

Mathematics Level 6

Review 2 - Measurement, Space, Statistics, Probability

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End-of-year review

Review R2 is the second of the two end-of-year reviews. It covers Chapters 5–8 — Measurement, Space, Statistics and Probability — everything you have learned since the number chapters. There is no new content: every question practises a skill you were already assessed on in your chapter test or your investigation task. Work steadily, show your working where a reason is asked for, and use the equipment list below.

This is a school-designed paper. It is not a VCAA instrument. Achievement in the Victorian Curriculum is reported against the Level 6 achievement standard, not against a mark on this paper.

Paper	R2 — Measurement, Space, Statistics and Probability (Chapters 5–8)
Content descriptions assessed	VC2M6M01 VC2M6M02 VC2M6M03 VC2M6M04 VC2M6SP01 VC2M6SP02 VC2M6SP03 VC2M6ST01 VC2M6ST02 VC2M6ST03 VC2M6P01 VC2M6P02
Total marks	30
Guidance time	35 minutes (about 1 minute per mark, plus 5 minutes reading time)
Calculators	Not permitted. None of the content descriptions in Chapters 5–8 permits a calculator.
Equipment	Section A: ruler and protractor (the protractor may be used to check angle answers); the timetable extract is supplied with the paper. Section B: ruler and grid paper. Section C: spreadsheet or graphing tool access; the data sets are supplied. Section D: simulation tool access for the simulation item; dice and spinners.

Instructions

1. Answer **all** questions. The marks for each part are shown in square brackets, like [1].
 2. Where a question asks for a **reason**, the reason is part of the mark — a bare number is not enough.
 3. Where a question mentions a digital tool, you may still work with pencil and paper; the tool is there to help you and to check your answer.
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Section A — Measurement

Assesses VC2M6M01, VC2M6M02, VC2M6M03 and VC2M6M04 — subtopics 5A, 5B, 5C and 5D. Section total: 8 marks.

Q1. Convert the measurements. (a) 3.4 kg to grams. (b) 6 kL to litres. [1 + 1]

Q2. A vegetable patch is a rectangle, 8 m long and 5 m wide. (a) Find the area of the patch. (b) A second rectangular patch has the **same** area as the first, but a different length and width. Give one possible length and width for the second patch. [1 + 1]

Q3. The timetable extract below shows weekday morning Upfield line services from Flinders Street. Every morning service on this line takes 14 minutes from Flinders Street to Royal Park, and 36 minutes from Flinders Street to Upfield.

Upfield line — weekday morning services towards Upfield

Departs Flinders Street	Southern Cross	North Melbourne	Royal Park	Brunswick	Upfield
08:34	08:38	08:41	08:48	08:51	09:10
08:50	08:54	08:57	09:04	09:07	09:26
09:10	09:14	09:17	09:24	09:27	09:46
09:50	09:54	09:57	10:04	10:07	10:26
10:06	10:10	10:13	10:20	10:23	10:42
10:26	10:30	10:33	10:40	10:43	11:02

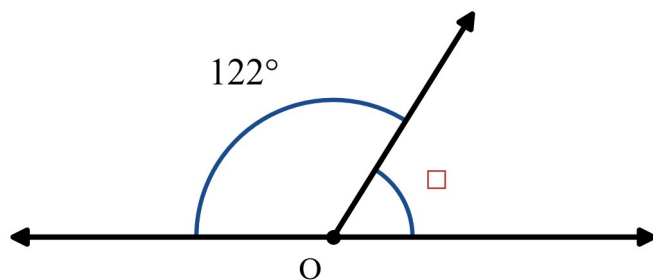
Source: Department of Transport and Planning, 'GTFS Schedule' (PTV timetable data, Victorian Government open data), 2026 (as at August 2026). Royal Park station is the station for Melbourne Zoo. Times are 24-hour.

