

Science 5–6

Chapter 5 — Communicating

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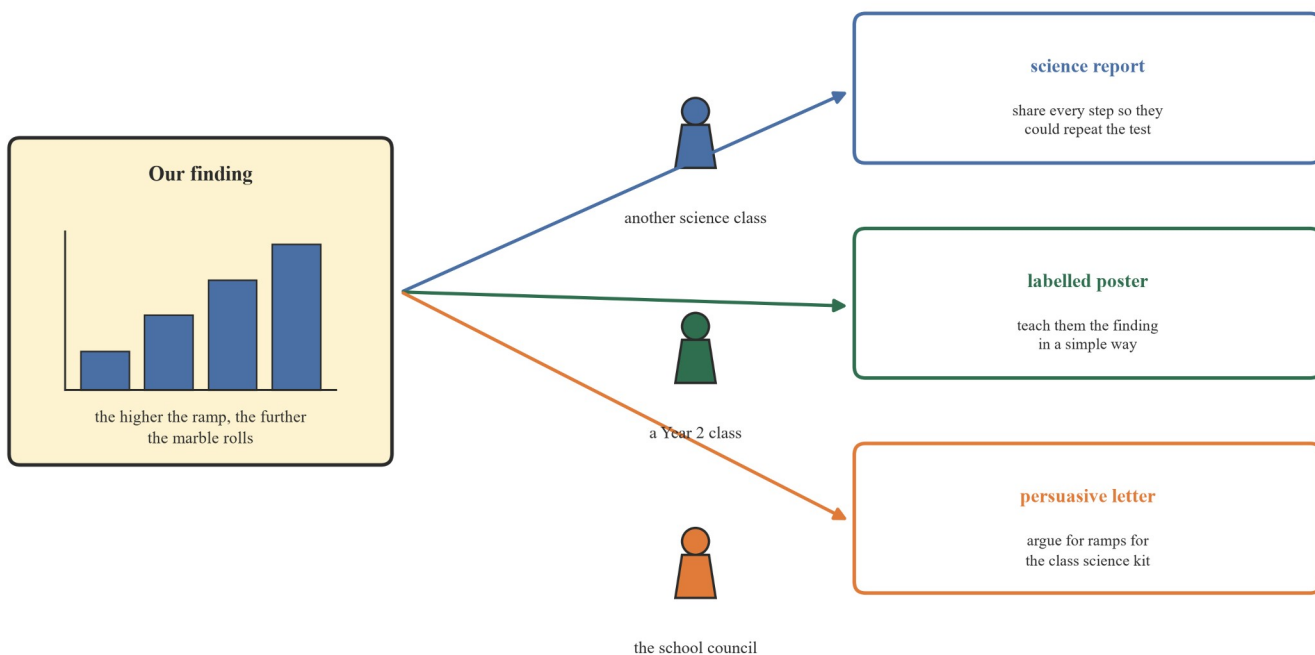
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Communicating science for a purpose and an audience

Words to know — communicate · purpose · audience · format · science report · labelled poster · persuasive letter · slideshow · animation · vocabulary · conclusion · source

When your test is over, the science is not finished. Science ideas, findings, patterns and relationships have to be **communicated** — shared with other people, on purpose, in a way that fits the people who will read or watch them. The people you share your work with are your **audience**. What you want your work to do is your **purpose**. A **format** is the shape your work takes: a science report, a labelled poster, a persuasive letter, a slideshow or a short animation. The same finding can be shared in all of these formats — but each one fits a different purpose and audience.

One finding, three audiences, three ways to share it



One finding on the left with a small column graph; three arrows lead to three audiences, each with its own format: another science class gets a science report, a Year 2 class gets a labelled poster, and the school council gets a persuasive letter

Theory

Every message has a purpose and an audience

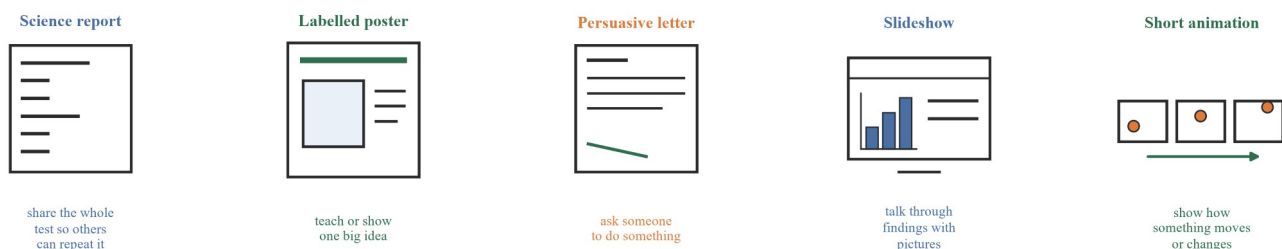
Before you write or make anything, answer two questions:

- **Who is my audience?** A Year 2 class, your own teacher, another science class, the school council — each audience knows different things and needs different help.
- **What is my purpose?** Do you want to *share* a finding so someone else can repeat the test? *Teach* an idea? *Persuade* someone to do something?

The audience and the purpose choose the format. You would not send a science report to a Year 2 class, and you would not send a poster to someone who needs every step of your test.

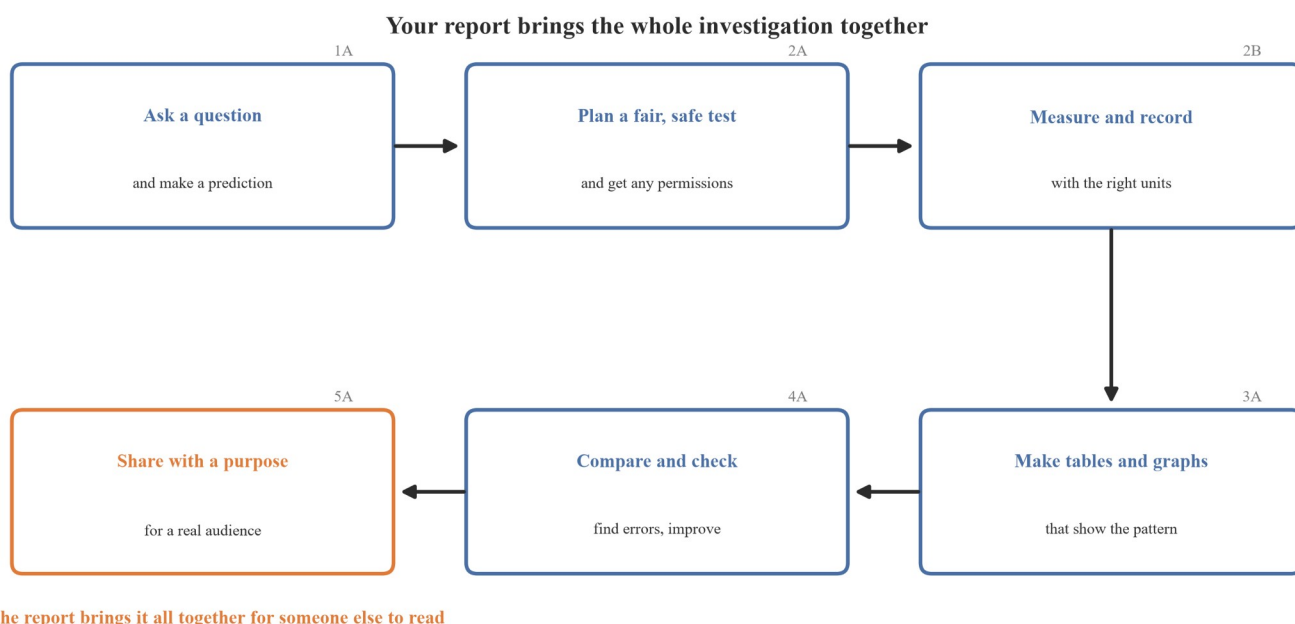
Five formats, and when each one fits

Five ways to present the same science



Five panels, one for each format. Science report: a page of headings and lines. Labelled poster: a big title, one picture and short labels. Persuasive letter: a greeting, lines of text and a signature. Slideshow: a screen with a finding as the title, one graph and two short points. Short animation: three frames with a ball moving up a ramp and an arrow of motion

- **Science report** — shares the whole test so others can repeat it. Your report is the last step of the whole investigation: it brings together your question and prediction (1A), your plan (2A), your measurements (2B), your tables and graphs (3A) and your checks for errors (4A).



