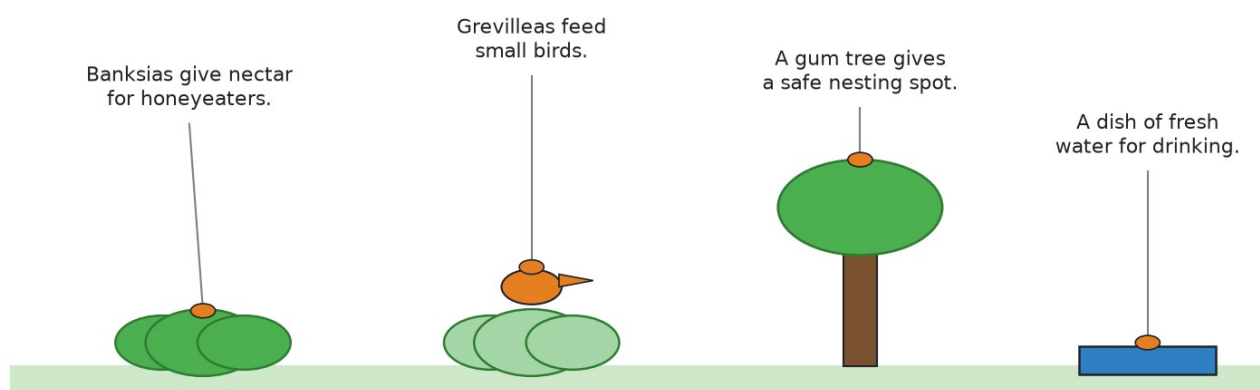
- **Aesthetic** means about beauty. We enjoy looking at a sunset, a forest or the sea because they are beautiful.
- **Emotional** means about feelings. A favourite park or beach can make us feel happy, calm or comforted.
- **Spiritual** means about deep meaning. Some places feel special and important to people, and they want to look after them.

Protecting environments

Because environments matter, people protect them. One strategy is to plant native plants that give birds food and shelter. This keeps a habitat safe.

A garden that helps birds

One way people protect habitat: plant native plants that birds need.



This is a real strategy used in schools and parks across Australia.

Protecting habitat can start small: the right plants give birds food, shelter and water.

A labelled diagram of a school bird garden with native plants, a gum tree and a water dish.

Worked examples

Worked example 1 — reading the rainfall chart (with help)

Use the rainfall bar chart to answer: which place is a desert, and how do you know?

Step	What to do	What we find
1	Find the bar with the least rain.	Alice Springs, 286 millimetres.
2	Ask: is that a lot of rain or a little?	It is a little. Less than half of Melbourne.
3	Match low rain to a vegetation type.	Very little rain means a desert.
4	Say it in a sentence.	Alice Springs is a desert because it gets very little rain.

Worked example 2 — why a place matters (with help)

Let us work out why the **Murray River** matters, step by step.

Step	Question	Answer
1	What water is here?	The Murray River, Australia's longest river.

Step	Question	Answer
2	What grows near it?	Gum trees and reeds along the banks.
3	Who uses it?	People in towns and farms; fish, birds and frogs.
4	Why does it matter?	It gives water and a home to people and animals.

Practice questions

Practice with help

Q1. Look at the vegetation table. Which type of vegetation has “many tall trees growing close together”?

Q2. Look at the vegetation table. Name the Australian example of a savannah.

Q3. Look at the tree habitat diagram. Name two animals that get a home from the tree.

Q4. Look at the water users diagram. Name two ways people use river water.

Q5. Match each feeling to its connection word: (a) “The beach makes me feel calm.” (b) “I love how the mountains look.” (c) “This place is very special to my family.”

Q6. Look at the bird garden diagram. Name one thing in the garden that helps birds.

Practice on your own

Q7. Choose one place in Australia and one place in Africa. For each, name the type of vegetation and one animal that lives there.

Q8. Explain why water is important to both people and animals.

Q9. A friend says a forest is only useful for wood. Give two other reasons a forest matters.

Q10. Read the model text below, then write 3–4 sentences about a place you know. Say what it looks like and why it matters.

A source to read and question

Source: the Murray–Darling Basin. The Murray–Darling Basin is Australia’s largest river system. It covers about 1,061,469 square kilometres. The Murray River is about 2,508 kilometres long. (*Murray–Darling Basin Authority and Geoscience Australia, retrieved 25 August 2026.*)

S1. Is the Murray River a source of surface water or groundwater? How do you know?

S2. Write one question you could ask about the Murray–Darling Basin.

Model text: describing why a place matters

Read it, then try your own about a place in Australia.

The Serengeti savannah

The Serengeti is a savannah in Tanzania, in Africa. The grass is tall and golden, and the trees are short and far apart. When the rain comes, the grass turns green, and huge herds of wildebeest and zebras move across the plains to find fresh food and water. Lions follow the herds. The savannah matters because it gives these animals food, water and a home.

What makes this a good description?

- It names the place and the type of vegetation.
- It describes what the place looks like.
- It says which animals live there and why.
- It ends by saying why the environment matters.

Now write 3-4 sentences about a place you know, like a park, beach or bush.

A model description of the Serengeti savannah with notes on what makes it a good description.

