

Mathematics Level 7

Chapter 4 — Geographical inquiry: questions, information and data

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Contents

Section	Page
Making good questions for a geographical inquiry	2
Finding, gathering and recording information and data	13
Showing and reading information and data in different formats	24

Making good questions for a geographical inquiry

Geography 3 · Chapter 4 · 4A

Owns: VC2HG4S01 (Geographical Skills — Geographical inquiry) **Draws on:** VC2HG4S01.E01 · VC2HG4S01.E02 · VC2HG4S01.E04 · VC2HG4S01.E05 (VC2HG4S01.E03 is not here — TOC §2A)

This section gives Chapter 4 its starting line. Our questions come from the places we met in Chapters 1–3: our own place (→ 1A), why activities and venues are where they are (→ 1B), and Australia next to another continent (→ 2A). The asking happens here; the finding out happens in 4B; the showing happens in 4C and 5A.

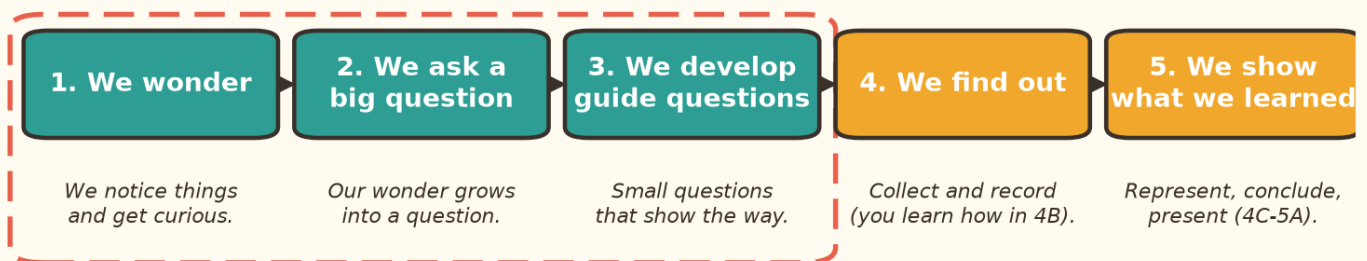
Teacher note. Read the pages together first. Every task can be started aloud: children say their questions, then write or draw them with a buddy if they wish. Model questions are written in child voice on purpose — read them as a child would say them. “Answers will be different” is most often true here; the possible answers at the end show the shape of a good response, not the only one.

What we are learning

Geographers are askers. A **geographer** is a person who studies places and environments. A geographer finds out about places by asking questions about them. The places might be a park, a creek, a town, a continent. The questions might be *where*, *what*, *why* or *how*. When we find out about places and environments by asking good questions and then looking for the answers, Geography gives that whole job a name: a **geographical inquiry**. In this book we use that name to mean exactly that — finding out about places and environments, step by step.

The inquiry path: asking questions is step one

This part is 4A: identifying and developing questions



A geographical inquiry is a careful way of finding out about places and environments. It starts with good questions.

A path of five steps across the page: we wonder, we ask a big question, we develop guide questions, we find out, we show what we learned; the first three steps sit inside a red dashed frame labelled “This part is 4A”

Questions start with wondering. You look at a place and you notice things. *That creek has birds in it. Why does the park have big trees on one side and not the other? Where does our water come from?* Those little wonderings are the seeds. A wondering is not a question yet — but it can grow into one.

To develop means to grow. When we **develop** a question, we grow it and make it better. First a wondering grows into a **big question**. Then the big question grows into small **guide questions** — the small steps that show the inquiry the way.

- Wondering: *our taps have water in them.*
- Big question: *where does the water in our taps come from?*

- Guide questions: *where is the water kept before it gets to us? How does it travel to our town? What would our town do without it?*

A good guide question. Not every question can lead a geographical inquiry. A good guide question passes three checks.

A good guide question ...



**is about a place, its people
or its environment**

*"Where is our school garden?" yes!
"What is my name?" not about a place*



is a question we can answer

*"How many bins are on our
school grounds?" we can count them!*



**tells us where to look
and how to find out**

*a map, a book, a photo, a count,
or asking someone who knows*

Guide questions are the small steps that lead a big inquiry.

A checklist poster with three checks: a good guide question is about a place, its people or its environment; it is a question we can answer; and it tells us where to look and how to find out

Four families of questions. In this book our questions come from four families. Each family is a place to start wondering, and each one pairs with a section we have already met.

Four families of geographical questions

My local environment

"What plants and animals live in the creek near our school?"

(pairs with 1A)

How we depend on the environment

"Where does the water in our taps come from?"

(pairs with 1A - 1C)

Why activities and venues are where they are

"Why is the sports oval next to the park?"

(pairs with 1B)

Australia and other continents

"What deserts are in Australia and in South America?"

(pairs with 2A)

Each family gives us a place to start wondering.

Four cards, one for each question family: my local environment (pairs with 1A), how we depend on the environment (pairs with 1A and 1C), why activities and venues are where they are (pairs with 1B), and Australia and other continents (pairs with 2A), each with a model question

Before we use these families, two words want a friendly hello. The **environment** is everything around a place: the land, the water, the air, the plants and the animals. And we **depend on** the environment — we need it. It gives us our water and our food and our wood, and it takes our wastes. We need it every single day. (Chapters 1–3 showed us both of those ideas; here they are places to ask from.)

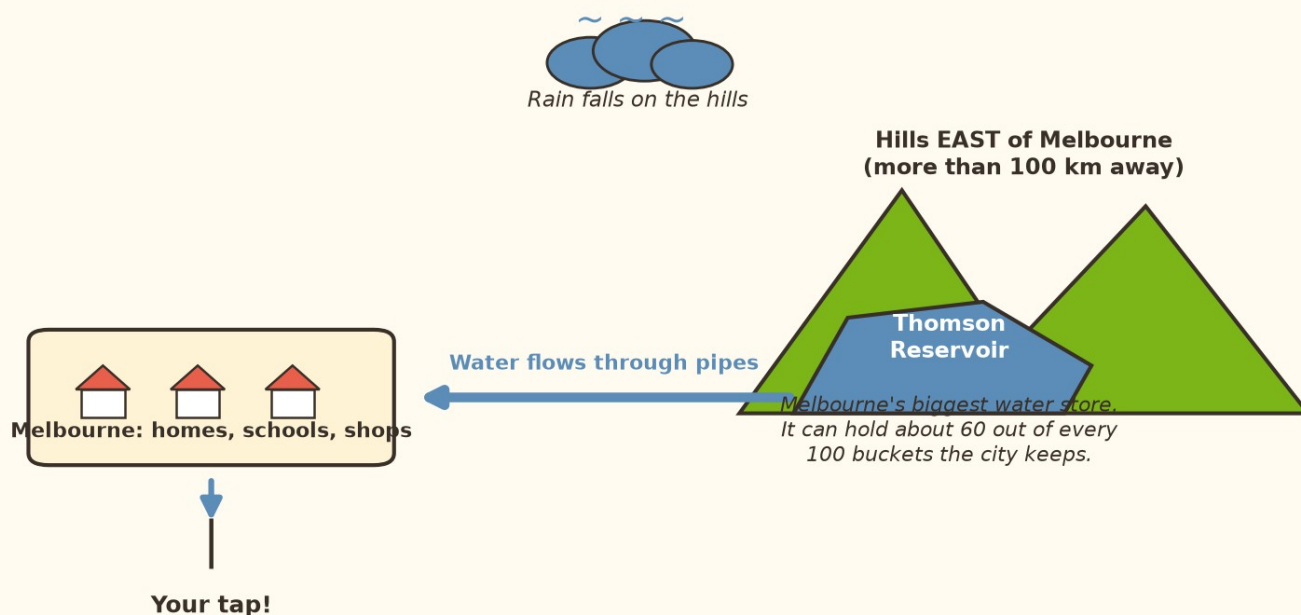
Worked examples

Example 1 — step by step: developing questions about what we depend on

(VC2HG4S01.E01 · VC2HG4S01.E02)

The class wondered: *our taps have water in them*. Watch the wondering grow into guide questions.

Where does Melbourne's tap water come from?



Our own simple picture to help us ask questions - not a real map.
Source for the facts: Melbourne Water, 25 August 2026.

A simple original picture, not a real map: rain falls on hills east of Melbourne, water is kept in Thomson Reservoir, the city's biggest water store, and flows through pipes to homes, schools and shops, and out of your tap

What we do

We look at the picture and say what we notice: hills, rain, a big water store, a city far away.

We grow the wondering into a big question: *Where does the water in our taps come from?*

We develop guide questions: *Where is the water kept before it reaches us? How far away is it? How does it travel to us?*

We add “how will we find out?” to each guide question: a map, a book, a photo, asking someone who knows.

Why it works

Questions grow from things we can see. Seeing first is step one. (VC2HG4S01.E01)

A big question gives the whole inquiry one direction.

Guide questions are small steps. Each one tells us where to look. (VC2HG4S01.E02)

A question only guides an inquiry if it can be answered.

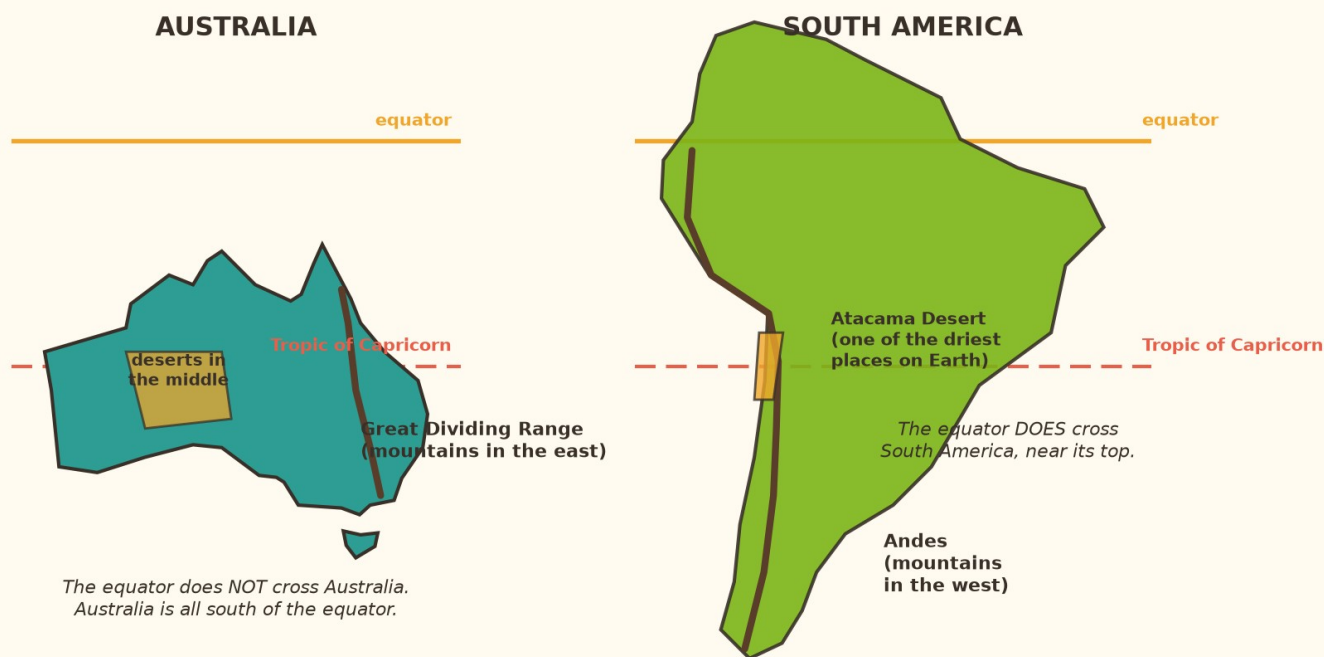
A little true fact makes the picture real: most of Melbourne's tap water is kept in the hills east of the city. The biggest store is Thomson Reservoir — a **reservoir** is a lake where water is kept for people to use — and it can hold about 60 out of every 100 buckets the city keeps. (Fact source: Melbourne Water, 25 August 2026.) So one more guide question grows all by itself: *What would Melbourne do in a long dry time?*

Example 2 — step by step: developing same-and-different questions about

continents (VC2HG4S01.E05)

The class wondered: *is South America a bit like Australia?* A **continent** is one of the great big land areas of the world — Australia is one, South America is one, Africa is one. Watch the class use two simple maps to develop questions.