A flow of six steps in two rows: ask a question and make a prediction (1A), plan a fair and safe test (2A), measure and record with the right units (2B), make tables and graphs that show the pattern (3A), compare and check to find errors and improve (4A), and share with a purpose for a real audience (5A)

- **Labelled poster** — teaches or shows one big idea. One clear, labelled picture does most of the work.
- **Persuasive letter** — asks someone to do something, and gives reasons backed by evidence.
- **Slideshow** — talks an audience through findings with pictures that carry the point.
- **Short animation** — shows how something moves or changes, step by step.

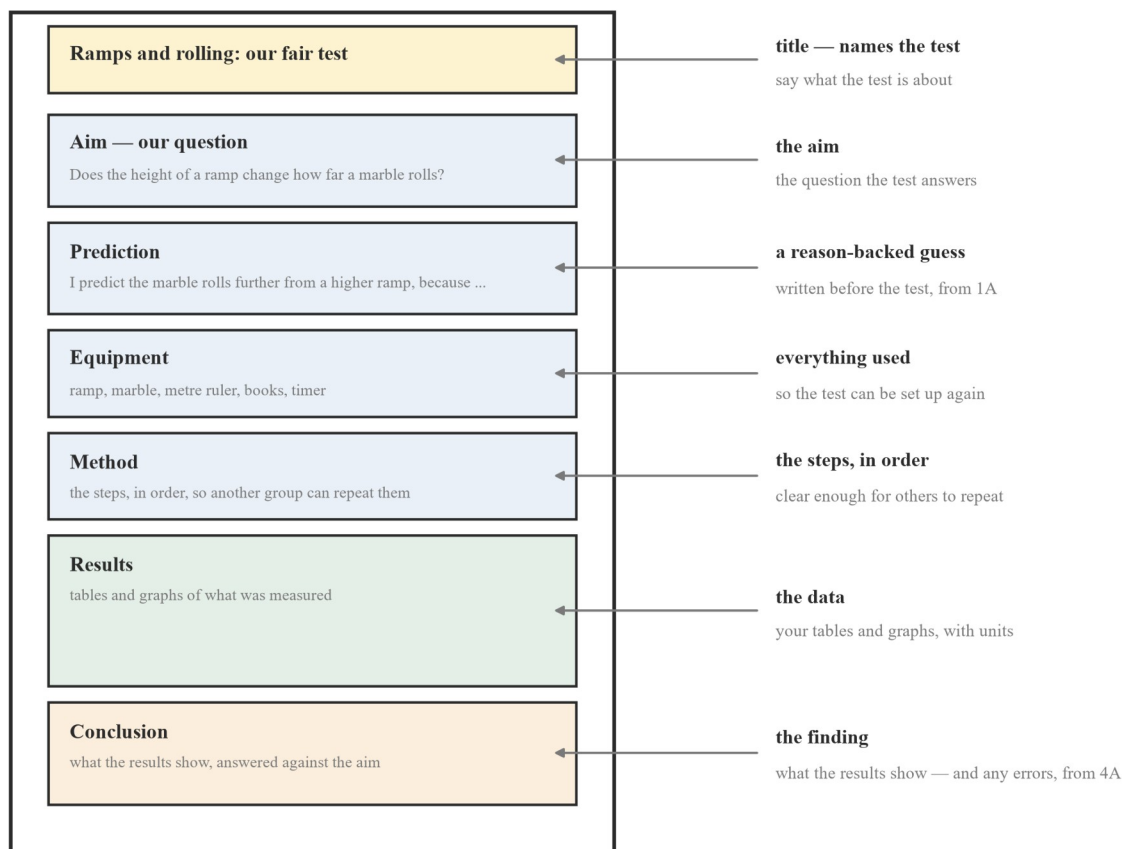
Digital tools are part of communicating too. Software can make your slideshow, your animation and your graphs — but a tool only adds something when it makes the finding clearer for your audience.

The parts of a science report

A science report has set parts, in a set order. Each part does one job.

The parts of a science report

Name and date go at the top



A report page with seven labelled parts, top to bottom: title (“Ramps and rolling: our fair test”), aim (the question the test answers), prediction (a reason-backed guess written before the test), equipment (everything used), method (the steps, in order, so another group can repeat them), results (tables and graphs of what was measured, with units), and conclusion (what the results show, answered against the aim)

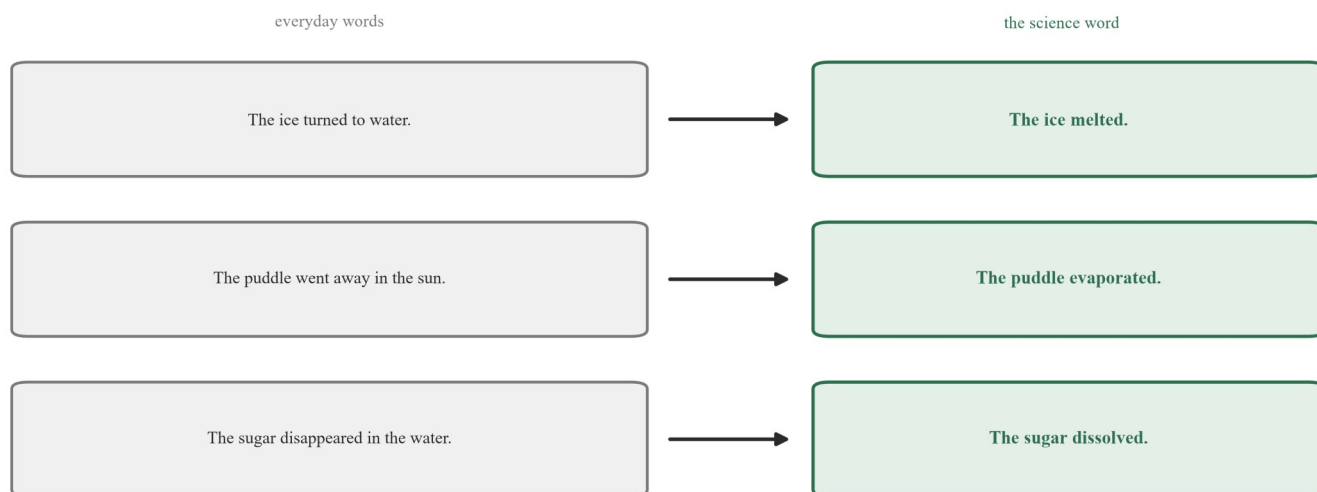
- The **title** names the test.
- The **aim** is the question the test answers.
- The **prediction** is your reason-backed guess, written *before* the test.
- The **equipment** list names everything used, so the test can be set up again.
- The **method** gives the steps, in order, clear enough for another group to repeat.
- The **results** hold your tables and graphs, with units on every number.
- The **conclusion** answers the aim: it says what the results show, and names any errors and how to improve (that is your 4A checking, inside the report).

Notice the order. The report walks your reader through the investigation in the same order you did it.

Using the right science words

Good communicating does not avoid science vocabulary — it uses the right word, exactly. An everyday word says *something happened*; the science word says *what* happened.