A timetable of six weekday morning Upfield line services from Flinders Street, with columns for Southern Cross, North Melbourne, Royal Park, Brunswick and Upfield

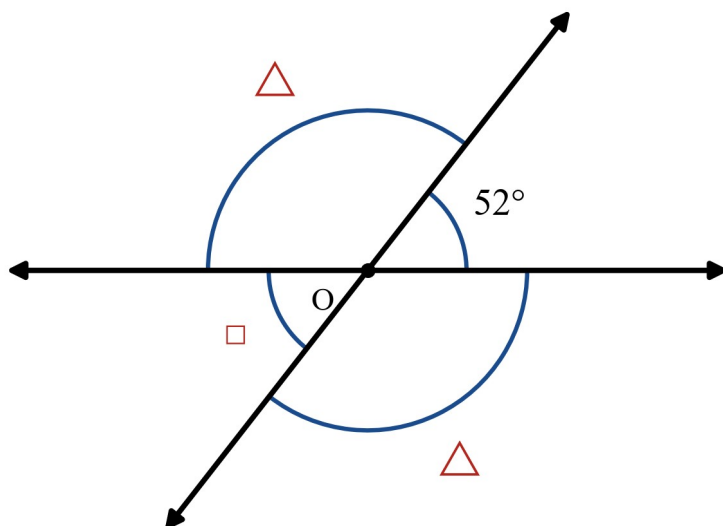
Source: Department of Transport and Planning, 'GTFS Schedule' (PTV timetable data, Victorian Government open data), 2026 (as at August 2026). Retrieved 20 August 2026.

- (a) One morning, a service departs Flinders Street at 08:13 and runs with the usual 36-minute journey time to Upfield. At what time does it arrive at Upfield? (b) How many minutes does the journey from Royal Park to Upfield take? [1 + 1]

Q4. Use the two figures below. You may use your protractor to check your answers.



A straight line with one ray rising from the point O, making two angles: 122° on the left and $\square$ on the right



Two straight lines crossing at the point O , making four angles: 52° at the top right, $\square$ opposite it at the bottom left, and $\triangle$ at the top left and bottom right

- (a) Find $\square$ in the first figure, and give your reason. (b) Find $\square$ in the second figure, and give your reason. [1 + 1]

Section A total: 8 marks.

Section B — Space

Assesses VC2M6SP01, VC2M6SP02 and VC2M6SP03 — subtopics 6A, 6B and 6C. Section total: 7 marks.

Q5. (a) A solid has a straight-sided cross-section. Every parallel cross-section is the same shape and the same size. What kind of solid is it? (b) A cone is sliced parallel to its base. The cross-sections are circles that get smaller towards the point. Is a cone a right prism? Give a reason. [1 + 1]

Q6. (a) Without plotting, say which of the four quadrants the point $A(-3, 4)$ is in. (b) On grid paper, plot the point $B(2, -5)$. Move the point 6 units left, then 3 units up. Write the coordinates of its new position. (c) Describe how the coordinates of **any** point change when it is moved 4 units right and 2 units down. [1 + 1 + 1]

Q7. (a) A shape is reflected, and then translated. Sam translates the same shape first, and then reflects it. Do the two orders **always** put the shape in the same final position? Answer yes or no. (b) In a tessellation, four angles meet at a point: 105° , 105° and 60° . Find the fourth angle, and give your reason. [1 + 1]

Section B total: 7 marks.

Section C — Statistics

Assesses VC2M6ST01, VC2M6ST02 and VC2M6ST03 — subtopics 7A, 7B and 7C. Section total: 8 marks.

Q8. Two classes each recorded the number of books every student read this term. The results are:

- **Class 6G:** 2, 4, 5, 5, 5, 6, 8
- **Class 6K:** 1, 3, 5, 5, 5, 7, 11

- (a) The variable is *number of books read*. It is a numerical variable. Is it **discrete** or **continuous**? Give a reason.
 (b) Find the mode of each class's data. (c) Find the range of each class's data, and say which class has the greater spread. You may check your answers by drawing a side-by-side column graph of the two data sets with a graphing tool. [1 + 1 + 1]

Q9. A school house newsletter prints a column graph of the money two houses raised at the fete: House Banksia raised \$100, and House Wattle raised \$95. On the graph, the vertical axis starts at \$90, so the column for House Banksia looks about twice as tall as the column for House Wattle. (a) Name the fault in this display. (b) Explain why the display misleads the reader. [1 + 1]

Q10. Mia wants to investigate: *Do students prefer playing sport or reading in their free time?* She plans to ask only the 10 students on her soccer team. (a) Give one way Mia could refine — improve — her question or her plan before she collects any data. (b) Mia decides to ask all 28 students in her class instead. The results are: sport 17, reading 11. Write one sentence that reports this finding within the context of her investigation. (c) Mia writes: *Everyone at the school prefers sport.* Give one reason her data does **not** support that claim. [1 + 1 + 1]

Section C total: 8 marks.