Two continents to wonder about: Australia and South America



Simple outline maps we drew for this book - not to scale. The brown lines show real mountain ranges.

Simple original outline maps of Australia and South America, not to scale, with the equator and the Tropic of Capricorn shown across, the Great Dividing Range in eastern Australia, the Andes in western South America, and a desert patch marked on each continent

What we do

We find the lines first. The **equator** is a line people draw around the middle of Earth, on maps and globes. The **Tropic of Capricorn** is another line, south of the equator. We check each continent against them.

We look for the SAME: both have mountains; both have deserts; both are crossed by the Tropic of Capricorn.

We look for the DIFFERENT: Australia's mountains run in the east, South America's run in the west; the equator crosses South America but not Australia.

We ask WHY, and we plan HOW: *why might the deserts be in different places? How can we find out — a map, a book, a photo?* (VC2HG4S01.E05)

Why it works

Where a continent sits on the globe is a fact we can see. Same-or-different questions start from things we can see.

"What is the same?" is the first half of same-and-different. It gives the inquiry its first questions.

"What is different?" is the other half.

A question that ends with "how will we find out?" is ready to guide an inquiry. 4B is where we go and find out.

Here is the class’s finished chart.

Model: our same-and-different chart for Australia and South America			
What is the SAME?	What is DIFFERENT?	WHY might that be?	HOW can we find out?
Both have mountains.	The mountains are in different places: east in Australia, west in South America.	We need to find out more. Maybe look at maps and photos.	Look at a map. Read a book. Ask our teacher.
Both have deserts.	Australia's deserts are in the middle. South America's Atacama Desert is on the west side.	Maybe it is about where the mountains and the oceans are.	Look at a map with the deserts on it.
Both are crossed by the Tropic of Capricorn.	The equator crosses South America but NOT Australia.	That is about where each continent sits on the globe.	Look at a globe. Use the line to check.

Same or different? Then ask WHY - then plan HOW to find out.

A model chart with four tall boxes side by side — what is the same, what is different, why might that be, how can we find out — filled in for Australia and South America: mountains in different places, deserts in different places, and the equator crossing one continent but not the other

Practice tasks

With help

Q1. Sort the cards (VC2HG4S01 . E01). Look at the eight question cards in the picture below. Sort them into two piles: *can lead a geographical inquiry* and *cannot (yet)*. For each card you sort “yes”, say which check from our checklist it passes first.

Question cards: which ones can lead a geographical inquiry?

1. Where does our school's water come from?	2. What did you have for lunch?	3. Why is the shop on the corner of Main Road?	4. What is my dog's favourite game?
5. What grows in the park near our school?	6. Which way is the library from our classroom door?	7. Is a sandwich a kind of pizza?	8. How is Australia different from South America?

Sort the cards: geographical question OR not a geographical question (yet).
A geographical question is about places, people and environments -
and we can find it out by looking, counting, reading or asking.

Eight question cards to sort: where does our school's water come from; what did you have for lunch; why is the shop on the corner of Main Road; what is my dog's favourite game; what grows in the park near our school; which way is the library from our classroom door; is a sandwich a kind of pizza; how is Australia different from South America

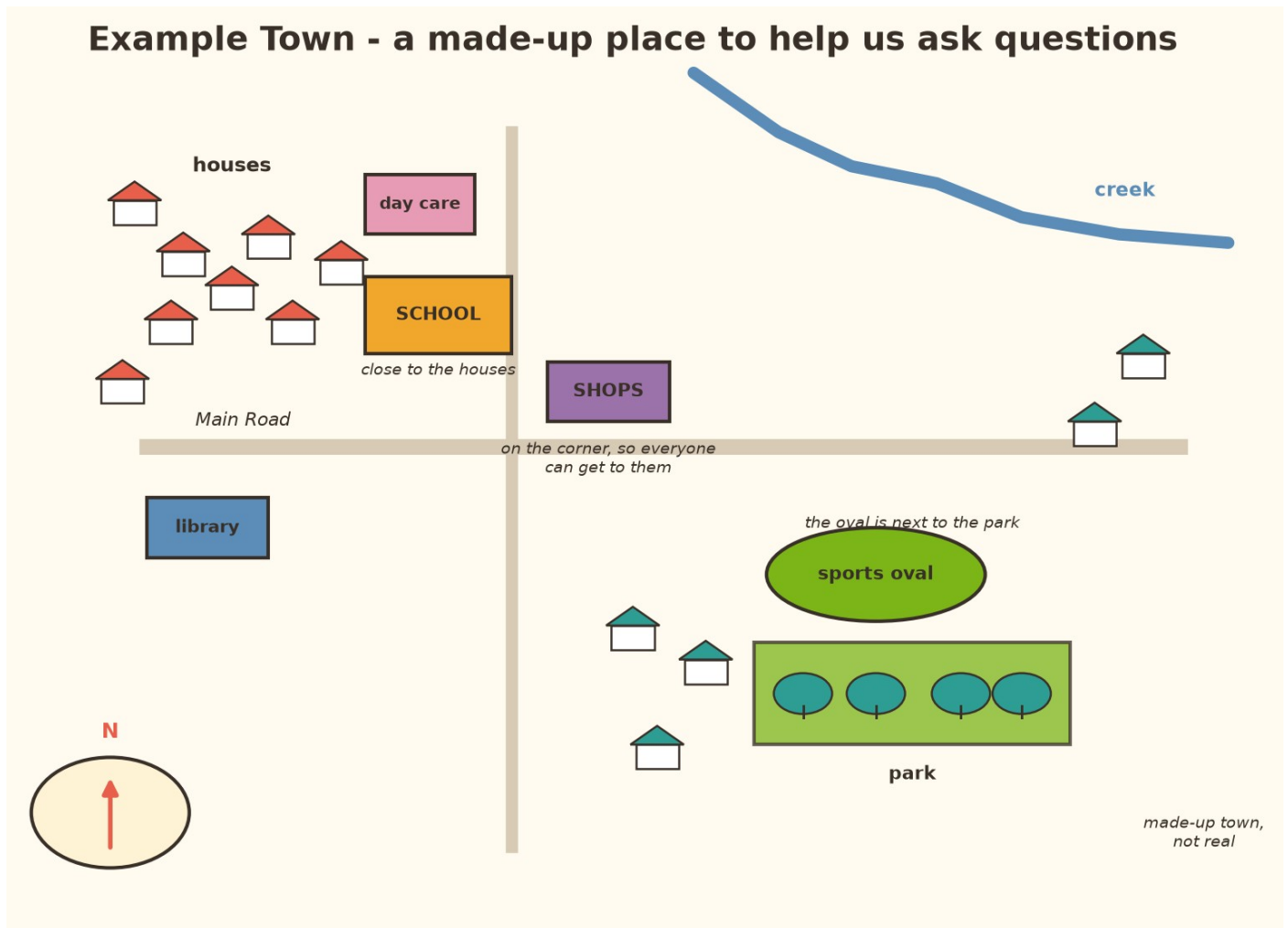
Q2. Finish the starters (VC2HG4S01 . E02). Finish each starter so it becomes a question about YOUR place. Then add “how will we find out?”

1. Where does the water in our taps come from, and ...?
2. The food in our lunch boxes came from ... — which parts grew outside?
3. The wood and the paper in our classroom came from ...?
4. What does the environment near our school give us that we need?

Q3. Grow the wonderings (VC2HG4S01 . E01). Each line below is a wondering, not a question. Grow each one into a big question, then into two guide questions.

1. *There are birds in the creek near our school.*
2. *One side of the park has big trees and the other side has no trees at all.*
3. *Our town has a street that is full of shops.*

Q4. Why is it there? (VC2HG4S01 .E04) Look at Example Town below. A **venue** is a place where something happens — a school, a shop, a park and a sports oval are all venues.



A picture map of Example Town, a made-up place clearly labelled as not real: houses, a school close to the houses, a day care near the school, shops on the corner of two roads, a library, a sports oval next to a park, a creek, and a north arrow

1. The school is close to the houses. Why might that be?
2. The shops are on the corner, where two roads meet. Why might that be?
3. Write your own “why is it there?” question about the sports oval, the park, the day care or the library.
4. Use a direction word — north, south, east or west — in one of your questions.

Q5. Same and different, from the maps (VC2HG4S01 .E05). Use the two continent maps from Example 2.

1. Write two things that are the SAME for Australia and South America.
2. Write two things that are DIFFERENT.
3. Turn one same and one different into questions. Start with *why* or *how*.
4. For each question, write one way to find out (map, book, photo, ask someone).

Q6. Match the question to the finding-out. Draw a line from each question to the best way to find it out.

Question	Way to find out
a. Which way is the creek from our school gate?	1. Look at a map of the world or a globe.
b. Where does our town's water come from?	2. Go outside, stand at the gate, use a north arrow.
c. How many bins are on our school grounds?	3. Walk and look, count and write down, check a book of birds.
d. What birds live in the park near us?	4. A map, a book, or asking someone who knows.
e. Does Africa have deserts like Australia's?	5. Count them.

On your own

Q7. Your own local questions (VC2HG4S01 . E01). Think of the place around YOUR school. Write three guide questions of your own about your local environment. For each one, write how you would find out.

Q8. Try Africa this time (VC2HG4S01 . E05). In Example 2 the class compared Australia with South America. Your turn with Africa: use a map of Africa from your classroom or a book. Write two same-questions, two different-questions and one why-question about Australia and Africa, and say how you would find out for one of them.

Q9. Make a weak question strong. These questions are too small to lead an inquiry. Develop each one into a guide question that passes all three checks.

1. *Is the park good?*
2. *Do you like our town?*
3. *Is a desert dry?*

Q10. Plan a mini inquiry (VC2HG4S01.E02 · VC2HG4S01.E04 · VC2HG4S01.E05). Pick one big question from any of the four families. Fill in the plan.