Say exactly what happened: use the science word



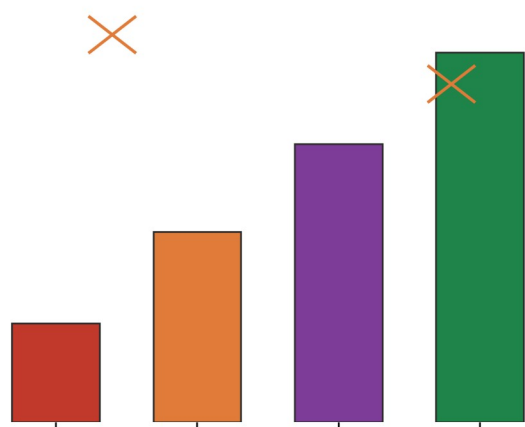
Three rows, each with an everyday sentence on the left and the same sentence on the right using the exact science word: “The ice turned to water” becomes “The ice melted”; “The puddle went away in the sun” becomes “The puddle evaporated”; “The sugar disappeared in the water” becomes “The sugar dissolved”

“Turned to water”, “went away” and “disappeared” all sound the same — but melting, evaporating and dissolving are three different changes. The science word carries the science. Use it, and define any new word your audience may not know.

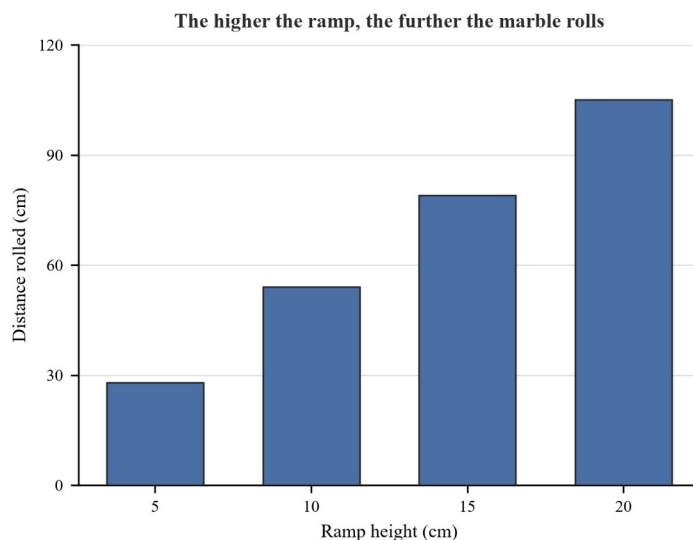
Make the representation carry the finding

Tables, graphs and pictures are **representations** of your data. A good representation carries the finding; a poor one only decorates the page.

A representation should carry the finding, not decorate the page



decorates: no title, no labels,
no units — the bars say nothing



carries the finding: title, labels,
units and a source line

The same four columns of data drawn twice. Left: bare columns in four different colours with star doodles, no title, no labels and no units — the bars say nothing. Right: the same columns with the finding as the title (“The higher the ramp, the further the marble rolls”), both axes labelled with units (ramp height in cm, distance rolled in cm) and a source line at the bottom

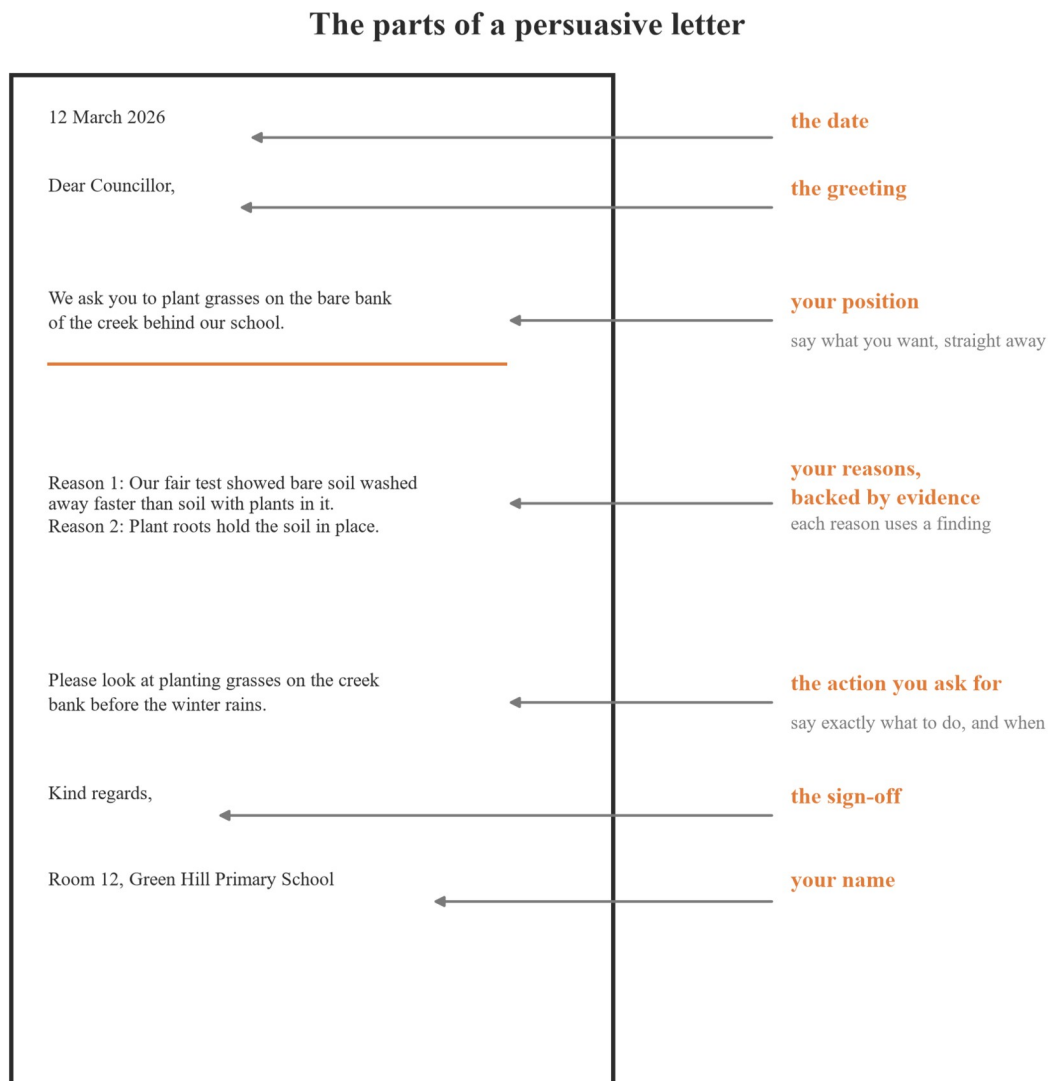
Before a graph is ready to show an audience, check that:

- the **title is the finding**, not just the topic — “The higher the ramp, the further the marble rolls” tells your reader the pattern before they look at a single bar;
- both **axes are labelled**, with the **unit** on each one (cm, mL, s, °C);
- a **source line** says where the data came from, so your reader knows it is your own measurement.

The same rule holds for pictures and posters: every label, line and colour should help your reader see the finding. If it only makes the page pretty, it is decoration.

The parts of a persuasive letter

A persuasive letter has one job: to get someone to *do* something. It opens with your position, backs it with reasons and evidence, and closes with the exact action you ask for.



SCENARIO — a practice letter written for this page

A letter page with seven labelled parts: the date, the greeting (“Dear Councillor,”), your position underlined (“We ask you to plant grasses on the bare bank of the creek behind our school”), your reasons backed by evidence (Reason 1 from a fair test, Reason 2 about plant roots holding soil), the action you ask for (“Please look at planting grasses on the creek bank before the winter rains”), the sign-off, and your name

Each reason should lean on a finding — something you measured or observed, not just something you feel. That is what makes a letter persuasive instead of just loud.

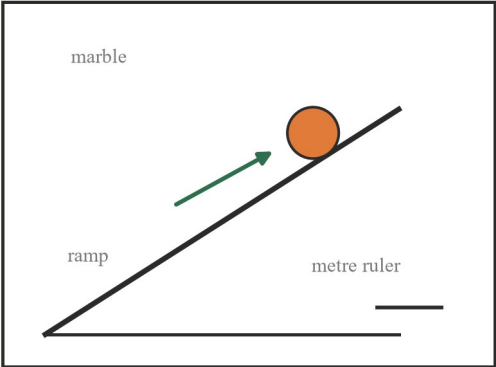
The parts of a labelled poster

A poster teaches one big idea at a glance.