Answers

Q1. Forest. **Q2.** Tropical savannah, north Queensland. **Q3.** Any two of: birds (rosellas), insects and spiders, koalas, kangaroos. **Q4.** Any two of: drink, cook, wash, water farms and towns. **Q5.** (a) emotional, (b) aesthetic, (c) spiritual. **Q6.** Any one of: banksias (nectar), grevilleas (food), the gum tree (nesting), the water dish (drinking). **Q7.** Answers will vary; for example, Simpson Desert (desert, camel) and Serengeti (savannah, lion). **Q8.** People need water to drink, cook and wash; animals need it to drink and live in; without it, they cannot survive. **Q9.** Any two of: it is a habitat for animals; it gives shade and clean air; people love it for beauty or feelings. **Q10.** Answers will vary. **S1.** Surface water, because a river is water we can see. **S2.** Answers will vary.

Vegetation: what it does and where it grows

Curriculum trace (teacher-facing metadata — not student text)

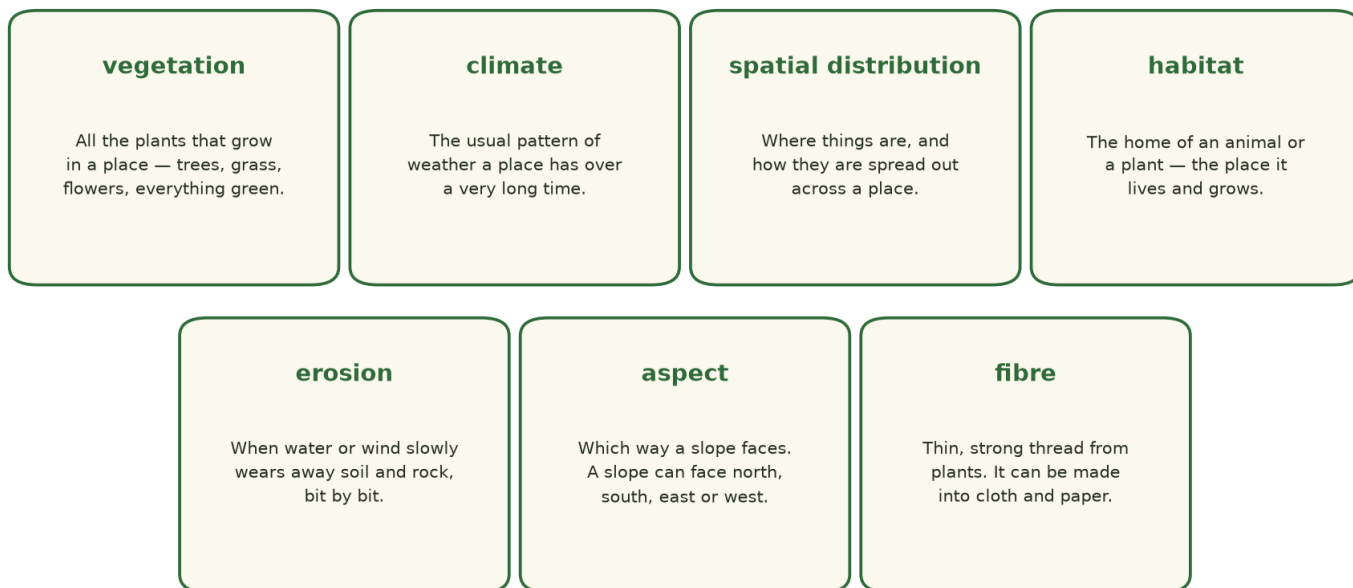
Code: VC2HG4K04 **Draws on:** VC2HG4K04.E01, VC2HG4K04.E02, VC2HG4K04.E03, VC2HG4K04.E04 (ids retained as linkage keys) **Exclusions (TOC §2A, D3):** the CD’s closing clause on how Aboriginal and Torres Strait Islander Peoples use vegetation is not taught in this book; VC2HG4K04.E05 is excluded. The remainder is taught through neutral, general content. **Boundary notes:** 2A content (equator, tropics, lines of latitude, hemispheres, compass-as-topic) and 2B’s formal climate types (equatorial, tropical, arid, semi-arid, temperate, Mediterranean) are not taught here. Climate gets a one-sentence definition only (E02 requires it); the world pattern is described in plain language (“hot middle of the world”, “cold ends of the world”). This section seeds 2C.

In this section

We find out what **vegetation** is — all the plants that grow in a place: trees, grass, flowers, everything green. We look at the jobs vegetation does for us and for the land. We meet the five main types of vegetation, and we look at where in Australia and in the world each type grows. That “where” is called the **spatial distribution** — where things are, and how they are spread out across a place.

Words to know

We say what each word means before we use it. Keep these meanings in mind.



These words are defined again where they first appear in the section.

Figure 1 — Words to know. We say what each word means before we use it.

The jobs that vegetation does

Vegetation is not just there to look at. It does many jobs for us and for the land.