My geographical inquiry plan

My big question:

My guide questions (the small steps):

**Where will I look, and how will I find out?
(map, book, photo, count, ask someone, go and look ...)**

What I learned:

A blank plan page with four spaces to write in: my big question, my guide questions, where will I look and how will I find out, and what I learned

Inquiry task — start your own inquiry

This is the doing part of 4A. The inquiry itself is the task; 4B is where you will go and find the answers.

1. With your class, walk the school grounds, or look out from a window.
2. Notice three places people made or look after: a tap, a bin, a garden, a shade tree, the oval, the bike shed, the flag pole, the gate.
3. Pick the one that makes you wonder most. Write your wondering.
4. Grow it into a big question, then develop three guide questions. Check each one against the three checks.
5. For each guide question, choose how you will find out.
6. Keep your plan safe. In 4B you will go and find the answers — with maps, photos, counts and **fieldwork**. Fieldwork means going outside to look, count and check for yourself.

Possible answers

Answers will be different in every class. These show the shape of a good response.

Q1. Yes pile: cards 1, 3, 5, 6 and 8 — each is about a place, its people or its environment, and each can be answered by looking, counting, reading or asking. No pile: cards 2, 4 and 7 — lunch, a dog's game and sandwiches are not about places and environments (yet); card 7 could become a food question, but as it stands it is a yes-or-no quiz, not an inquiry.

Q2. Shape of a good finish: *Where does the water in our taps come from, and how does it get to our town? We will find out from a map and by asking someone who knows.*

Q3. Example for wondering 1: big question — *Why do birds live in that creek?* Guide questions — *What do the birds eat there? Where do they nest?* Find out — walk and look, check a bird book.

Q4. (1) So children can walk to it from home. (2) So people on both roads can get to it. (3) Example — *Why is the oval next to the park?* (4) Example — *Which way is the creek from the school: north, south, east or west?*

Q5. Same: both have mountains; both have deserts; both are crossed by the Tropic of Capricorn. Different: the mountains sit in different places; the equator crosses South America but not Australia. Example why-question — *Why are the mountains in different places?* Find out — a map, a book, a photo.

Q6. a-2, b-4, c-5, d-3, e-1.

Q7–Q10. Answers will be different in every class. A good response has: questions about places and environments (check 1), questions the child can answer (check 2), and a named way to find out for each (check 3).

Q9. Example for 1: *What makes the park a good place for birds and for us?* Example for 3: *Why is the desert dry, and what can live there?*

Inquiry task. Look for: a clear wondering; a big question; three guide questions that pass the three checks; a finding-out way for each. The questions should be ready to take into 4B.

Next in Chapter 4: 4B takes these plans and goes finding out — with maps, photos, counts, surveys and fieldwork.

Finding, gathering and recording information and data

Geography 3 · Chapter 4 — Geographical inquiry: questions, information and data · Section 4B

What we will learn

In this section we learn to find information and data in different places, gather it, and record it — including by doing fieldwork, and by using maps, photographs and graphs.

Our curriculum code for this section is VC2HG4S02 (Victorian Curriculum 2.0, Geography, Levels 3–4).

In 4A we learned to ask good geographical questions. Now we go and find the answers — and in 4C we will turn what we collect into maps and graphs we can read.

New words in this section

- A **geographer** is a person who studies places.
 - **locate** means find. **collect** means gather. **record** means write it down or draw it, so we do not forget it.
 - **information** is things we find out. **data** are facts and numbers we collect.
 - **fieldwork** is going to a place and finding out for yourself.
 - A **survey** is asking lots of people the same question. An **interview** is asking one person questions and writing down what they say.
 - A **tally** is counting with marks: four lines, then a slant line across makes five.
 - A **satellite image** is a photo of the Earth taken from space. An **aerial photograph** is a photo taken from a plane.
 - A **symbol** is a little picture that stands for a real thing on a map. The **key** tells you what each symbol means. The **north point** is the arrow that shows which way is north.
 - **density** is how close things are to each other. When buildings sit close together, the city has a high density.
 - A **bay** is where the sea curves into the land.
-

What we are learning

To answer a question, a geographer needs information. There are three jobs: **locate** the information (find it), **collect** it (gather it), and **record** it (write it, draw it or save it) so we can use it back in class.

Where can we find information?

Eight sources a geographer can use



Fieldwork means you go to the place yourself. The other sources can come to you in class.

Eight picture cards showing where we can find information: fieldwork, maps, photographs, satellite images, graphs, interviews, surveys and books.

Some information comes from **fieldwork** — you go to the place yourself. Other sources come to you in class: maps, photographs, satellite images, graphs, books, and what other people tell you.

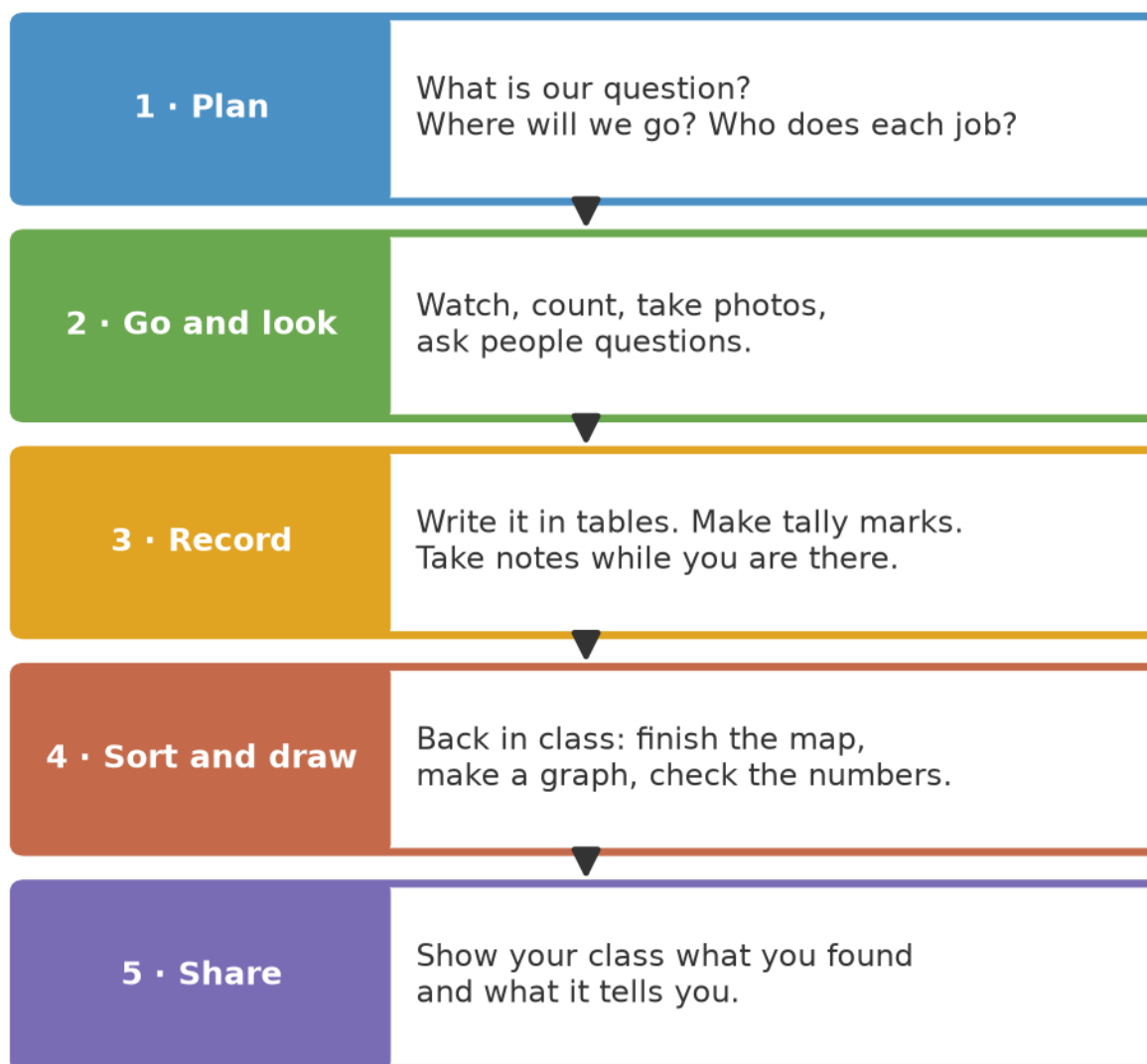
There are lots of ways to collect. On a fieldwork walk you can watch and count with a **tally**, take **photographs**, and ask questions — an **interview** with one person, or a **survey** of lots of people. In class you can read maps, look at **aerial photographs** and **satellite images** (or a map app on a tablet), and read graphs. Maps, aerial photos and satellite images are also how we spot the natural features (like rivers and bays), managed features (like parks and farms) and constructed features (like roads and bridges) that we met in 2C.

There are lots of ways to record, too: **tables**, **tally charts**, **picture graphs**, **column graphs**, and **sketch maps** with symbols. Think of as many ways as you can, then pick the one that shows your data best, with your teacher's help.

Three rules for every map. 1. A **title** tells what the map shows. 2. **Symbols** come with a **key**. 3. A **north point** shows which way is north (we met it in 2B).

The best source is the one that fits the question. *What do people do at the park?* — go and look, and ask. *How big is a city?* — a satellite image. Choose with your teacher's help.

The five steps of our fieldwork



A flow chart of the five steps of fieldwork: plan, go and look, record, sort and draw, share.