The parts of a labelled poster

Ramps: higher means further!



- We changed the ramp height: 5, 10, 15 and 20 cm.
- We measured how far the marble rolled.
- From 20 cm it rolled about 4 times as far as from 5 cm.

Class 6B ramp test — SCENARIO data

big title = the key message
one line a reader remembers

one clear, labelled picture
the picture is the largest part

a few short facts
only what the audience needs

source line
where the findings came from

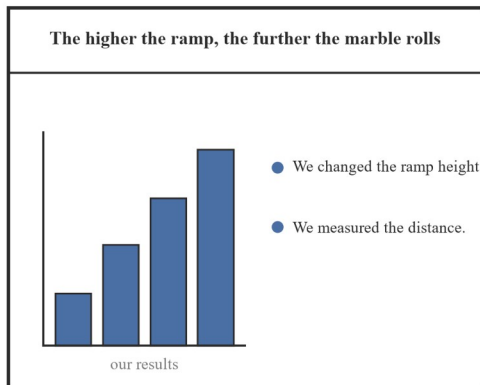
A poster with four labelled parts: a big title that is the key message (“Ramps: higher means further!”), one clear labelled picture of a marble on a ramp (the picture is the largest part), a few short facts (only what the audience needs), and a source line at the bottom

The title is the message, the picture is the teaching, and the words stay short. A reader should get your finding in ten seconds, and the labels should use the right science words.

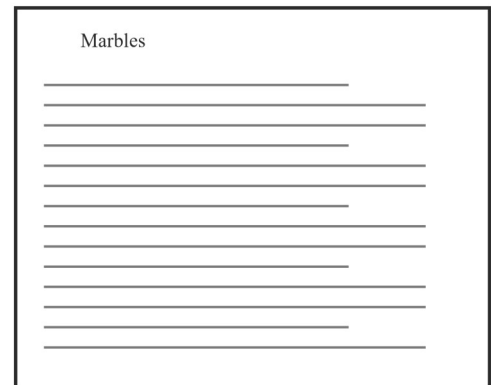
Slideshows that help

A slide is a helper for a talk, not a script. The audience should listen to *you*.

What makes a slide work



a slide that helps: the title is the finding,
one picture, two short points



a slide that gets in the way: a wall of tiny words
and no picture — the audience reads, not listens

Two slides side by side. Left, ticked: the title is the finding, there is one graph and two short points. Right, crossed: a one-word title and a wall of tiny lines of text with no picture — the audience reads instead of listens

A slide that helps has:

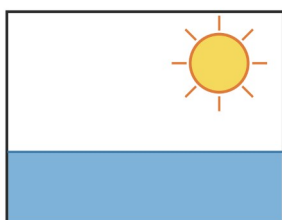
- a title that is the finding;
- one clear picture or graph;
- two or three short points, in letters big enough to read from the back of the room.

A slide that gets in the way is a wall of tiny words. Your audience reads it and stops listening to you.

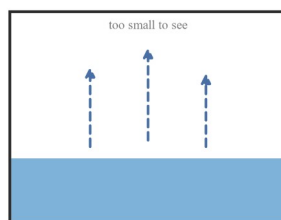
Short animations that teach

An animation is a chain of still frames shown one after another, so something looks like it moves. It is the best format for teaching a *process* — something that happens in steps.

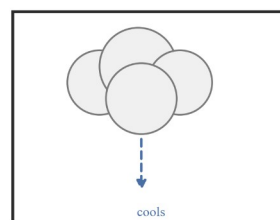
A short animation can teach a process, step by step



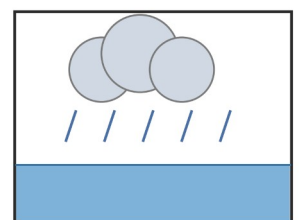
1 The sun warms
the sea



2 Water goes up
into the air



3 High up it cools
and forms clouds



4 Rain falls and the
water starts again

frames from a class animation about the water cycle (from Levels 3–4)

Four frames of a class animation about the water cycle. Frame 1: the sun warms the sea. Frame 2: water goes up into the air, too small to see. Frame 3: high up, it cools and forms clouds. Frame 4: rain falls and the water starts again

Plan an animation as a frame-by-frame plan before you use any software: one step per frame, one idea per frame, and a short label under each one.

Before you present

Whatever the format, run the same checks before your work goes to its audience.



Before you present — check your work



I know my purpose — what I want this to do



I know my audience — who will read or watch it



My format fits both



I use the right science words



My graph has a title, labels and units



I name my sources



I checked my spelling

A checklist titled “Before you present — check your work” with seven ticked boxes: I know my purpose; I know my audience; my format fits both; I use the right science words; my graph has a title, labels and units; I name my sources; I checked my spelling

Worked examples

Example 1 — with support

Our class ramp test found that *the higher the ramp, the further the marble rolls*. Choose the best format for each audience, and say why.

Working	Comment
(a) Another science class wants to repeat our test. → a science report	They need every step, not just the finding. A report shares the aim, method, results and conclusion, so the test can be repeated.
(b) A Year 2 class wants to learn the finding. → a labelled poster	They need the one big idea, fast and clearly. One clear, labelled picture and a few short facts teach the idea at a glance.
(c) The school council decides what kits each class gets. → a persuasive letter	We want them to <i>do</i> something: buy ramp kits. A letter states a position, gives reasons from our evidence, and asks for an action.

∴ Same finding, three formats — the purpose and the audience choose the format.

Example 2 — with support

Sasha draws her ramp graph with bare columns: no title, no labels, no units. Fix the graph so it carries the finding.

Working	Comment
1. Title: "The higher the ramp, the further the marble rolls."	The title is the finding, not just "Marbles".
2. Label along the bottom: "Ramp height (cm)".	The thing we change, with its unit.
3. Label up the side: "Distance rolled (cm)".	The thing we measure, with its unit.
4. Source line: "Class 6B ramp test."	The reader sees where the data came from.

∴ With a finding-title, labels, units and a source line, the graph carries the finding by itself.

Example 3 — by yourself

Tomas writes three sentences in his conclusion. Rewrite each one using the exact science word, then write his finding as one sentence with units.

1. "The ice in the cup turned to water."
2. "By lunchtime, the puddle outside had gone away in the sun."
3. Finding, with units: from the 5 cm ramp the marble rolled 28 cm, and from the 20 cm ramp it rolled 105 cm.

Practice questions

With support

Q1 (3 marks) Fill each gap with the best word from the box. Each word is used once.

audience · purpose · communicate

- (a) To _ _ _ means to share ideas or findings with other people.
- (b) The _ _ _ is what you want your work to do.
- (c) The _ _ _ is the group of people who will read or watch your work.

Q2 (3 marks) Match each purpose (1–3) to the best format (a–c).

1. Ask the school council to buy ramp kits for every class.
 2. Show another science class every step, so they can repeat the test.
 3. Teach a Year 2 class one big idea at a glance.
- a. labelled poster b. science report c. persuasive letter

Q3 (3 marks) Name the part of a science report described.

- (a) the question the test answers
- (b) the steps, in order, so another group can repeat the test
- (c) what the results show, answered against the aim

Q4 (3 marks) Here are three audiences for the ramp finding. Pick the best format for each from the list, and finish the reason.

science report · labelled poster · persuasive letter

- (a) your teacher, who needs to see your method and results to give you feedback → format: _ _ _ _ , because _ _ _ _
- (b) the whole school at the science fair → format: _ _ _ _ , because _ _ _ _
- (c) the principal, who can approve a class science night → format: _ _ _ _ , because _ _ _ _

Q5 (3 marks) Rewrite each sentence using the exact science word.