Section D — Probability

Assesses VC2M6P01 and VC2M6P02 — subtopics 8A and 8B. Section total: 7 marks.

Q11. A bag holds 4 red counters, 3 blue counters, 2 green counters and 1 yellow counter. One counter is picked without looking. (a) Write the probability of picking a blue counter as a fraction. (b) Write the same probability as a decimal and as a percentage. (c) Which colour is most likely to be picked? Give its probability as a fraction. [1 + 1 + 1]

Q12. A class uses a simulation tool to spin a fair spinner with four equal sectors — red, blue, green and yellow — and records the outcomes. The table shows two runs of the simulation.

Outcome	40 trials	400 trials
Red	8	96
Blue	12	108
Green	9	94
Yellow	11	102

- (a) Before any trials are run, what probability does the class expect for each colour? Give your answer as a fraction and as a percentage.
- (b) Using the 400-trial run, find the relative frequency of blue.
- (c) What do the relative frequencies of **all four** colours add to in the 400-trial run? (d) Compare the 40-trial run with the 400-trial run. What effect does increasing the number of trials have on the variation of the relative frequencies? You may run your own simulation to check your answer to part (d). [1 + 1 + 1 + 1]

Section D total: 7 marks.

Paper total: 30 marks.

Marking guide

This is a school-designed classroom instrument, marked by the class teacher. It is not a VCAA instrument. Marks are a diagnostic aid: achievement in the Victorian Curriculum is reported against the Level 6 achievement standard, not against a mark on this paper.

Allocation by question. Every part is marked whole marks only; there are no half marks. Where a part asks for a value **and** a reason, both are needed for the mark.

Q	Part	Answer in brief	Marks
1	(a)	3400 g	1
1	(b)	6000 L	1
2	(a)	40 m ²	1
2	(b)	any length–width pair with area 40 m ² , different from 8 m by 5 m	1
3	(a)	08:49	1
3	(b)	22 minutes	1
4	(a)	58°, angles on a straight line add to 180°	1
4	(b)	52°, vertically opposite angles are equal	1
5	(a)	a right prism	1
5	(b)	no, with a valid reason	1
6	(a)	top left quadrant (quadrant II)	1
6	(b)	(−4, −2)	1
6	(c)	first coordinate increases by 4; second coordinate decreases by 2	1
7	(a)	no	1
7	(b)	90°, angles at a point add to 360°	1
8	(a)	discrete — the values are counted	1
8	(b)	mode 5 for both classes	1
8	(c)	ranges 6 and 10; class 6K	1
9	(a)	broken axis / vertical axis does not start at 0	1
9	(b)	the small difference is stretched to look big	1
10	(a)	any valid refinement	1
10	(b)	one sentence in context, numbers correct	1
10	(c)	the data covers her class only, not the school	1
11	(a)	$\frac{3}{10}$	1
11	(b)	0.3 and 30%	1

Q	Part	Answer in brief	Marks
11	(c)	red; $\frac{4}{10}$ (or $\frac{2}{5}$, 0.4, 40%)	1
12	(a)	$\frac{1}{4}$ and 25%	1
12	(b)	0.27	1
12	(c)	1	1
12	(d)	variation decreases; relative frequencies get closer to the expected value	1
Total			30

Marking notes.