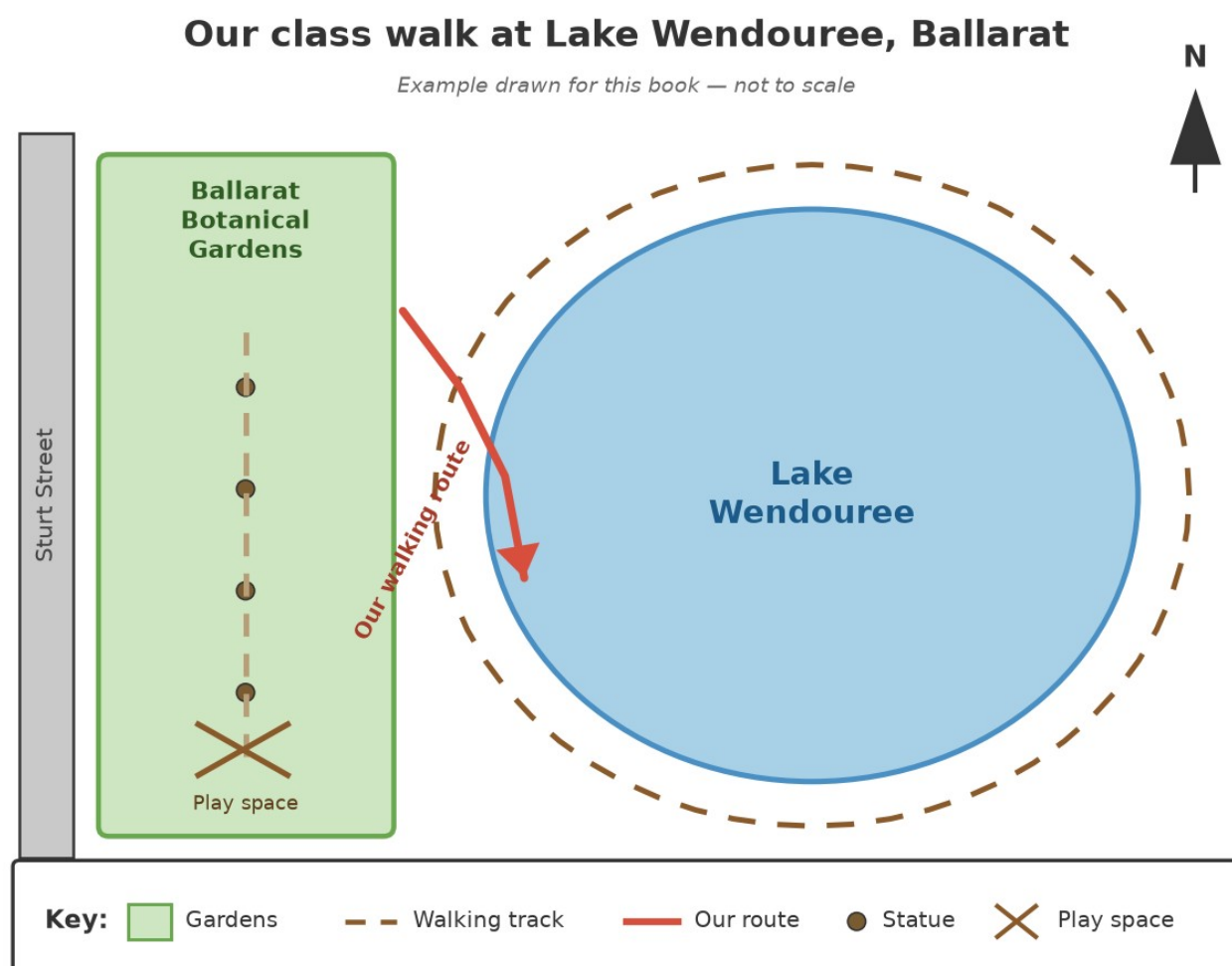
Worked examples

Worked example 1 — a fieldwork walk at Lake Wendouree, Ballarat

Ruby's class in Ballarat had a 4A question: *What can people do at Lake Wendouree, and where is each thing?* Lake Wendouree is a real lake in Ballarat, Victoria. Rowing races for the 1956 Melbourne Olympic Games were held on it, and the Ballarat Botanical Gardens sit right next to it.

Step	What the class did	Why
1 · Plan	With their teacher, they chose a safe walking route along the west side of the lake, by the gardens. Jobs: a tally writer, a photographer, a map drawer and a question asker.	Fieldwork works when everyone knows their job.
2 · Go and look	They walked slowly and tallied what people were doing: walking 10, playing 7, riding bikes 5, sitting and	A tally collects data while you are there. Photos are records too.

Step	What the class did	Why
	chatting 3. The photographer took photos of the lake, the gardens and the statues.	
3 · Ask	The question asker interviewed a gardener: “Why do people love this place?” He said, “The gardens are beautiful, and the lake is famous for rowing.”	An interview tells us things counting cannot.
4 · Record	Back in class, they drew a sketch map with a title, symbols, a key and a north point. They put their tallies into a tally chart.	Recording keeps the data safe for 4C.



An example class sketch map of Lake Wendouree in Ballarat, with a title, a key, a north point and symbols for the gardens, the walking track, statues and a play space.

Worked example 2 — Melbourne and Alice Springs from space

Step	What we did	Why
1 · Ask	<i>Which place has its buildings closer together — Melbourne or Alice Springs? That is a question about density.</i>	A good question tells us what to look for.
2 · Choose a source	Satellite images in Google Earth, looked at on 25 August 2026. From space you can see a whole city at once.	A satellite image fits a “how big and how close” question.

Step	What we did	Why
3 · Look and collect	Melbourne: buildings and roads spread a very long way, with a big bay (Port Phillip Bay) at one edge. Alice Springs: a small group of streets, red desert all around, and a dry river line (the Todd River).	We wrote each thing we saw as a note.
4 · Record	A table of what we saw, and a column graph of how many people live in each place (see below).	Two records are better than one.
5 · Say what we found	Many more people live in Melbourne, and its buildings sit closer together and spread much further. Alice Springs is small, with open land around it.	The data, not our guessing, gives the answer.

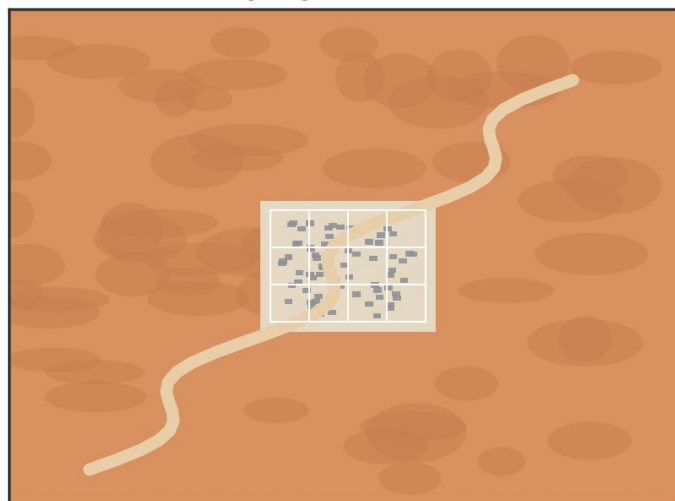
What we look for in the satellite images

Melbourne — a very big city



Buildings and roads spread a long way from the middle.

Alice Springs — a small town

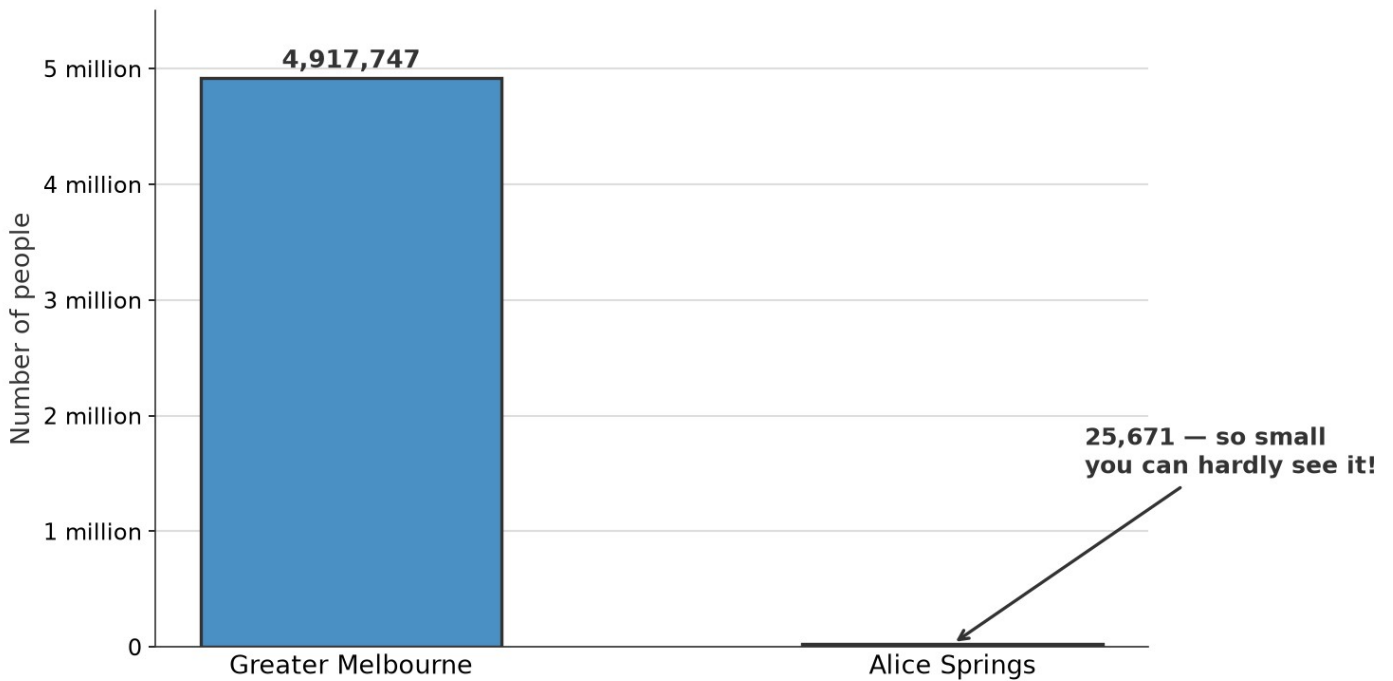


A small group of streets, with red desert all around.

Drawings made for this book. Now look at the real places in Google Earth and see how far the buildings spread.

Two drawings that show what Melbourne and Alice Springs look like from space: a big spread of buildings by a bay, and a small town ringed by red desert.

How many people live there?



Source: Australian Bureau of Statistics, 2021 Census (viewed 25 August 2026).

A column graph showing how many people live in Greater Melbourne (4,917,747) and in Alice Springs (25,671), from the ABS 2021 Census.

Source: Australian Bureau of Statistics, 2021 Census (viewed 25 August 2026). Satellite images viewed in Google Earth, 25 August 2026.

Your fieldwork task — your own inquiry

This task is the investigation. Work through the five steps from the flow chart.

Part A — a fieldwork walk near your school

Your question (from 4A): *What places do people use near our school?*

1. **Plan** (with your teacher): choose a short, safe walking route near your school. Share out the jobs. Decide what you will tally — kinds of places, like shops, parks, schools, play spaces and sports grounds (the local places we met in 1B). Pick one interview question to ask one person, like “What is your favourite place near here, and why?” Decide what you will photograph.
2. **Go and look**: walk the route. Tally each kind of place. Take your photos. Do your interview and write the answer down word for word.
3. **Record**: finish a sketch map of your route. Give it a title, symbols with a key, and a north point. Make a tally chart of your counts.
4. **Sort and draw**: choose a graph — picture graph or column graph — and make it from your tallies.
5. **Share**: show your map and your graph to the class. Say what you found out.

Part B — ask a school far away

With your teacher’s help, get information from a school in a very different place — for example Darwin, far north in Australia’s Northern Territory (warm all year, with a dry season and a wet season), or a school in Indonesia, one of the countries closest to Australia. Ask three things: *What is the weather like now? What do students play at lunch? What is a place they like?* Record the answers in a table, then add the school to a map: symbols, the place names written on (that is called **annotating** the map), a title and a north point.

What we found out from another school

Place	Weather in August	At lunch	A place they like
Our school, Melbourne (Victoria)	Winter: cold mornings, about 10 °C, coats on	Play football and chasey in the sun	The school garden
Partner school, Darwin	Dry season: warm and sunny, about 30 °C	Play in the shade — it is too hot in the sun	The beach

Example only — your class will fill in its own table. In August it is winter in Australia. Darwin is far north in the Northern Territory, so it stays warm, and its dry season runs from May to October.