- (a) The butter turned to liquid in the hot pan.
- (b) The wet washing dried as the water went up into the air.
- (c) The salt disappeared when we stirred it into the water.

Q6 (3 marks) Ravi hands you a graph with bare columns and no words at all. Name three fixes that make it carry the finding.

By yourself

Q7 (4 marks) Your group's finding is: *soil with plants in it washes away more slowly than bare soil*. Choose the best format and give one reason for each audience.

- (a) the local council, who can plant the bare creek bank
- (b) a Year 1 class

Q8 (3 marks) These report parts are out of order. Write them in the correct order.

conclusion · method · aim · results · prediction · equipment

Q9 (3 marks) A class tested how far a marble rolls from ramps of different height. From the 5 cm ramp it rolled 28 cm; from the 20 cm ramp it rolled 105 cm.

- (a) Write their finding as one sentence.
- (b) Name the report part this sentence belongs in.

Q10 (3 marks) You will teach the ramp finding on a labelled poster. List the four parts your poster must have, and say what goes in each one for this finding.

Q11 (3 marks) Here is part of a letter to a local council.

“We ask you to plant grasses on the bare bank of the creek behind our school. Our fair test showed that bare soil washed away faster than soil with plants in it. Please look at planting grasses on the creek bank before the winter rains.”

Name the three persuasive-letter parts you can find in it.

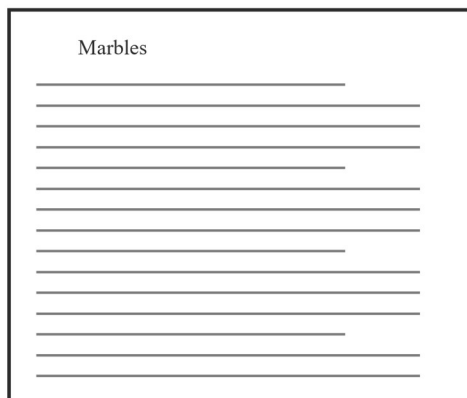
Q12 (3 marks) A student's slide is one word — “Marbles” — above a wall of tiny text. Give three changes that turn it into a slide that helps.

Q13 (3 marks) Plan a four-frame animation that teaches a Year 3 class how a puddle dries after rain. Say what each frame shows.

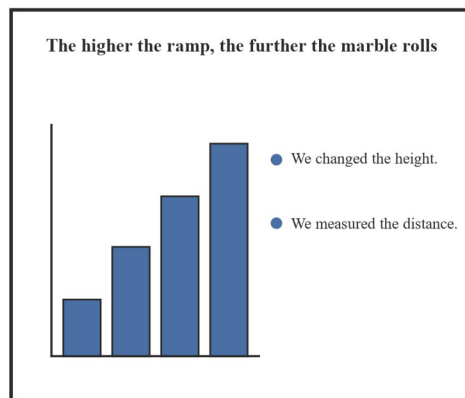
Q14 (3 marks) Two students present the same ramp finding on different slides.

Two students present the same finding

Slide A



Slide B



Slide A is a one-word title, “Marbles”, above fifteen lines of tiny text. Slide B has the finding as its title, one column graph of the results, and two short points: “We changed the height” and “We measured the distance”

- (a) Which slide works better?
- (b) Give two reasons for your choice.

Q15 (5 marks) SCENARIO — *data invented for skills practice*. A class rolled a marble from ramps of four heights and measured how far it rolled.

Ramp height (cm)	5	10	15	20
Distance rolled (cm)	28	54	79	105

- (a) Write the finding as one sentence. (1 mark)
- (b) The class draws a column graph. List two things that must be on it before it can carry the finding. (2 marks)
- (c) The class will share this finding with a Year 2 class. Choose the best format and give one reason. (2 marks)

Q16 (5 marks) SCENARIO — *findings invented for skills practice*. Your class tested how fast water washes soil away. Bare soil washed away faster than soil with grass in it, and the grass roots held the soil together. The bare bank of the creek behind your school washes away a little more after every rain.

Write a short persuasive letter to the local council that has all five parts: the greeting, your position, two reasons backed by your evidence, the action you ask for, and your sign-off.

Practical — one finding, two audiences

PRACTICAL — this page plans or analyses work done in the classroom, laboratory or field. It is not a substitute for doing it.

Question — Does the height of a ramp change how far a marble rolls?

Your communication task — run the test, then share the same finding in *two* formats for *two* different audiences, and say why each format fits.

Equipment — ramp (ruler or toy-car track), marble, metre ruler, stack of books, sticky notes or chalk to mark the stopping point.

Safety and risk

Risk	How we stay safe
Marbles rolling onto the floor	Roll one marble at a time; pick up marbles straight away; keep the rolling area clear of bags and feet.
Books or the ramp falling	Build the book stack flat and steady; keep the stack low.

The things we change, measure and keep the same

The one we change	the height of the ramp (5, 10, 15 and 20 cm)
The one we measure	the distance the marble rolls from the end of the ramp (cm)
The ones we keep the same	the same marble, the same ramp, the same floor, the same starting point on the ramp

Method

- Stack books to hold the ramp at 5 cm. Check the height with the metre ruler.
- Let the marble roll from the top of the ramp. Do not push it.
- Mark where it stops and measure the distance from the end of the ramp in cm. Record it.
- Repeat steps 1–3 for ramp heights of 10, 15 and 20 cm.
- Look for the pattern in your results and write your finding as one sentence.

Results

Ramp height (cm)	5	10	15	20
Distance rolled (cm)				

Thinking about the results

- What pattern do your results show? Write it as one sentence.
- Which number would you measure again, and why?
- Name one thing that made your distances a little different from another group's.

Purpose and audience plan

	Audience 1	Audience 2
My audience is	- - - -	- - - -
My purpose is	- - - -	- - - -
My format is	- - - -	- - - -
It fits because	- - - -	- - - -

Now make both versions: your finding as a labelled poster for one audience, and as a short science report for the other. Check each one against the “Before you present” list before you share it.

Answers

1 (a) communicate (b) purpose (c) audience **2** 1–c, 2–b, 3–a **3** (a) the aim (b) the method (c) the conclusion **4** (a) science report — the teacher needs the method and results, not just the finding (b) labelled poster — the big idea at a glance for a walking audience (c) persuasive letter — you want the principal to *do* something **5** (a) The butter melted. (b) The water on the washing evaporated. (c) The salt dissolved. **6** any three: a title that is the finding; a label with unit along the bottom; a label with unit up the side; a source line **7** (a) persuasive letter — the council can act on it, and reasons from evidence persuade (b) labelled poster — one big idea, one clear picture, short words **8** aim, prediction, equipment, method, results, conclusion **9** (a) The higher the ramp, the further the marble rolls (from 28 cm at 5 cm to 105 cm at 20 cm). (b) the conclusion **10** title = the finding; one clear labelled picture of the ramp and marble; a few short facts (what was changed, what was measured, the pattern); a source line **11** the position; a reason backed by evidence; the action asked for **12** any three: make the title the finding; cut the wall of text to two or three short points; add one clear graph or picture; make the letters large enough to read from the back of the room **13** any four-frame plan that shows the steps in order, e.g. frame 1 rain leaves a puddle; frame 2 the sun comes out; frame 3 the water goes up into the air; frame 4 the puddle is gone **14** (a) Slide B (b) any two: the title is the finding; one clear graph carries the data; only two short points, so the audience listens; Slide A is a wall of tiny text the audience reads instead of listening **15** (a) The higher the ramp, the further the marble rolls. (b) any two: a title that is the finding; both axes labelled with units (cm); a source line (c) labelled poster — it teaches one big idea at a glance for a Year 2 class (format *1*, reason *1*) **16** check: greeting; position stated straight away; two reasons that each lean on the test evidence; the exact action asked for; sign-off and name **Practical** — pattern: the higher the ramp, the further the marble rolls; poster fits a teaching audience, report fits an audience that needs every step

Full solutions

Q1 (3 marks) (a) communicate — to share ideas or findings with other people. *1 mark* (b) purpose — what you want the work to do. *1 mark* (c) audience — the people who will read or watch it. *1 mark*

Q2 (3 marks) 1–c: asking someone to *do* something is a persuasive letter’s job. *1 mark* 2–b: repeating a test needs every step, which a science report carries. *1 mark* 3–a: teaching one big idea at a glance is a labelled poster’s job. *1 mark*

Q3 (3 marks) (a) the aim *1 mark* (b) the method *1 mark* (c) the conclusion *1 mark*

Q4 (3 marks) (a) science report, because the teacher needs to see the method, results and checking to give feedback. *1 mark* (b) labelled poster, because a fair audience walks past — the finding has to land at a glance. *1 mark* (c) persuasive letter, because the purpose is to get the principal to approve something, with reasons from evidence. *1 mark*

Q5 (3 marks) (a) The butter **melted**. *1 mark* (b) The water on the washing **evaporated**. *1 mark* (c) The salt **dissolved**. *1 mark* Melting, evaporating and dissolving are three different changes — the everyday words hide that, and the science words show it.