- **Q2(b):** accept any whole-number pair that multiplies to 40 and is not 8 m by 5 m — for example 10 m by 4 m, 20 m by 2 m or 40 m by 1 m.
- **Q4:** the reason is part of the mark (the content description requires the reasoning to be communicated). Accept the standard 5D wordings: *angles on a straight line add to 180°*; *vertically opposite angles are equal*. A correct value measured with a protractor earns the value, but the reason must still be stated.
- **Q5(b):** accept either valid reason — the cross-sections are **not the same size**, or the cross-sections are circles, which are **not straight-sided** shapes.
- **Q6(b):** award the mark for the correct new coordinates; working that shows counting along the axes is welcome but not required.
- **Q7(b):** accept *angles at a point add to 360°* or *a full turn is 360°*.
- **Q8(a):** the reason must say, in some words, that the values are **counted** (or come in whole numbers).
- **Q10(a):** accept any genuine refinement — naming the group to be asked (for example *students in Year 6 at our school* instead of only her team), or making the two choices in the question exact. A student who notes that her team is likely to lean towards sport has earned the mark.
- **Q10(b):** the sentence must stay inside the investigation's context — it should name Mia's class (or the 28 students asked) — and the numbers must agree with the data.
- **Q12(a):** accept $\frac{1}{4}$, 0.25 or 25% in either order; both forms are required for the mark.
- **Q12(d):** award the mark for either idea: the relative frequencies vary **less** in the 400-trial run, or they sit **closer to the expected value** of 0.25.

Diagnostic map. One question per content description, so a strand result reads straight off the paper:

Strand	Questions	CD	Marks
Measurement	Q1	VC2M6M01	2
Measurement	Q2	VC2M6M02	2
Measurement	Q3	VC2M6M03	2
Measurement	Q4	VC2M6M04	2
Space	Q5	VC2M6SP01	2
Space	Q6	VC2M6SP02	3
Space	Q7	VC2M6SP03	2
Statistics	Q8	VC2M6ST01	3
Statistics	Q9	VC2M6ST02	2
Statistics	Q10	VC2M6ST03	3
Probability	Q11	VC2M6P01	3

Strand	Questions	CD	Marks
Probability	Q12	VC2M6P02	4

Solutions

Answer key

Q1. (a) 3400 g; (b) 6000 L. **Q2.** (a) 40 m²; (b) example: 10 m by 4 m. **Q3.** (a) 08:49; (b) 22 minutes. **Q4.** (a) 58°; (b) 52°. **Q5.** (a) a right prism; (b) no. **Q6.** (a) top left quadrant (quadrant II); (b) (−4, −2); (c) the first coordinate increases by 4, the second coordinate decreases by 2. **Q7.** (a) no; (b) 90°. **Q8.** (a) discrete; (b) 5 for both classes; (c) 6 and 10, class 6K. **Q9.** (a) broken axis; (b) it exaggerates the difference. **Q10.** (a) example: ask the whole year level, not just her team; (b) example sentence; (c) she surveyed her class only. **Q11.** (a) $\frac{3}{10}$; (b) 0.3, 30%; (c) red, $\frac{4}{10}$. **Q12.** (a) $\frac{1}{4}$, 25%; (b) 0.27; (c) 1; (d) variation decreases.

Fully worked solutions

Q1. (a) On the mass ladder, kg → g is one jump towards the smaller unit, so multiply: $\$3.4 \times 1000 = \3400 g. (b) On the capacity ladder, kL → L is one jump towards the smaller unit: $\$6 \times 1000 = \6000 L. Check each way back: $3400 \div 1000 = 3.4$ ✓ and $6000 \div 1000 = 6$ ✓.

Q2. (a) Area = length $\times$ width: $\$8 \times 5 = \40 m². (b) Find a different pair of whole numbers that multiply to 40: $10 \times 4 = 40$, so one answer is **10 m by 4 m** (20×2 and 40×1 also work). Check: $10 \times 4 = 40$ m² — the same area, different sides. This is the same-area, different-perimeter idea from subtopic 5B.

Q3. (a) Count on 36 minutes from 08:13: 08:13 → 08:43 is 30 minutes, and 30 minutes → 36 minutes adds 6 more, giving **08:49**. Check: $13 + 36 = 49$ minutes past 8 o'clock. (b) Flinders Street to Upfield is 36 minutes; Flinders Street to Royal Park is 14 minutes, so Royal Park to Upfield is $\$36 - 14 = \22 minutes. Check: $14 + 22 = 36$ ✓.