An example table recording what a class found out from a partner school in Darwin: weather in August, lunch games and a liked place, beside the same things for their own Melbourne school.

Practice questions

With help

Q1. Sort these into two lists — *fieldwork* (you go and look) and *in class* (the source comes to you): (a) counting people at the crossing outside school; (b) looking at a satellite image of your town; (c) asking your nan what your street was like long ago; (d) reading a map of your area; (e) taking photos of the shops on your street; (f) reading a column graph of rainy days.

Q2. Match each question to the best source: (1) How many people walk past the shop in one hour? (2) What does our town look like from above? (3) Which play space do most kids in our class like best? — sources: a tally at the shop; a satellite image; a survey of the class.

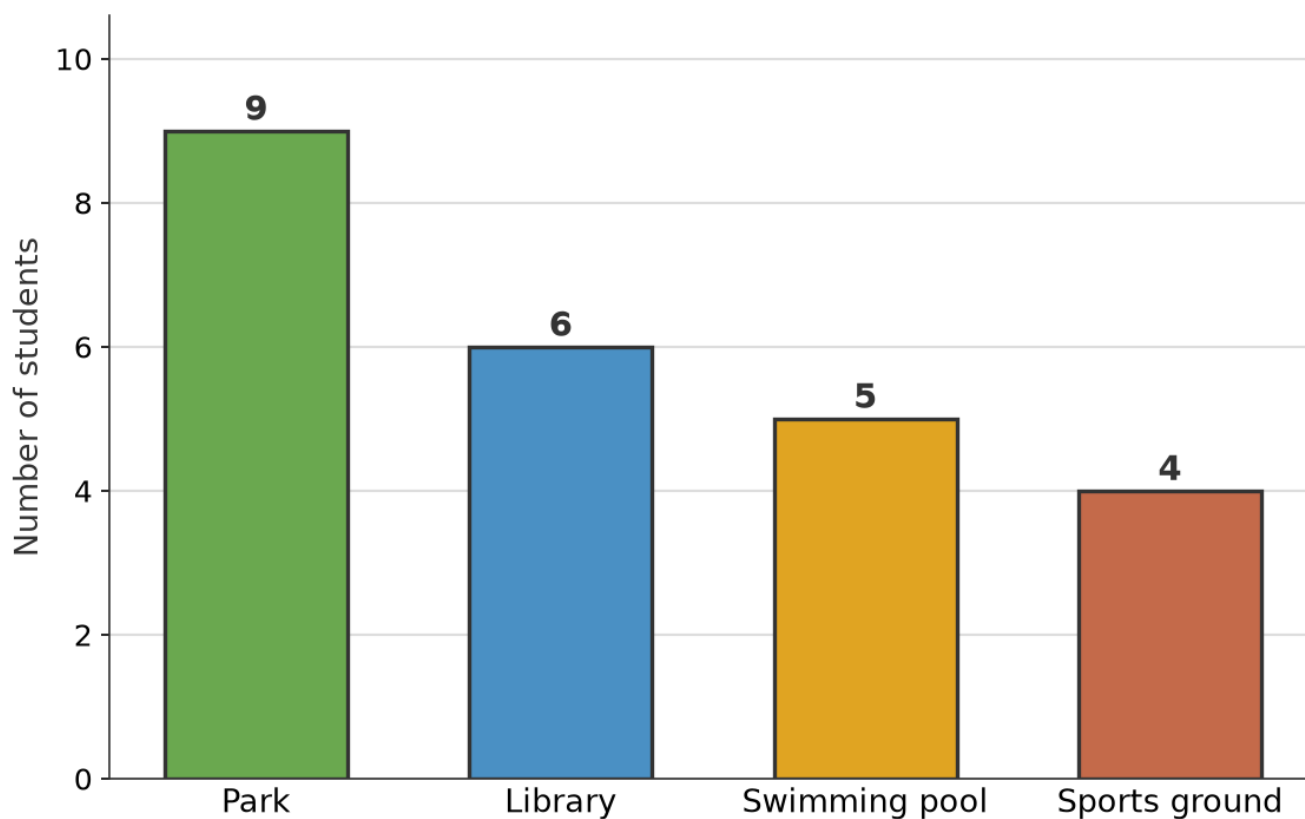
Q3. Use the tally chart below. (a) How many students voted for the swimming pool? (b) Which place got the most votes? (c) How many votes are there altogether?

Our class vote: favourite place to play		
24 students in Year 3 each voted for one place		
Place	Tally	Count
Park		9
Library		6
Swimming pool		5
Sports ground		4
Total: 9 + 6 + 5 + 4 = 24 votes		

A tally chart showing a class vote of 24 students for their favourite place to play: park 9, library 6, swimming pool 5, sports ground 4.

Q4. Use the column graph below (the same class vote). (a) Which place has the tallest column? (b) How many more students chose the park than the sports ground? (c) Would a picture graph of the same votes show the same winner? Why?

Our class vote: favourite place to play



Each column shows how many students chose that place. The tallest column is the most popular.

A column graph of the class vote, with the park the tallest column at 9.

Q5. Use the map symbols below. Name the symbol you would use for: (a) a lake; (b) a place to catch a train; (c) a place to buy milk; (d) which way is north.

Map symbols we can use



A symbol is a small picture that stands for a real place. The key on a map tells you what each symbol means.

Eight map symbols with their names: school, park, lake or water, road, railway, shops, play space and north point.

Q6. Sam drew a sketch map of his street with symbols, but he forgot the three map rules. Name the three things he must add.

On your own

Q7. Write one survey question to ask people at a park. Give three answer choices people can tick.

Q8. On your walk you saw 8 people walking, 3 people running and 5 people riding bikes. (a) Make a tally chart of what you saw. (b) Choose a picture graph or a column graph to show it, and say why you chose it.

Q9. Look again at the two space drawings of Melbourne and Alice Springs. Write two differences between the two places.

Q10. Draw a sketch map of your classroom or your playground. Use at least three symbols (you may invent your own if the key explains them). Include a title and a north point.

Answers

Q1. Fieldwork: (a), (e). In class: (b), (d), (f). (c) is an interview — it is fieldwork if you go and ask her yourself, or in class if she comes to you. **Q3.** (a) 5. (b) The park. (c) 24. **Q4.** (a) The park. (b) $9 - 4 = 5$ more students. (c) Yes — the same votes give the same winner; only the way we show them changes. **Q5.** (a) Lake or water (wavy lines). (b) Railway. (c) Shops. (d) North point. **Q6.** A title, a key for his symbols, and a north point.

Full answers

Q7. A good survey question asks everyone the same thing and has answers you can tick — for example, “How do you get to the park?” with choices *walk / ride / car*. Every answer you collect is data.

Q8. (a) Walking: a five-group and three lines; running: three lines; riding: a five-group. (b) Either graph is fine if it shows the numbers clearly — a column graph is quick to draw when the numbers are small like these.

Q9. Any two true differences, for example: Melbourne’s buildings spread a long way and Alice Springs’ do not; Alice Springs has red desert all around it and Melbourne has a bay; many more people live in Melbourne.

Q10. Check your own map against the three map rules: a title that says what it shows, symbols with a key, and a north point. If all three are there, your map is ready for 4C.

Showing and reading information and data in different formats

Curriculum trace (teacher-facing).

Section 4C owns VC2HG4S03 (Levels 3-4 band; Level 3 is the first year of the band).

Elaborations drawn on:

- VC2HG4S03.E01 — taught here with Melbourne (Australia) and Jakarta (Indonesia). The Asia and Australia's Engagement with Asia priority (VC2CCPASK2) tagged on .E01 is LIVE: Indonesia is the neighbouring country studied.
- VC2HG4S03.E02
- VC2HG4S03.E03
- VC2HG4S03.E04
- VC2HG4S03.E05

Feeds (per TOC): the climate place-pair feeds 3B; the thematic-map work feeds 2A/3C; the waste graphs feed 1C. Chapters 4-5 carry the most doing and the least prose: tasks are oral, graphical or one-line answers.

Sources (real, named, dated; retrieval date 2026-08-25):

- [S1] Bureau of Meteorology, "Climate statistics for Australian locations — MELBOURNE AIRPORT", station 086282, long-term means, http://www.bom.gov.au/climate/averages/tables/cw_086282.shtml
- [S2] World Meteorological Organization, 1991-2020 climate normals for Jakarta, as published in the climate table of the "Jakarta" article, Wikipedia, <https://en.wikipedia.org/wiki/Jakarta>
- [S3] Australian Bureau of Statistics, estimated resident population, capital cities, June 2025 (via Wikipedia, "List of cities in Australia by population").
- [S4] Simpson Desert (parallel sand dunes; about 150 mm of rain a year), Wikipedia, "Simpson Desert".
- [S5] Sahara (largest hot desert), Wikipedia, "Sahara".
- [S6] Patagonian Desert (cold desert; frost is common), Wikipedia, "Patagonian Desert".
- [S7] Natural Earth 1:110m land outlines (public domain) for the world map figure.

Class datasets (the helping survey, the lunch-bin count, the compost-bin weigh-ins) are invented story data labelled as one class's data; no real school is portrayed. The street language/religion maps and the satellite view are model drawings, labelled as such.

We are learning to:

- read **data** (facts and numbers we collect) shown in different **formats** (ways of showing it)
- read tables, picture graphs, column graphs and line graphs, and spot the **trend** (the way the data is going)
- read climate data for Melbourne, Australia and Jakarta, Indonesia
- read **thematic maps** (maps that show one thing) about rain, plants, people, language and religion
- read a satellite image and a world map
- compare deserts on three continents

New ideas

Data is what we find out when we look, ask or count. A **format** is a way of showing data. Four formats we will use:

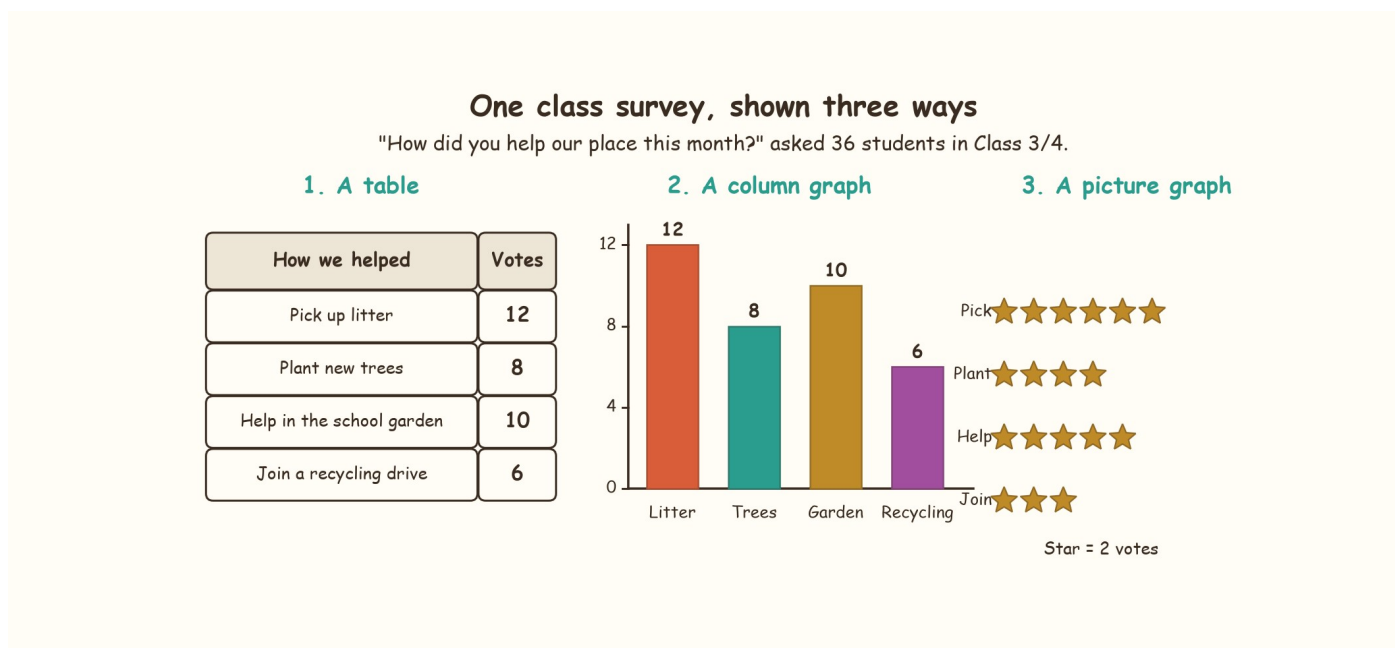
- a **table** — data set out in rows, with a line of numbers going down called a column
- a **picture graph** — little pictures stand for groups of things
- a **column graph** — one column for each group; taller means more
- a **line graph** — dots joined by a line; great for showing change over time

A **trend** is the way the data goes: up, down, or about the same.

Weather is what a place is like right now — sunny, rainy, windy. **Climate** is the weather a place usually has, year after year. We measure how warm it is (the **temperature**) in degrees Celsius (°C), and how much rain falls (the **rainfall**) in millimetres (mm).

A **thematic map** is a map that shows one thing, like rain or people. The **legend** tells us what the colours and **symbols** (little signs) mean.

Step 1 — One survey, three formats. Class 3/4 asked every student, “How did you help our place this month?” Here is the same data in three formats.



A class survey of 36 students shown three ways: as a table, as a column graph, and as a picture graph where one star stands for two votes.

Look and say: the data is the same in all three. Only the format changes. Which format do you like best? Why?

Step 2 — Climate data for two places. Here is real climate data for Melbourne and for Jakarta, the biggest city of Indonesia, a country in Asia near Australia.

Two places, four seasons

How warm it is in the day, and how much rain falls

Melbourne, Australia

Jakarta, Indonesia

Season	warmth (deg C)	rain (mm)	warmth (deg C)	rain (mm)
Summer (Dec-Feb)	26	132	31	938
Autumn (Mar-May)	20	122	33	478
Winter (Jun-Aug)	14	118	33	210
Spring (Sep-Nov)	20	163	33	308

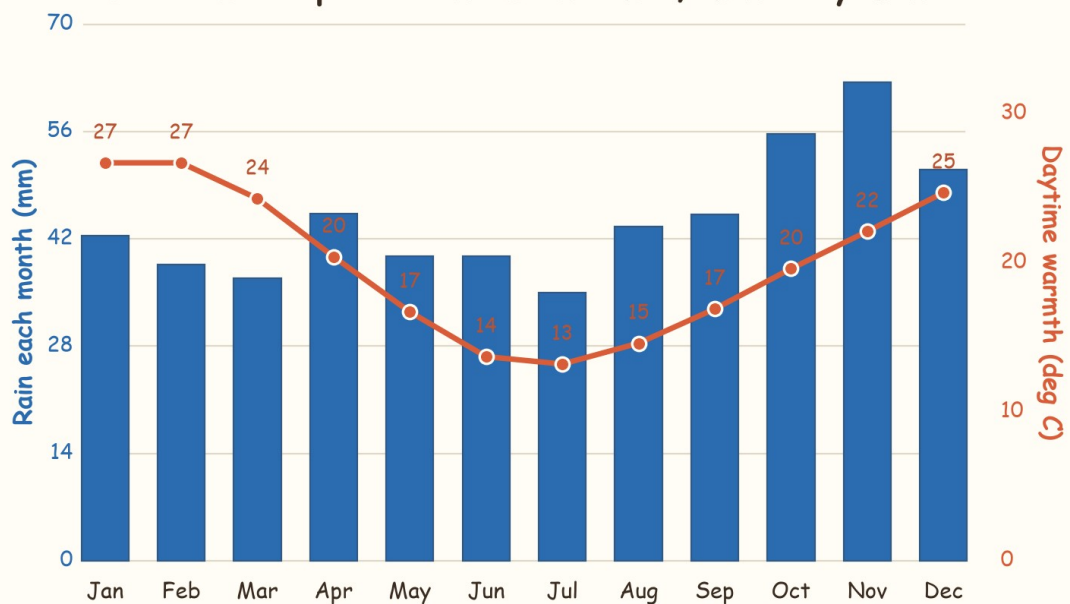
Temperatures are the mean daytime warmth for each season (deg C). Rain is the season total (mm).

Source: Melbourne — Bureau of Meteorology, station 086282; Jakarta — World Meteorological Organization, 1991-2020 normals.
Both retrieved 25 August 2026.

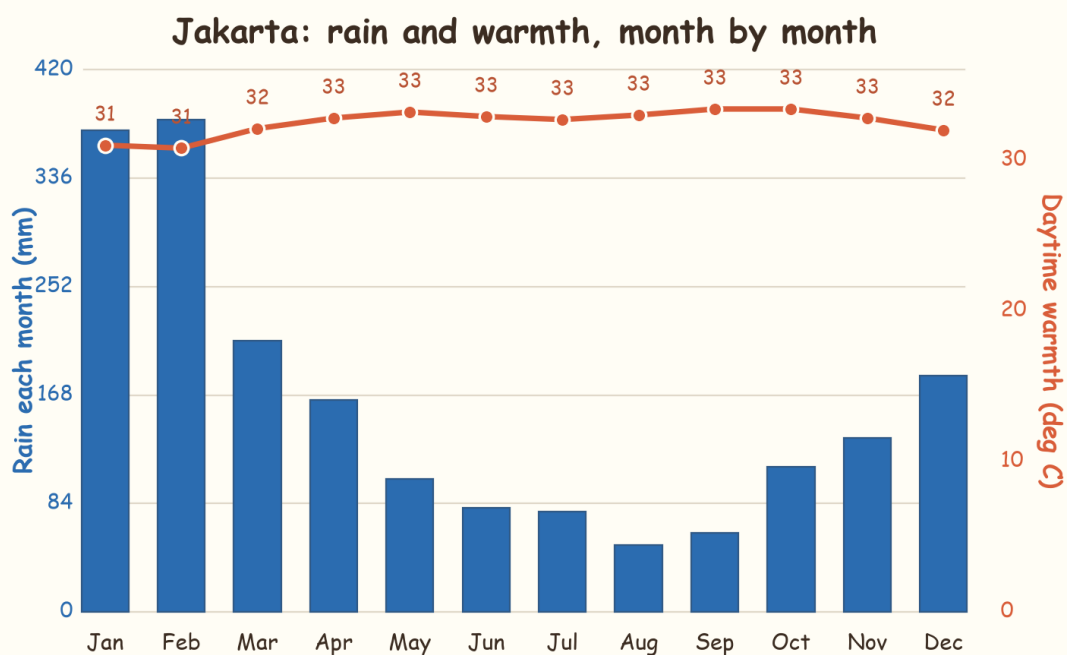
A table with four seasons. For Melbourne and for Jakarta it shows how warm it is in the day and how much rain falls in each season.

Look and say: which place looks hotter? Which place looks wetter? The same data is also shown as two climate graphs — blue columns are rain, the red line is warmth.

Melbourne Airport: rain and warmth, month by month



Climate graph for Melbourne Airport: blue rain columns for each month and a red warmth line that dips in the middle of the year.

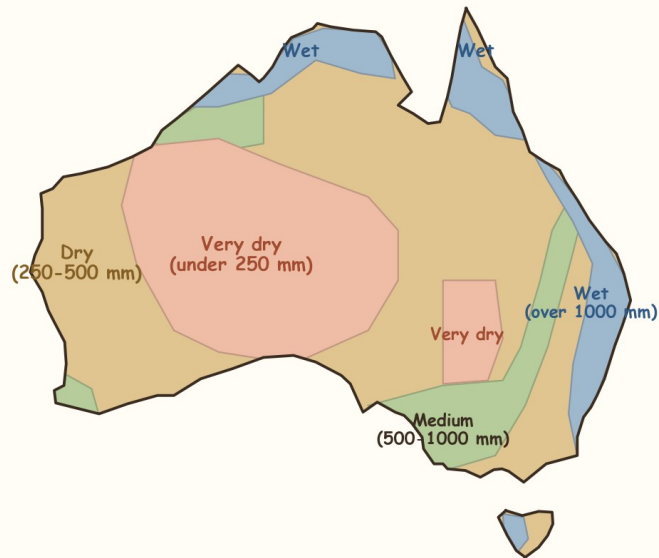


Climate graph for Jakarta: very tall rain columns early and late in the year and a red warmth line that stays high and flat.

Step 3 — Thematic maps of Australia. First the rain map, then the plant life map, then the people map. Read the legend each time.

Rain map of Australia

How much rain falls in a year (mean annual rainfall)



How wet is each part?

- Wet — over 1,000 mm of rain a year
- Medium — 500 to 1,000 mm
- Dry — 250 to 500 mm
- Very dry — under 250 mm

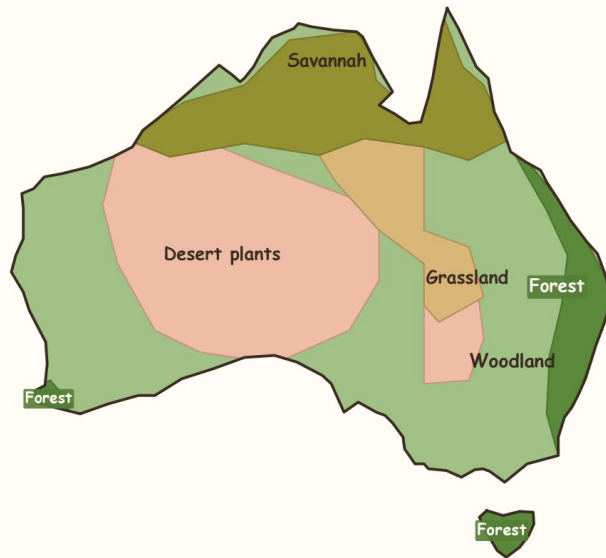
Rain is measured in millimetres (mm). 250 mm is about one big bucket of water spread over a whole floor tile!

Simplified map for school use. North is up.

Simple rainfall map of Australia with four coloured parts: wet, medium, dry and very dry, with a legend.

Plant life map of Australia

The main vegetation types (simplified)



What grows there?