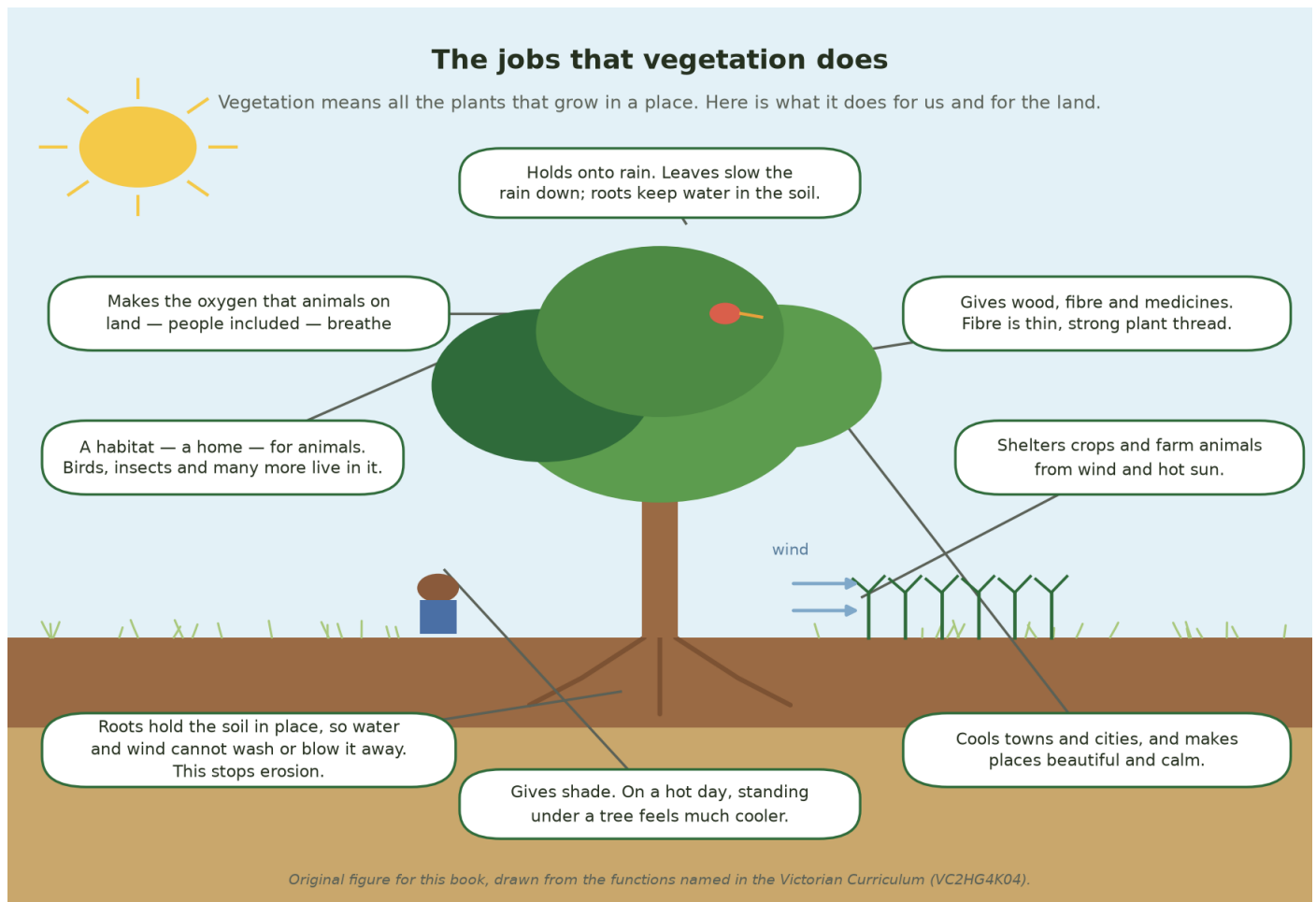


Figure 2 — The jobs that vegetation does.

Here are the jobs from the picture, in words:

- Vegetation makes the **oxygen** that animals on land — people included — breathe. Oxygen is a gas in the air that living things need.
- It holds onto rain. Leaves slow the rain down, and roots help water soak into the soil.
- It holds the soil in place, so water and wind cannot wash or blow it away. This stops **erosion** — when water or wind slowly wears away soil and rock, bit by bit.
- It is a **habitat** — a home — for animals. Birds, insects and many more live in it.
- It shelters crops and **livestock** — farm animals such as sheep and cattle — from wind and hot sun.
- It gives shade for people. On a hot day, standing under a tree feels much cooler.
- It cools **urban** places — cities and towns — and makes places beautiful and calm.
- It gives us wood, **fibre** and **medicines**. Fibre is thin, strong plant thread. It can be made into cloth, string and paper.