Q4. (a) $\square$ and 122° sit side by side on one straight line, so $\square = 180^\circ - 122^\circ = \58° (angles on a straight line add to 180°). (b) The $\square$ angle faces the 52° angle across the crossing point, so $\square = \$52^\circ$ (vertically opposite angles are equal). Check with your protractor if you wish: both figures are drawn to scale.

Q5. (a) A solid whose parallel cross-sections are the same shape and the same size is a **right prism** — that is the definition from subtopic 6A. (b) **No**. The slices get smaller towards the point, so the parallel cross-sections are **not the same size** — and a circle is not a straight-sided shape. Either reason is enough.

Q6. (a) A is left and up, so its signs are (−, +): the **top left** quadrant (quadrant II). (b) Starting at B(2, −5), count 6 units left along the horizontal axis: 2, 1, 0, −1, −2, −3, −4. Then count 3 units up the vertical axis: −5, −4, −3, −2. The new position is **(−4, −2)**. (c) Moving right increases the first coordinate; moving down decreases the second coordinate. So the **first coordinate increases by 4** and the **second coordinate decreases by 2**.

Q7. (a) **No**. Reflections and translations are combined differently when their order changes — the two orders do not always land the shape in the same place, so order matters. (b) The four angles meet at one point, so they add to a full turn: $105^\circ + 105^\circ + 60^\circ = 270^\circ$, and $\$360^\circ - 270^\circ = \90° (angles at a point add to 360°). This is the same 360° test that decides whether shapes tessellate in subtopic 6C.

Q8. (a) **Discrete** — the number of books is counted, so the values are separate whole numbers; nothing between 2 and 3 books can be recorded. (b) The mode is the value with the highest frequency. In **both** classes, 5 appears three times and no other value appears more than once, so the mode is **5** for 6G and **5** for 6K. (c) The range is the highest value minus the lowest value. Class 6G: $\$8 - 2 = \6 . Class 6K: $\$11 - 1 = \10 . **Class 6K** has the greater spread, because $10 > 6$. If you built the side-by-side column graph in a graphing tool, the wider spread of 6K's columns shows the same thing.

Q9. (a) The fault is a **broken axis** — the vertical axis starts at \$90 instead of 0. (b) The columns' heights no longer match the amounts: \$100 is only \$5 more than \$95, but the graph makes House Banksia look about twice as big, so the small difference looks much larger than it is.

Q10. (a) Example: ask a fair group — the whole year level, not only her soccer team, because her team is likely to lean towards sport. Naming the group in the question (for example *students in our class*) also earns the mark. (b) Example: *Of the 28 students in Mia's class, more said they prefer playing sport (17 students) than reading (11*

students). The sentence must stay inside the group actually asked, with the right numbers. (c) Mia asked only her class — 28 students — not the whole school, so data about one class cannot speak for every student in the school.

Q11. (a) There are $4 + 3 + 2 + 1 = 10$ counters, all equally likely to be picked, and 3 are blue: $P() = \frac{3}{10}$. (b) $P() = \frac{3}{10} = 0.3$

$P() = 30\%$. (c) Red has the greatest count — 4 counters — so **red** is most likely, with $P(\text{red}) = \frac{4}{10}$ (which is also $\frac{2}{5}$, 0.4 or 40%). Check: $40\% + 30\% + 20\% + 10\% = 100\%$ — all the outcomes together add to 1.

Q12. (a) The spinner is fair and has 4 equal sectors, so each colour is equally likely: $P() = \frac{1}{4} = 25\%$. (b) Relative

frequency = frequency $\div$ number of trials. Blue landed 108 times in 400 trials: $108 \div 400 = 0.27$. (c) The four frequencies add to the whole run: $96 + 108 + 94 + 102 = 400$, so $0.24 + 0.27 + 0.235 + 0.255 = 1$. The relative frequencies of all the outcomes always add to 1. (d) In the 40-trial run the relative frequencies are 0.2, 0.3, 0.225 and 0.275 — up to 0.05 away from the expected 0.25. In the 400-trial run they are 0.24, 0.27, 0.235 and 0.255 — no more than 0.02 away.

Increasing the number of trials decreases the variation: the relative frequencies settle closer to the expected value. Running your own simulation with more trials should show the same settling.