Q6 (3 marks) One mark each for any three of: a title that states the finding; a label and unit along the bottom; a label and unit up the side; a source line naming where the data came from. *3 marks*

Q7 (4 marks) (a) Format: persuasive letter, *1 mark* because the council is the group that can plant the bank. *1 mark* Reasons backed by your test evidence are what persuade them to act. (b) Format: labelled poster, *1 mark* because a Year 1 class needs one big idea with one clear, labelled picture and very short words. *1 mark*

Q8 (3 marks) aim → prediction → equipment → method → results → conclusion. *3 marks* (one error allowed for 2; two errors for 1)

Q9 (3 marks) (a) “The higher the ramp, the further the marble rolls — from 28 cm at the 5 cm ramp to 105 cm at the 20 cm ramp.” *2 marks* (pattern *1*, units *1*) (b) the conclusion. *1 mark*

Q10 (3 marks) One mark each for any three of the four parts, correctly used: the title is the finding (“Higher means further”); one clear labelled picture (ramp, marble, ruler); a few short facts (what we changed, what we measured, the pattern); a source line (our class test). *3 marks*

Q11 (3 marks) The position (“We ask you to plant grasses on the bare bank...”), *1 mark* a reason backed by evidence (“Our fair test showed that bare soil washed away faster...”), *1 mark* the action asked for (“Please look at planting grasses... before the winter rains”). *1 mark*

Q12 (3 marks) One mark each for any three of: title becomes the finding; the wall of text is cut to two or three short points; one clear graph or picture is added; the letters are made big enough to read from the back. *3 marks*

Q13 (3 marks) One mark for four frames in a sensible order, one mark for one step per frame, one mark for the steps actually explaining drying (water going up into the air as the sun warms it). *3 marks* Example: 1 a puddle sits after rain; 2 the sun warms it; 3 the water goes up into the air; 4 the puddle is gone.

Q14 (3 marks) (a) Slide B. *1 mark* (b) One mark each for any two of: B’s title is the finding; B’s one graph carries the data with it; B has only two short points, so the audience listens to the talk; A is a wall of tiny text, so the audience reads and stops listening. *2 marks*

Q15 (5 marks) (a) “The higher the ramp, the further the marble rolls.” *1 mark* (b) One mark each for any two of: a title that states the finding; both axes labelled with the unit (cm); a source line. *2 marks* (c) labelled poster, *1 mark* because a Year 2 class needs the one big idea at a glance, not every step of the test. *1 mark*

Q16 (5 marks) One mark each: greeting (e.g. “Dear Councillor,”); position stated straight away (plant the bare creek bank); reason 1 leaning on evidence (bare soil washed away faster in the fair test); reason 2 leaning on evidence (grass roots held the soil together); the exact action asked for, with a time (before the winter rains) plus a sign-off and name. *5 marks*

Practical (not for marks — check your own plan) Pattern sentence: “The higher the ramp, the further the marble rolls.” A report fits the audience that needs every step (another class, your teacher); a labelled poster fits the audience you are teaching. Each version passes the “Before you present” checks: purpose named, audience named, format fits both, right science words, graph with title–labels–units, source named, spelling checked.

Test

Topic test 1 — Working scientifically

Science inquiry · Chapters 1–5 · Subtopics 1A, 2A, 2B, 3A, 4A, 5A · Codes VC2S6I01, VC2S6I02, VC2S6I03, VC2S6I04, VC2S6I05 and VC2S6I06

Total: 40 marks · Section A (multiple choice): 12 marks · Section B (short response): 22 marks · Section C (extended response): 6 marks

All 40 marks are science inquiry marks.

Planned for about 45 minutes. This paper is untimed — there is no time to beat.

This is a school-designed paper. It is not a VCAA instrument. Achievement at Levels 5 and 6 is reported against the Victorian Curriculum achievement standard on teacher judgement; the marks here are one source of evidence towards that judgement.

Conditions

- Completion is **untimed**. The 45 minutes is planning guidance only; take as long as you need.
- **Reading support** is permitted. Your teacher may read any question out to you if you need it. Reading is not what is being looked at, and your teacher will not help with the answer.
- **No calculator. No formula sheet. No reading time.**
- Answer every question. For multiple-choice questions, circle the letter of the best answer. There is only one best answer for each question.

In this test you will:

- pick out investigable questions and reasoned predictions (Q1, Q2)
- plan a fair, safe and repeatable investigation (Q3, Q4, Q13, Q14)
- choose units, convert units and handle repeat readings (Q5, Q6, Q15, Q16)
- choose and check representations of data (Q7, Q8, Q17, Q18)
- find errors, compare findings and ask the next question (Q9, Q10, Q19, Q20)
- match a format to a purpose and an audience (Q11, Q12, Q21, Q22)
- read a real data table, judge a claim against it and share the finding (Q23)

Section A — Multiple choice (12 marks)

Each question is worth 1 mark. Circle the letter of the best answer.

Q1 (1 mark · VC2S6I01) Which is MOST investigable?

A. Are deserts pretty? B. How do animals in desert habitats survive heat? C. Why do deserts exist? D. Is the desert mysterious?

Q2 (1 mark · VC2S6I01) Mia will roll a marble down ramps of different heights. She is testing whether the height of the ramp changes how far the marble rolls. Which is a **reasoned prediction**?

A. “I predict the marble will roll further when the ramp is higher, because the higher ramp is steeper.” B. “I predict the marble will roll further when the ramp is higher.” C. “The marble rolled 54 cm from the 10 cm ramp.” D. “I hope the marble rolls a really long way.”

Q3 (1 mark · VC2S6I02) Before a field excursion, planning should include:

A. Deciding what the weather will be on the day B. Only choosing what to bring for lunch C. Safety checks, equipment list, route and predicted sample sites D. Picking who will sit next to whom on the bus

Q4 (1 mark · VC2S6I02) Why must you **MATCH** the method to the question?

A. Every science question can be answered with the same method B. Different questions need different kinds of evidence C. It makes the method easier to write down D. Teachers prefer one method for every topic

Q5 (1 mark · VC2S6I03) The standard unit for mass is the:

A. metre B. second C. volt D. gram (or kilogram)

Q6 (1 mark · VC2S6I03) Electric current is measured in:

A. amperes (A) B. volts C. grams D. metres

Q7 (1 mark · VC2S6I04) An annotation on a plant photo should:

A. Use only colours, with no written words B. Hide the parts you are unsure about C. Show parts from a different plant for comparison D. Label structures clearly with their names

Q8 (1 mark · VC2S6I04) A group measures the temperature of a cup of water every 2 minutes for 10 minutes. Which representation best shows how the temperature changes with time?