The five main types of vegetation

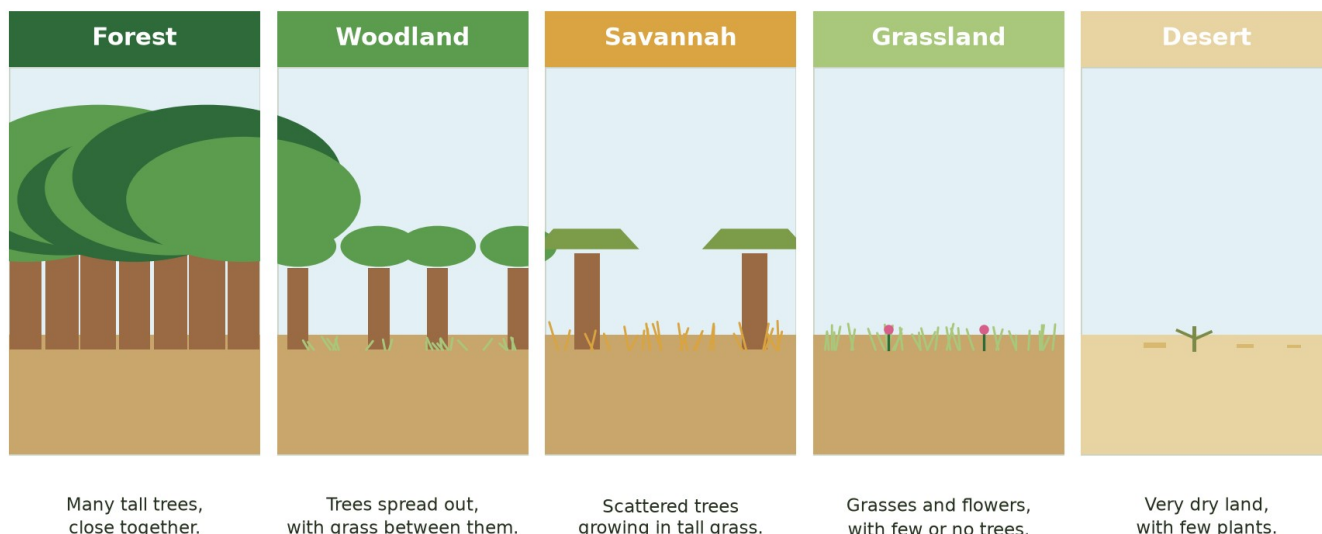
There are five main types of vegetation: **forest**, **woodland**, **savannah**, **grassland** and **desert**.

- A **forest** has many tall trees, close together. Forests are often wet.
- A **woodland** has trees spread out, with grass between them.
- A **savannah** is hot grassland with scattered trees. It has plenty of rain, but a long dry season.

- A **grassland** is covered in grasses and flowers, with few or no trees.
- A **desert** is very dry land, with few plants.

The five main types of vegetation

Each picture shows what the plants look like in that type.



Original figure for this book. The five types are the ones named in the Victorian Curriculum (VC2HG4K04).

Figure 3 — What the five main types look like.

The five main types, side by side

Use this table to help you sort the types. Every example place below is a real place.

Type	What it is like	Where in Australia	Where in the world
Forest	Many tall trees, close together. Often wet.	East coast and ranges, Tasmania, southwest corner; rainforest near Cairns	The Amazon (South America), the Congo (Africa)
Woodland	Trees spread out, with grass between them.	A wide band around the deserts of central Australia	Open tree lands in parts of Africa and India
Savannah	Scattered trees growing in tall grass.	The north: the Kimberley, the Top End, Cape York	The Serengeti (Africa), parts of Brazil
Grassland	Grasses and flowers, with few or no trees.	Inland plains; the Western Volcanic Plains near Melbourne	The Great Plains (North America), the Pampas (South America)
Desert	Very dry land, with few plants.	Centre and west: Great Victoria Desert, Simpson Desert	The Sahara (Africa), the Gobi (Asia)

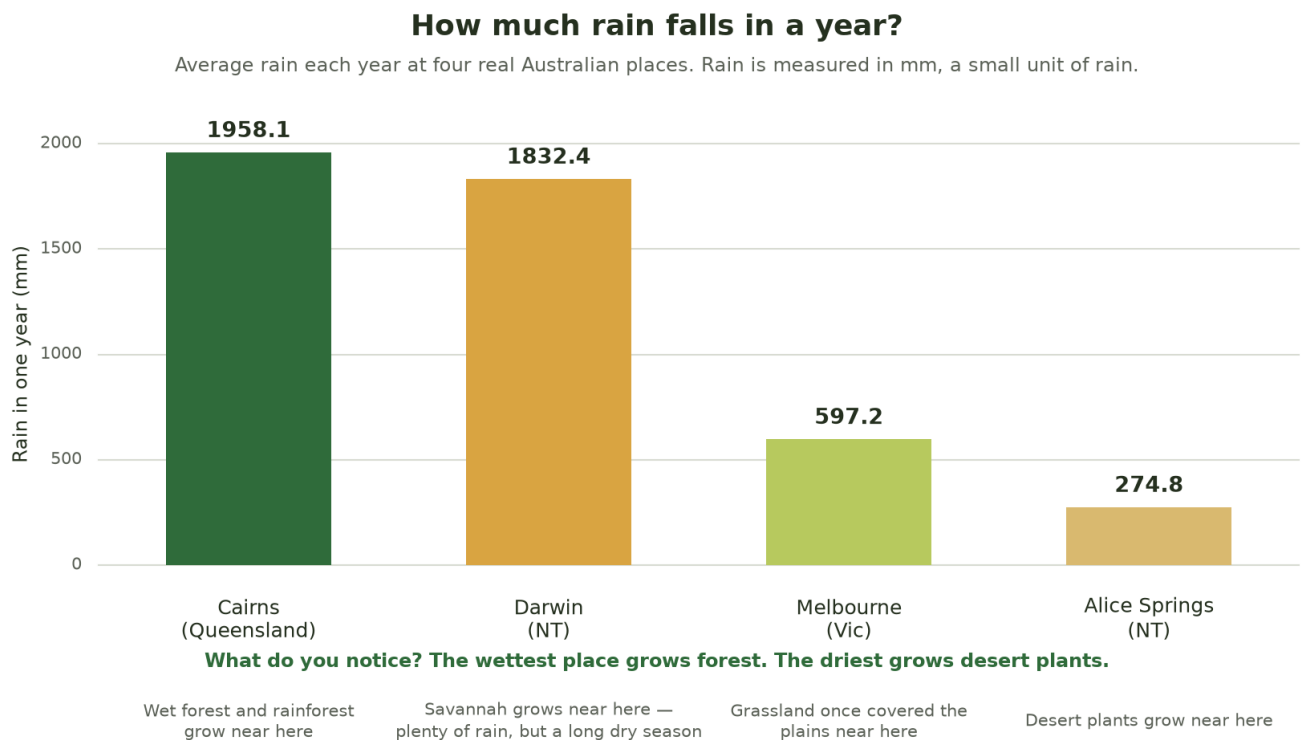
'Vegetation' means all the plants that grow in a place. The example places are real, named places.