- Forest — tall, thick trees
- Savannah — tall grass, a few trees
- Grassland — mostly grasses
- Woodland — trees spread apart
- Desert — very few plants, dry land

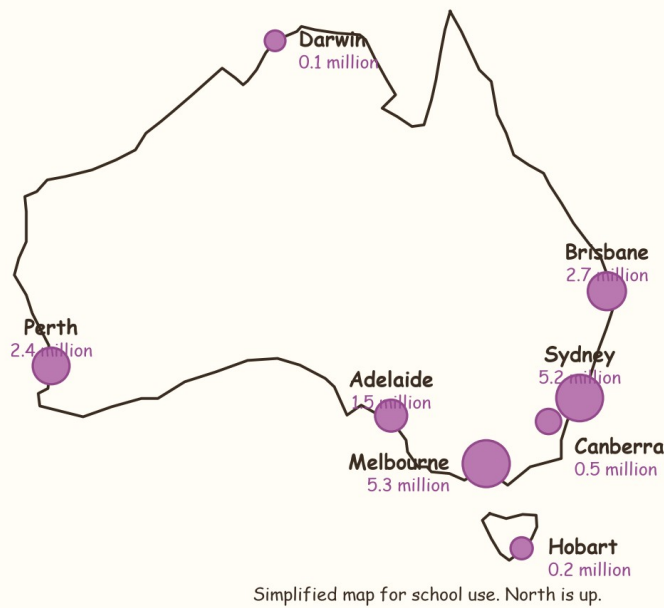
See section 3A for what each type is like.

Simplified map for school use. North is up.

Simple vegetation map of Australia showing desert plants, grassland, savannah, woodland and forest, with a legend.

People map of Australia

How many people live in each capital city



How to read this map

■ A capital city

Bigger dot = more people.

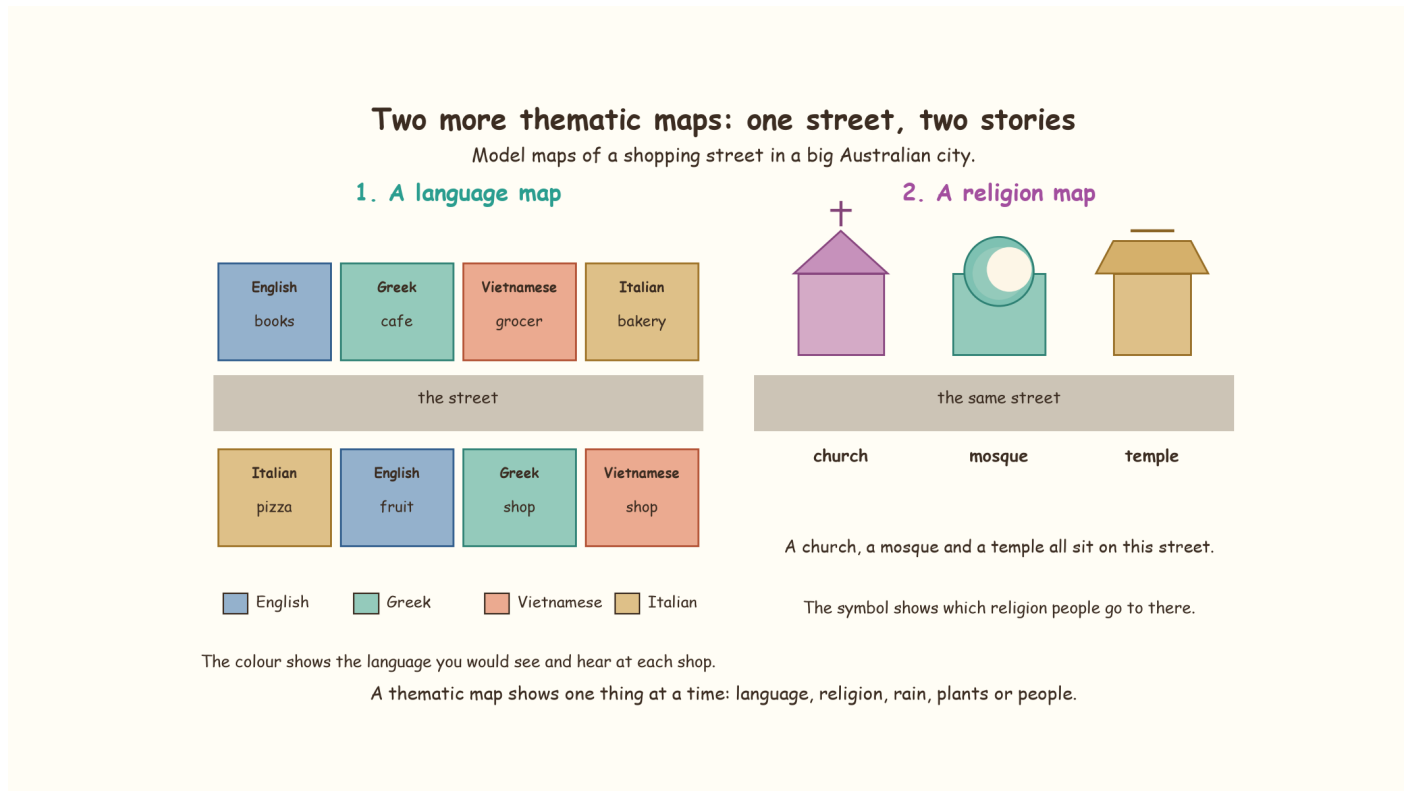
Most Australians live near the coast, and many live in the south-east.

Numbers: Australian Bureau of Statistics, estimated resident population, June 2025.

Simple population map of Australia showing the eight capital cities as dots; a bigger dot means more people.

Look and say: put the rain map and the plant map side by side. The wet east coast grows forest; the very dry middle grows desert plants. The climate of a place changes what can grow there. Australia is also far away from the other continents, so it has animals found nowhere else — like kangaroos and koalas.

Thematic maps can show people too. These two model maps are about one shopping street in a big Australian city.

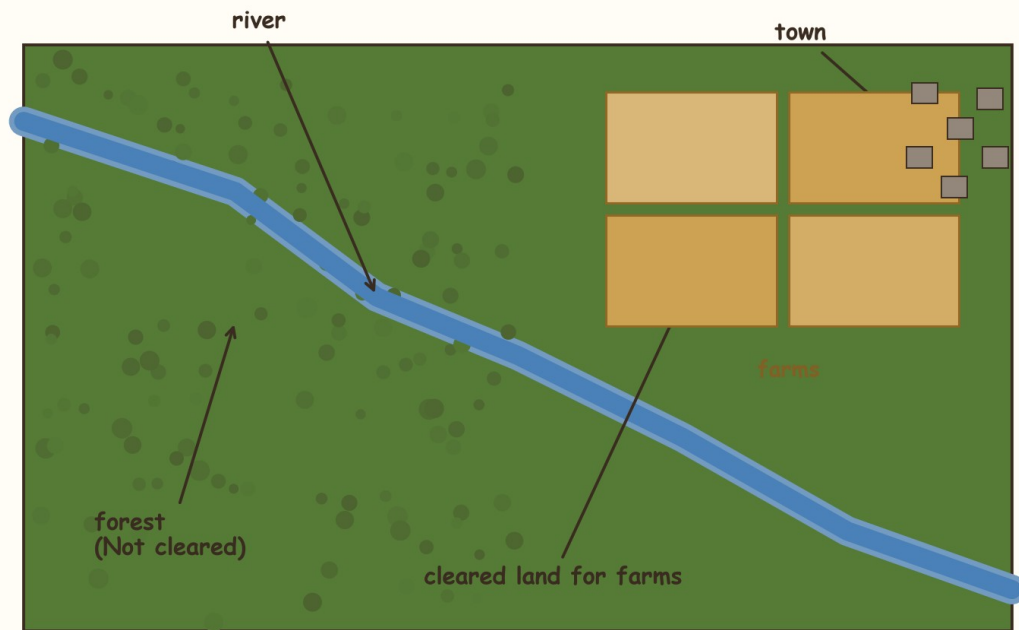


Two model thematic maps of one shopping street: a language map with shops coloured by the language seen and heard there, and a religion map showing a church, a mosque and a temple.

Look and say: many languages and religions on one street. People in Australia have family from many parts of the world, and the things people do in a place shape the languages and religions found there.

Step 4 — Looking down from space. A **satellite image** is a picture taken from space. This model drawing shows the kind of things it can show.

Looking down from space: a model drawing

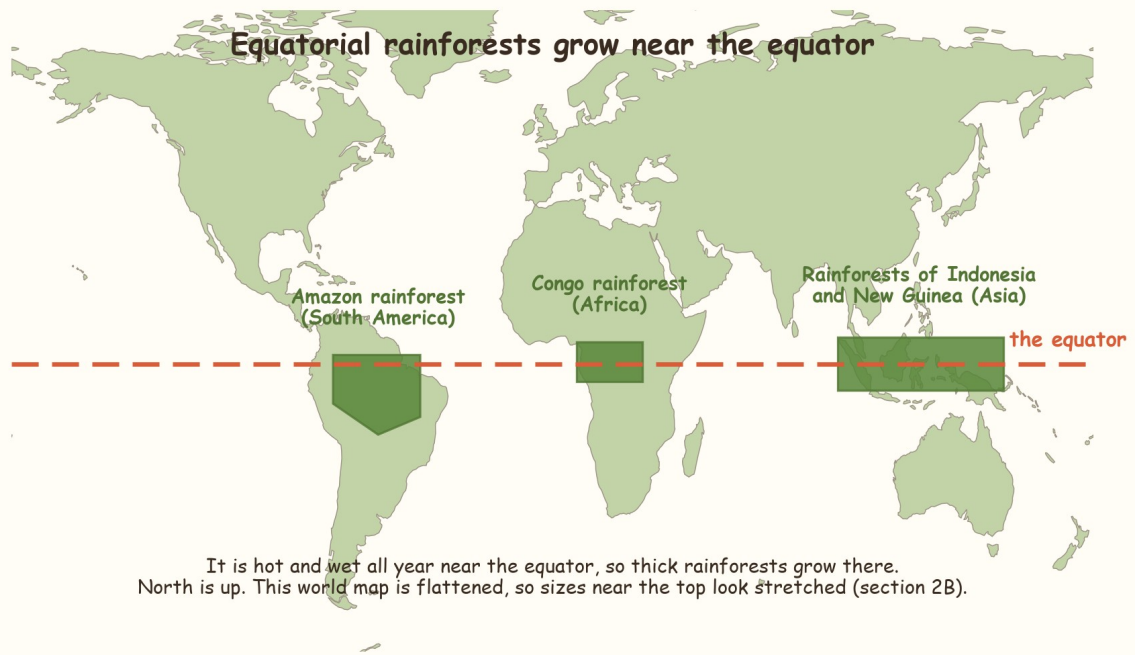


In a real satellite image, cleared farms look like brown patches next to green forest. (Model drawing.)

Model drawing of a satellite view: green forest, a blue river, square brown farms where trees were cleared, and a small town.

Look and say: how can you tell the farms from the forest? (The farms are square and brown; the forest is green and not square.) With your teacher, look at online satellite images of your own suburb in an online map. What is built? What is green? Where is the water?