A. A column graph B. A labelled photo of the cup C. A line graph D. A list of the numbers with no graph

Q9 (1 mark · VC2S6I05) Misreading a thermometer scale is an example of a:

A. Measurement error B. Fault with the thermometer itself C. Choice of incorrect method D. Mistake too small to count as an error

Q10 (1 mark · VC2S6I05) Sam tests how light affects plant growth, but he also gives the plants in the light more water than the plants in the dark. Why can he not trust his finding?

A. Plants never grow the same way twice. B. He changed two things at once, so he cannot tell which one made the difference. C. He should have used more plants in the dark. D. Water does not matter to plants.

Q11 (1 mark · VC2S6I06) The method section of a scientific report describes:

A. The final conclusions of the investigation B. The background theory only C. What was done in the investigation, step-by-step D. The results and graphs

Q12 (1 mark · VC2S6I06) Your class found that *the higher the ramp, the further the marble rolls*. You want to teach that one big idea to a Year 2 class. Which format fits best?

A. A science report B. A persuasive letter C. A slideshow with twenty slides D. A labelled poster

Section B — Short response (22 marks)

SCENARIO — *a class test invented for skills practice*. A class tests how the height of a ramp changes how far a marble rolls. They roll the same marble from the same ramp at heights of 5 cm, 10 cm, 15 cm and 20 cm, and measure how far the marble rolls each time.

Q13 (3 marks · VC2S6I02) Name the variables in this fair test.

- (a) the variable the class changes (1 mark)
- (b) the variable the class measures (1 mark)
- (c) one variable the class keeps the same (1 mark)

Q14 (2 marks · VC2S6I02) **SCENARIO** — *invented for skills practice*. A class plans a field observation of what lives in and beside a creek in a national park. Parks Victoria manages the park.

- (a) Name one thing the class must get before it starts its investigation in the park. (1 mark)
- (b) Why must the class get it *before* the investigation starts, not after? (1 mark)

Q15 (2 marks · VC2S6I03) Write the standard unit for each quantity.

- (a) length (1 mark)

(b) temperature (1 mark)

Q16 (3 marks · VC2S6I03)

- (a) Complete: 3 kilograms = _ _ _ grams. (1 mark)
- (b) A group times the same marble roll three times. The readings are 22 s, 23 s and 29 s.
- (c) Which reading does not fit with the other two? (1 mark)
- (ii) What should the group do next? (1 mark)

SCENARIO — data invented for skills practice. A group measures the temperature of a cup of hot water every 2 minutes.

Time (min)	0	2	4	6	8
Temperature (°C)	50	46	42	39	37

Q17 (2 marks · VC2S6I04)

- (a) Which graph fits this data best — a column graph or a line graph? (1 mark)
- (b) Why? (1 mark)

Q18 (3 marks · VC2S6I04) Use the table above.

- (a) By how many °C did the temperature fall in the first 4 minutes? (1 mark)
- (b) Name two things the graph must have before it is ready to carry the finding. (2 marks)

SCENARIO — findings invented for skills practice. Two groups roll the same marble from the same ramp, set at 15 cm. Group A measures 78 cm. Group B measures 52 cm.

Q19 (2 marks · VC2S6I05)

- (a) Give one source of error that could explain why the two findings are different. (1 mark)
- (b) Suggest one improvement to the method so that two groups get closer findings. (1 mark)

Q20 (1 mark · VC2S6I05) Write one question these results raise for a next investigation.

Q21 (2 marks · VC2S6I06) Match each audience to the best format. Use each format once.

science report · labelled poster

- (a) Another science class wants to repeat your ramp test. (1 mark)
- (b) A Year 2 class wants to learn one big idea at a glance. (1 mark)

Q22 (2 marks · VC2S6I06)

- (a) Rewrite this sentence using the exact science word: “The sugar went away when we stirred it into the water.” (1 mark)
- (b) Name the part of a science report described: “The steps, in order, so another group can repeat the test.” (1 mark)

Section C — Extended response (6 marks)

Q23 (6 marks · VC2S6I04, VC2S6I05 and VC2S6I06) The table below is a real record. It shows the rainfall that usually falls in each month in Melbourne, from the years 2013 to 2026.

Month	Rainfall (mm)
January	53.3
February	24.7
March	34.5

Month	Rainfall (mm)
April	66.7
May	46.3
June	41.3
July	40.8
August	45.6
September	42.7
October	64.2
November	64.4
December	50.2

Source: Bureau of Meteorology, Melbourne (Olympic Park) station 086338, monthly rainfall, 2013–2026, bom.gov.au — retrieved 2026-08-21.

- Which month has the highest rainfall? Write the month and the number. *(1 mark)*
- A student says: “Most of Melbourne’s rain falls in winter.” Use the table to say whether the evidence supports what the student said. Use numbers from the table in your answer. *(2 marks)*
- Write one sentence about the rainfall in February, using the number from the table. *(1 mark)*
- Write one new investigable question about Melbourne’s rainfall that this table raises. *(1 mark)*
- Your class shares this finding with the school garden club on a labelled poster. Write a title for the poster that *is* the finding. *(1 mark)*

Marking guide

This guide is written for a generalist primary teacher — no science background is needed. Award a mark when the student's answer matches an acceptable response below or says the same idea in other words. Do not award half marks. The marks are a record that evidence was seen; they are not used to rank students.

Section A — Multiple choice

Q	Answer	Code	Source
Q1	B	VC2S6I01	bank item VC2S6I01.E01.S01.D 1.V01
Q2	A	VC2S6I01	authored — the bank supplies no prediction item at this level
Q3	C	VC2S6I02	bank item VC2S6I02.E02.S01.D 2.V01
Q4	B	VC2S6I02	bank item VC2S6I02.E01.S01.D 3.V01
Q5	D	VC2S6I03	bank item VC2S6I03.E01.S01.D 1.V01
Q6	A	VC2S6I03	bank item VC2S6I03.E01.S01.D 2.V01
Q7	D	VC2S6I04	bank item VC2S6I04.E01.S01.D 1.V01
Q8	C	VC2S6I04	authored — the bank supplies no graph-choice item at this level
Q9	A	VC2S6I05	bank item VC2S6I05.E01.S01.D 1.V01
Q10	B	VC2S6I05	authored — the bank's item at this level is written above the year level
Q11	C	VC2S6I06	bank item VC2S6I06.E02.S01.D 2.V01
Q12	D	VC2S6I06	authored — the bank's item at this level is written above the year level

Items drawn from the bank are printed with their stem and options word for word; only the positions of the options have changed for this paper (the bank stores every correct answer in position A, and a printed paper needs the answers spread out). All bank items sit under their own code; none is drawn from a neighbouring code.

Why each answer is correct, in brief:

- **Q1 B** — it can be answered by observing and measuring; the others ask for an opinion or have no testable answer.

- **Q2 A** — a reasoned prediction is a prediction *plus a reason*, written before the test as “I predict ... because ...”. B is a prediction with no reason; C is a result, written after a test; D is a wish.
- **Q3 C** — safety checks, equipment, route and sample sites are what make fieldwork safe and repeatable.
- **Q4 B** — the kind of question decides the kind of investigation (fair test, field observation, survey, simulation or research).
- **Q5 D** — mass is measured in grams or kilograms; metres measure length, seconds measure time and volts measure electrical push.
- **Q6 A** — electric current is measured in amperes; volts measure the electrical push that drives the current.
- **Q7 D** — an annotation labels what is there, clearly and by name.
- **Q8 C** — a line graph is the representation for change over time.
- **Q9 A** — the mistake is in the reading, not in the instrument or the method.
- **Q10 B** — a fair test changes one variable at a time; two changes at once means the finding cannot be trusted to either one.
- **Q11 C** — the method is the steps, in order, so the test can be repeated; the conclusion and the results live in their own parts.
- **Q12 D** — a labelled poster teaches one big idea at a glance, which is what a Year 2 class needs; a report carries every step, and a letter asks someone to do something.