Figure 4 — The five main types, side by side. Every example place is a real place.

Climate and vegetation

The **climate** of a place is the usual pattern of weather the place has over a very long time. Some places are hot and wet. Some are hot and dry. Some are cool. The climate of a place has a lot to do with which type of vegetation grows there.

One good clue is rain. The graph below uses real rain numbers from four real Australian places.



Source: Bureau of Meteorology long-term averages (climate normals), retrieved 25 August 2026.

Figure 5 — How much rain falls in a year at four real Australian places.

Look across the graph. Cairns gets a lot of rain, and wet forest and rainforest grow near there. A rainforest is a kind of forest that is wet all year round. Alice Springs gets very little rain, and desert plants grow near there. The wetter a place is, the more plants grow, and the taller they grow.

Where the types grow in Australia

Now look at the whole of Australia. The map below is a simple one made for this book. It shows the big pattern, not every plant.

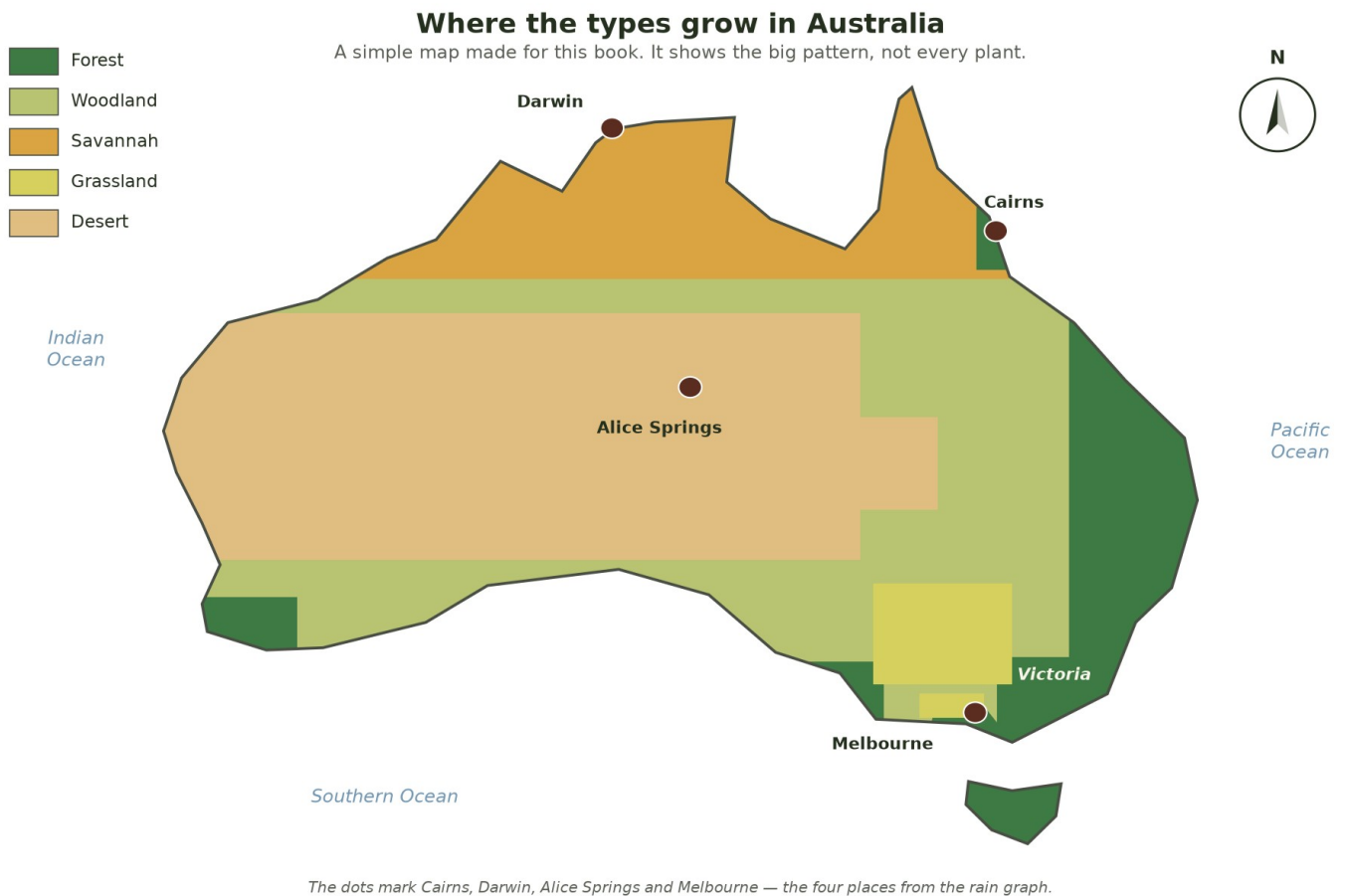


Figure 6 — Where the types grow in Australia.