Now the world map. The **equator** is a line around the middle of the Earth — not a real line you could see on the ground. A **continent** is one of the great pieces of land, like Africa or Australia.



World map with the equator shown as a dashed line and three equatorial rainforest areas marked: the Amazon in South America, the Congo in Africa, and Indonesia and New Guinea in Asia.

Look and say: the rainforests sit near the equator. Near the equator it is hot and wet all year, so thick rainforests grow there.

Step 5 — Deserts on three continents. Deserts are dry places — most get under 250 mm of rain a year. But deserts are not all the same!

Three kinds of desert



Deserts are dry places — most get under 250 mm of rain a year. Deserts are not all hot!

Three desert cards: sandy desert (Simpson Desert, Australia) with long straight dunes; stony desert (Sahara, Africa) with rock plains; cold desert (Patagonia, South America) with frost and wind.

Look and say: what is the same about all three? (Dry!) What is different? (Sand, stones, cold.)

Worked examples

We try together — Worked example 1 (using the survey in Step 1)

Teacher: Which helping job got the most votes? How can we tell in each format?

- Table: look for the biggest number. 12 is the biggest — pick up litter.
- Column graph: look for the tallest column — the red one, 12.
- Picture graph: look for the longest line of stars — the top line.

All three formats tell the same story.

Teacher: How many students planted new trees? Check all three formats.

- Table: 8. Column graph: the column stops at 8. Picture graph: 4 stars, and each star is 2 votes, so 4 lots of 2 is 8. Same answer, three ways.

We try together — Worked example 2 (using the climate table in Step 2)

Teacher: Which place is hotter in winter?

- Melbourne, winter: 14 °C. Jakarta, winter: 33 °C. Jakarta is hotter — much hotter!

Teacher: Which place gets more rain in summer?

- Melbourne: 132 mm. Jakarta: 938 mm. Jakarta gets far more rain.

Teacher: What is the pattern?

- Melbourne changes with the seasons: a warm summer, a cool winter. Jakarta stays hot all year, and its rain swings from a very wet part of the year to a much drier part.

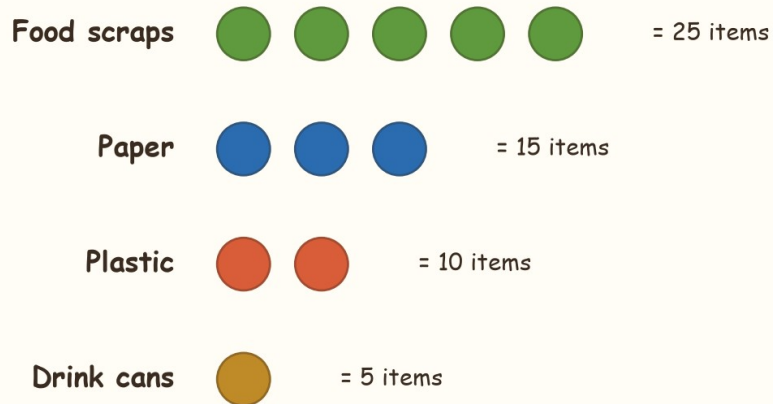
Practice questions — with help

Use the graphs and maps from the New ideas steps.

1. Look at the picture graph of our lunch bins. One circle stands for how many items? Which group had the most?
2. Now check your answer on the column graph of the same data. Which graph was easier for you to read? Say why.
3. Look at the line graph of food scraps week by week. Is the trend up or down? What did the class do in Week 3, and did it work?
4. Look at the rain map of Australia. Where is the very dry part? Which parts get the most rain?
5. Look at the people map. Which two capital cities have the most people? True or false: most Australians live near the coast.
6. Look at the street maps. How many Italian shops are there, and what do they sell? What do the church, mosque and temple tell us about the people of this street?

What was in our lunch bins on Tuesday?

Class 3/4 counted 55 items. Each circle = 5 items.

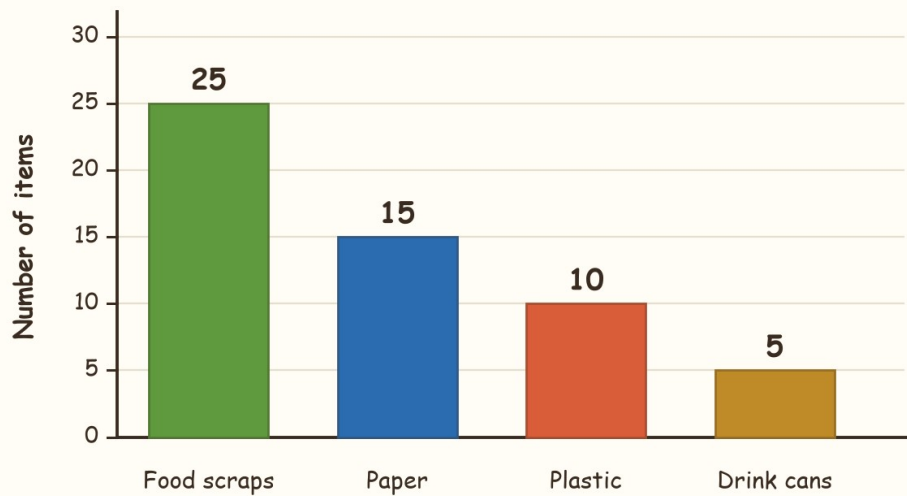


A picture graph uses a little picture for each group of items.

Picture graph of lunch-bin items counted on Tuesday: food scraps 25, paper 15, plastic 10, drink cans 5; one circle stands for 5 items.

What was in our lunch bins on Tuesday?

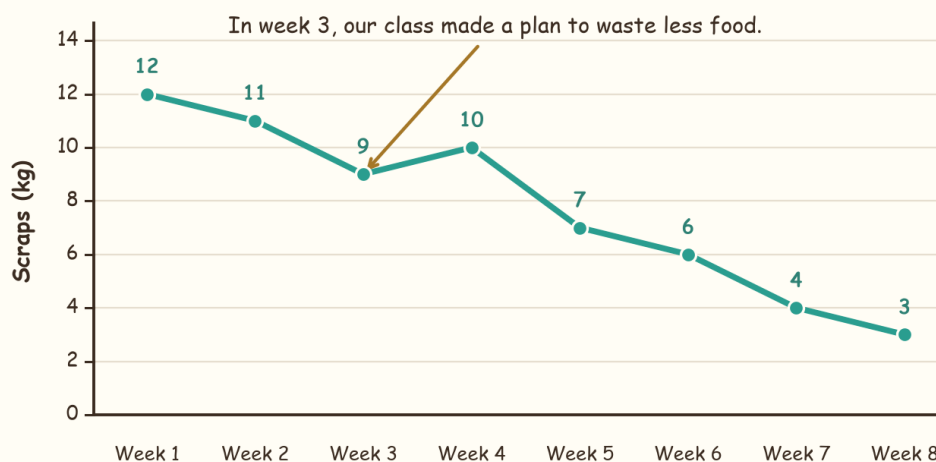
The same 55 items, now as a column graph



Column graph of the same 55 lunch-bin items: food scraps 25, paper 15, plastic 10, drink cans 5.

Food scraps to our compost bin, week by week

Class 3/4 weighed the scraps each Friday (kg)



The line goes down: the trend is down. We wasted less food each week.

Line graph of food scraps weighed each Friday for 8 weeks, going down from 12 kg to 3 kg, with a note that the class made a plan in Week 3.

Practice questions — on your own

- New data: “How we got to school today — walk 9, car 14, bike 4, bus 3.”
(a) Show it as a table. (b) Show the same data as a column graph.

- (b) Which column is tallest?
2. Look at the climate table again. Write two sentences about Melbourne and Jakarta: one about warmth, one about rain.
 3. Look at the rain map and the plant life map together. In your own words, say why the east coast grows forest but the middle grows desert plants.
 4. A friend says, “All deserts are hot.” Use the desert cards to say if that is right, and how you know.

Think and tell — our waste check

1. With your class, look in the lunch bins after one day. Sort the items into groups and count each group. You are collecting data, just like a real fieldworker!
2. Record your counts in a table. Then show the same data as a picture graph or a column graph.
3. Find the biggest group. Tell a partner one way your class could make less of it.
4. Do the same check again a few weeks later. Make a line graph of the two counts and the weeks between. Is the trend up or down? Is that good news?

Tell: which format was best for showing your data to a buddy? Why?

Words we use

- **data** — facts and numbers we collect; **format** — a way of showing data
- **table, picture graph, column graph, line graph** — four formats; **trend** — the way the data goes (up, down, about the same)
- **weather** — what a place is like right now; **climate** — the weather a place usually has, year after year
- **temperature** — how warm it is, in °C; **rainfall** — how much rain falls, in mm
- **thematic map** — a map that shows one thing; **legend** — the part that tells what the colours and symbols mean; **symbol** — a little sign that stands for something
- **vegetation** — the plants of a place; **desert, grassland, savannah, woodland, forest** — from driest to wettest (see 3A)
- **satellite image** — a picture of Earth taken from space
- **equator** — the line around the middle of the Earth; **continent** — one of the great pieces of land of the world
- **capital city** — the most important city of a state or country
- **state** — one of the big parts of a country; Australia has six states, and Victoria is one
- **church, mosque, temple** — places where people of different religions meet and worship

Answers (teacher-facing)

With help: 1. One circle = 5 items. Food scraps had the most (25). 2. Yes — the food scraps column is tallest. Reasons vary (picture graph shows the counting; column graph makes comparing heights fast). 3. Down. In Week 3 the class made a plan to waste less food; yes — the line keeps going down after Week 3 (with a small bump at Week 4). 4. The middle / centre. The top (north), the east coast and Tasmania. 5. Melbourne (5.3 million) and Sydney (5.2 million). True. 6. Two — the bakery and the pizza shop. People of different religions (and languages) share one street; what people do in a place shapes its languages and religions.

On your own: 1. (a) Two-column table: walk 9, car 14, bike 4, bus 3. (b) Columns of those heights. (c) Car. 2. Accept any true pair, e.g. “Jakarta is hot all year but Melbourne has a cool winter. Jakarta gets much more rain than Melbourne.” 3. Must link rain and plants: the east coast gets much more rain, and wet climate grows forest; the dry middle can only grow desert plants. (Climate and latitude influence vegetation — E02.) 4. Not right as a rule: the Patagonian Desert is cold (frost is common). Deserts are about dryness, not heat.

Think and tell: check for a table + a graph + a trend statement.

Fully-worked solutions (teacher-facing)

WE1: biggest number in the table (12, litter) = tallest column = longest star row. Picture-graph key check: stars x 2 = votes (4 stars x 2 = 8 for trees). WE2: winter row 14 vs 33 °C — Jakarta about 19 degrees warmer; summer rain 132 vs 938 mm — Jakarta roughly seven times wetter. Pattern: Melbourne’s warmth line rises and falls with the seasons while Jakarta’s stays high and flat; Jakarta’s rain columns swing from very wet (Jan-Feb) to much drier (Aug).

Numbers: seasons computed from the monthly means in `src/climate_4c.py` ([S1], [S2]); city populations per [S3].