Section B — Short response

Q13 (3 marks · VC2S6I02) (a) the height of the ramp. 1 mark (b) how far the marble rolls (the distance rolled). 1 mark (c) any one of: the same marble; the same ramp; the same floor; the same starting point on the ramp. 1 mark Do not accept “the weight of the marble” unless it is clearly offered as something kept the same.

Q14 (2 marks · VC2S6I02) (a) permission (a permit) from Parks Victoria, the body that manages the park. 1 mark Accept “permission from the land manager” or “a permit”. (b) because in a protected area approval is obtained *before* work starts — that is the rule, and access can be limited or refused. 1 mark Marker note: subtopic 2A teaches this as process and law. The real instruments behind it are the *National Parks Act 1975* (Vic) and Parks Victoria permits; for cultural heritage, permissions come through the *Aboriginal Heritage Act 2006* (Vic) and the Registered Aboriginal Party system. Students are not expected to name the Acts — the mark is for knowing that permission comes first and comes from a body other than the class.

Q15 (2 marks · VC2S6I03) (a) the metre (m). 1 mark Accept “metre” or “m”; do not accept “cm” or “mm”, which are prefixed forms of the metre. (b) degrees Celsius (°C). 1 mark Accept “degrees Celsius” or “°C”; do not accept “degrees” alone.

Q16 (3 marks · VC2S6I03) (a) 3000. 1 mark (b)(i) 29 s. 1 mark (b)(ii) take the measurement again (repeat that trial). 1 mark Do not award the mark for “work out the average” or “add them and divide”: this book compares repeat readings, spots the one that does not fit and measures again — averaging is not part of the method at this level. Do not award it for “cross it out” alone unless the student also says to measure again.

Q17 (2 marks · VC2S6I04) (a) a line graph. 1 mark (b) because the data shows change over time. 1 mark Accept any response that says the graph tracks how something changes as time passes.

Q18 (3 marks · VC2S6I04) (a) 8 °C — the temperature fell from 50 °C at 0 minutes to 42 °C at 4 minutes: $50 - 42 = 8$. 1 mark (b) any two of: a title that is the finding (for example, “The hot water cools quickly at first”); both axes labelled, each with its unit (minutes, °C); a source line saying where the data came from. 2 marks (1 mark each)

Q19 (2 marks · VC2S6I05) (a) any one source of error, for example: the marble was let go from a different point on the ramp; the marble was given a small push (or held back); the floor or the end of the ramp was different; the marble was stopped by something before it was measured; the two groups read the ruler differently. 1 mark (b) any one specific improvement that answers the error, for example: mark the starting point on the ramp and let go from there every time; let the marble go without pushing it; measure from the same place each time; check the stopping point the same way in both groups. 1 mark The improvement must be specific — “do it more carefully” is not enough.

Q20 (1 mark · VC2S6I05) Any investigable next question about the same test, for example: “Does the height of the ramp change how far the marble rolls?” or “Does the kind of floor change how far the marble rolls?” 1 mark The question must be one that a test could answer; do not accept a statement or a question no test could answer.

Q21 (2 marks · VC2S6I06) (a) science report — it carries every step so the test can be repeated. 1 mark (b) labelled poster — it teaches one big idea at a glance. 1 mark The mark is for the match; the reason is not required but must not contradict the match.

Q22 (2 marks · VC2S6I06) (a) “The sugar dissolved (when we stirred it into the water).” 1 mark (b) the method. 1 mark

Section C — Extended response

Q23 (6 marks · VC2S6I04, VC2S6I05 and VC2S6I06)

- (a) April, 66.7 mm. 1 mark (1 for the month and the number together; the month alone or the number alone is not enough)
- (b) The evidence does *not* support what the student said. 1 mark The winter months in this table are June (41.3 mm), July (40.8 mm) and August (45.6 mm) — all lower than April (66.7 mm) and lower than October (64.2 mm) and November (64.4 mm), so the rainiest months sit in autumn and spring, not winter. 1 mark for correct numbers from the table used to show this. Marker note: the judgement mark is for saying the claim is not supported (or “is wrong”, “does not match the table”); the evidence mark needs at least one correct figure quoted against a winter figure or the wettest months. A student who says “supported” cannot earn either mark, but a student who judges correctly and quotes no figures earns 1 mark.
- (c) For example: “February is the driest month, with 24.7 mm of rain.” 1 mark The sentence must use the February figure (24.7 mm) correctly; any true sentence built on that figure is acceptable.
- (d) For example: “Does the same pattern happen in other Victorian towns?” or “Does Melbourne’s rainfall change from year to year?” or “Which season had the most rain in 2025?” 1 mark The question must be investigable — one a test or a data search could answer. Do not accept a statement, or a question no investigation could answer (for example, “Why is rain wet?”).
- (e) Any title that states the finding, for example: “Melbourne’s rain: wettest in April, driest in February” or “Melbourne’s rain peaks in autumn and spring”. 1 mark The title must *be* the finding — do not accept a topic-only title such as “Melbourne’s rain” or “Rain”.

Tracing the items to the achievement standard

Every item traces to the achievement-standard extract of the subtopic that owns its code (§4.1 of the plan of record). The extracts are quoted as the authority file gives them.

Code	Subtopic	Achievement-standard extract	Items
VC2S6I01	1A	“Students make reasoned predictions, describe patterns and test relationships when investigating observable phenomena.”	Q1, Q2
VC2S6I02	2A	“They plan different scientific investigations including fair tests, describe how risks and ethical issues associated with investigations have been managed, and identify cultural considerations when	Q3, Q4, Q13, Q14

Code	Subtopic	Achievement-standard extract	Items
VC2S6I03	2B	planning fieldwork.” “They use equipment to generate and record data, including repeat trials.”	Q5, Q6, Q15, Q16
VC2S6I04	3A	“They construct representations to organise and process data and information, and describe patterns, trends and relationships.”	Q7, Q8, Q17, Q18, Q23(a), Q23(c)
VC2S6I05	4A	“They compare their methods and findings with those of others including identification of possible sources of error, suggest improvements to their own and others’ investigations, pose questions for further investigation and select evidence to develop reasoned conclusions.”	Q9, Q10, Q19, Q20, Q23(b), Q23(d)
VC2S6I06	5A	“They communicate ideas, findings, patterns, trends and relationships for a specific purpose and audience, including using various presentation formats, scientific vocabulary and digital tools where appropriate.”	Q11, Q12, Q21, Q22, Q23(e)

Inquiry weighting: 40 of 40 marks — this paper is the inquiry topic, so the whole paper is inquiry-strand marks (minimum required: 25%).

Mark record

Question	Code	Worth	Given
Q1 — most investigable question	VC2S6I01	1	
Q2 — reasoned prediction	VC2S6I01	1	
Q3 — fieldwork planning	VC2S6I02	1	
Q4 — matching method to question	VC2S6I02	1	
Q5 — unit for mass	VC2S6I03	1	
Q6 — unit for electric current	VC2S6I03	1	
Q7 — annotation	VC2S6I04	1	
Q8 — representation for change over time	VC2S6I04	1	
Q9 — reading error	VC2S6I05	1	

Question	Code	Worth	Given
Q10 — two variables changed	VC2S6I05	1	
Q11 — the method section	VC2S6I06	1	
Q12 — format for a Year 2 audience	VC2S6I06	1	
Q13 — variables in a fair test	VC2S6I02	3	
Q14 — permission before fieldwork	VC2S6I02	2	
Q15 — standard units	VC2S6I03	2	
Q16 — prefixes and repeat readings	VC2S6I03	3	
Q17 — choosing the graph	VC2S6I04	2	
Q18 — reading figures, carrying the finding	VC2S6I04	3	
Q19 — source of error and improvement	VC2S6I05	2	
Q20 — the next question	VC2S6I05	1	
Q21 — format for an audience	VC2S6I06	2	
Q22 — science word, report part	VC2S6I06	2	
Q23 — extended response on a real data table	VC2S6I04, VC2S6I05, VC2S6I06	6	
Total		40	