Read the map with the legend:

- **Savannah** grows across the north of Australia — the Top End, the Kimberley and Cape York.
- **Desert** grows in the centre and west — the Great Victoria Desert and the Simpson Desert.
- **Woodland** grows in a wide band around the deserts.
- **Forest** grows along the east coast, in the south-east (including Victoria and Tasmania), and in the southwest corner. Rainforest grows near Cairns.
- **Grassland** grows on the inland plains of the south-east, and it once covered the plains near Melbourne.

Victoria is a good place to see the pattern close up. Most of Victoria is forest and woodland, and the state has about 3.4 million hectares of native forest — forest of trees that belong to that place. One **hectare** is about the size of a football field.

How much forest is there?

Forests are the type of vegetation we hear about the most. Here is how much forest there is in the world, in Australia and in Victoria.

How much forest is there?

Forest area in millions of hectares. One hectare is about the size of a football field.



The world's forests are huge. Australia's forests are a small share of them — and Victoria's are smaller again.

Victoria's bar is drawn a little wider than its true share so that you can see it.

Figure 7 — How much forest is there? One hectare is about the size of a football field.

The world's forests are huge. Australia's forests are a small share of them — and Victoria's are smaller again.

The big pattern across the world

The same types grow in other parts of the world too, and they follow bands of climate. Travel away from the hot middle of the world towards one cold end, and the bands come in this order.

The big pattern of vegetation across the world

Vegetation follows bands of climate. This model shows the bands from the hot middle of the world to one cold end.
the hot middle of the world



The same bands repeat on the other side of the hot middle too. Australia sits with its deserts near the dry band.

Figure 8 — The big pattern of vegetation across the world.

The same bands repeat on the other side of the hot middle too. Australia sits with its deserts near the dry band. That is why so much of Australia is dry.

Vegetation in a local place

Vegetation is not only in faraway places. It grows in your own town as well — in parks, streets, gardens, along creeks, on farms and in school yards. Mapping where it grows in your own place is what geographers do. Geographers are people who study places.

The map below is an example. It is not a real place. Use it to help you map your own place.

Where vegetation grows in a local place — an example map

This example map is not a real place. Use it to help you map your own place.

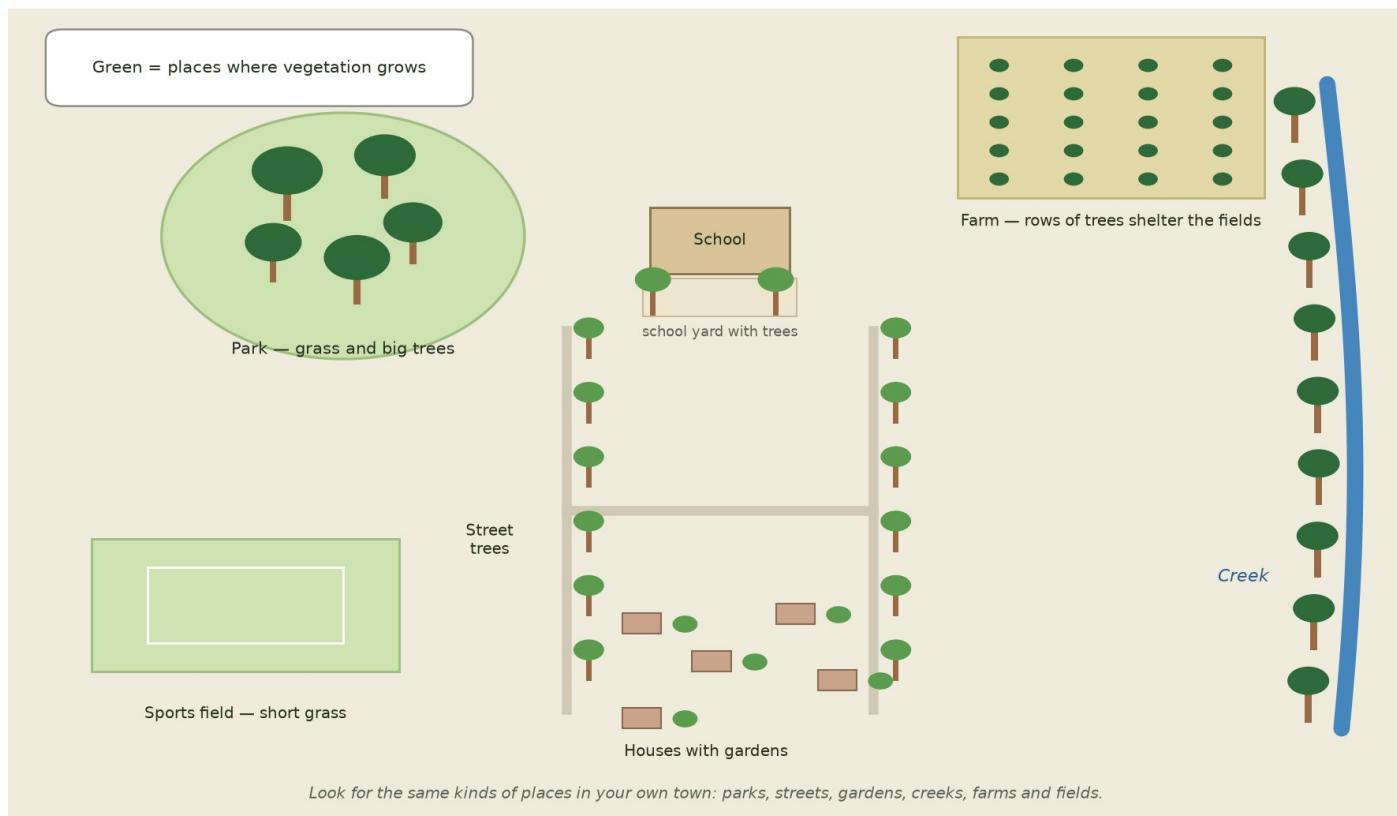


Figure 9 — Where vegetation grows in a local place (an example map).

Look at the example map. The green spots are places where vegetation grows. Even in a town, most of the green is near water (the creek) or put there by people (parks, gardens, street trees, farm rows).

More than climate: soils, aspect and slope

Climate sets the big pattern. But in one small place, three more things change what grows: **soils**, **aspect** and **slope**. Aspect means which way a slope faces — north, south, east or west.

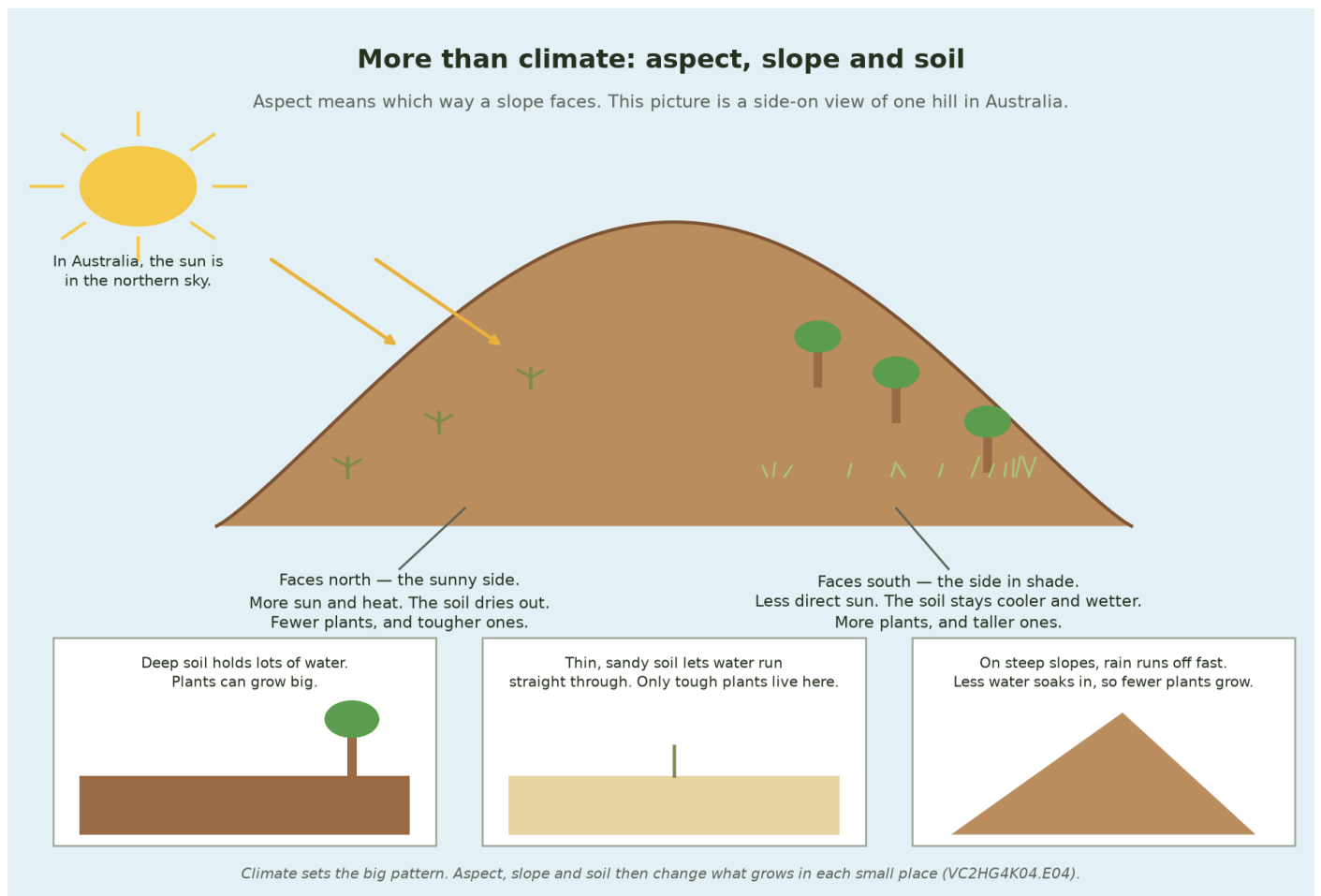


Figure 10 — More than climate: aspect, slope and soil.

In Australia, the sun tracks through the northern sky. So a slope that faces north gets more direct sun and heat. Its soil dries out, and fewer plants grow there. A slope that faces south stays cooler and wetter, and more plants grow there.

Soil matters too. Deep soil holds lots of water, so plants can grow big. Thin, sandy soil lets water run straight through, so only tough plants live there. And on steep slopes, rain runs off fast. Less water soaks in, so fewer plants grow.

Source to read

Source A — How much forest is there? (real numbers, real reports)

1. Forests cover about 4,060 million hectares of the world. That is about 31 out of every 100 parts of the world's land. (*FAO, Global Forest Resources Assessment 2020*)
2. Australia has about 134 million hectares of native forest. That is about 17 out of every 100 parts of Australia's land. (*ABARES, Australia's State of the Forests Report 2023*)
3. Victoria has about 3.4 million hectares of native forest. (*Victorian Government, State of the Forests reporting*)

Remember: one hectare is about the size of a football field.

Worked examples

Worked example 1 — What type of vegetation grows near Alice Springs? Use Figure 5 and Figure 6.

1. Read the rain number for Alice Springs in Figure 5: 274.8 mm in a year.
2. Ask: is that a lot of rain? No — it is the least of the four places. Cairns gets about seven times as much.
3. Little rain means few plants. So we expect dry-country plants.
4. Check Figure 6. Alice Springs sits in the middle of Australia, in the desert zone.

Answer: Desert vegetation grows near Alice Springs, because very little rain falls there.

Worked example 2 — *Which is bigger: the world's forest, Australia's forest, or Victoria's forest? Use Figure 7.*

1. Read the three bars: world 4,060 million hectares; Australia 134 million hectares; Victoria 3.4 million hectares.
2. Line the numbers up: 4,060 is far bigger than 134, and 134 is far bigger than 3.4.

Answer: The world's forest is the biggest. Australia's forest is a small share of it, and Victoria's forest is smaller again.

Practice questions

Practice with help

- Q1.** Look at Source A. About how many hectares of native forest does Australia have?
- Q2.** Look at Source A. Which has more native forest: Australia or Victoria? How can you tell?
- Q3.** Look at Figure 1. Which word means “all the plants that grow in a place”?
- Q4.** Look at Figure 2. Name two jobs vegetation does for animals.
- Q5.** Look at Figure 5. Which of the four places gets the most rain? Which gets the least?
- Q6.** Look at Figure 6. What type of vegetation grows across the north of Australia?

Practice on your own

- Q7.** Look at Figure 4. Name one place in the world, outside Australia, where savannah grows.
- Q8.** Grass and trees cover a bare hillside. Explain how they stop erosion.
- Q9.** A town plants trees along its streets. Name two jobs those trees do for the town.
- Q10.** In Australia, one side of a hill faces north and the other faces south. Which side has drier soil? Why?
-

Answers

Source A check: (i) About 4,060 million hectares of the world is forest — about 31 parts in every 100 of the world's land. (ii) Australia's share is about 17 parts in every 100 of its land, and Victoria has about 3.4 million hectares.

Q1. About 134 million hectares.

Q2. Australia. 134 million hectares is far more than 3.4 million hectares.

Q3. Vegetation.

Q4. Any two of: it makes the oxygen they breathe; it is a habitat (a home) for them; it shelters livestock from wind and hot sun.

Q5. Most: Cairns (1,958.1 mm). Least: Alice Springs (274.8 mm).

Q6. Savannah.

Q7. The Serengeti (Africa) — or parts of Brazil.

Q8. Roots hold the soil in place, and leaves slow the rain down, so water cannot wash the soil away and wind cannot blow it away.

Q9. Any two of: they give shade; they cool the town; they make the streets beautiful and calm; they give habitat to birds and insects.

Q10. The north-facing side. In Australia the sun is in the northern sky, so the north side gets more direct sun and heat, and its soil dries out.

Sources (teacher-facing)

- Victorian Curriculum 2.0, Geography: VC2HG4K04 and elaborations E01–E05 (codes only; VCAA export VC2_AS-CD-Elab_29-07-2026.csv). E05 excluded per TOC §2A/D3; ids retained as linkage keys.
- Rainfall normals: Bureau of Meteorology long-term averages (climate normals) — Cairns 1,958.1 mm; Darwin 1,832.4 mm; Melbourne (Olympic Park) 597.2 mm; Alice Springs 274.8 mm — as tabulated in the Wikipedia climate tables citing BOM, retrieved 25 August 2026.
- World forest area: FAO, *Global Forest Resources Assessment 2020* — 4.06 billion hectares, about 31% of the world's land area.
- Australia native forest area: ABARES, *Australia's State of the Forests Report 2023* — about 134 million hectares, about 17% of Australia's land area.
- Victoria native forest area: Victorian Government State of the Forests reporting — about 3.4 million hectares.
- All ten figures are original, drawn from primitives for this book (SOURCE_USE Rule 3, TOC D4). The Australia map is a simplified teaching outline, not for navigation. The local-place map is a made-up example (TOC D9).