

Mathematics Level 4

End-of-year review

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End-of-year review

End-of-year review · all seven chapters

Mathematics Level 4 (Year 4) · Victorian Curriculum 2.0

Codes assessed: VC2M4N02 · VC2M4N05 · VC2M4N06 · VC2M4N07 · VC2M4N10 · VC2M4N04 · VC2M4N01 · VC2M4N03 · VC2M4N08 · VC2M4N09 · VC2M4A02 · VC2M4A01 · VC2M4M01 · VC2M4M02 · VC2M4M03 · VC2M4M04 · VC2M4SP01 · VC2M4SP02 · VC2M4SP03 · VC2M4SP04 · VC2M4ST01 · VC2M4ST02 · VC2M4ST03 · VC2M4P01 · VC2M4P02

Name: _____ Date: _____

Total marks

40

Sessions

Two sessions. Do Session 1 on one day and Session 2 on another day.

Timing

This is a classroom check, not an exam. There is no strict time limit. Guidance duration for a teacher planning a lesson: about 25 minutes for each session.

Equipment

Pencils and paper. The scales, maps and graphs you need are printed in this review.

Calculators

Questions 2 and 11 must be done **without a calculator**. Their content descriptions (VC2M4N05, VC2M4A02) say this work is done “without a calculator”. Question 9 appears in both forms its content description (VC2M4N08) asks for: part (a) is done by hand, and part (b) may be checked with a calculator or a spreadsheet if one is available. For the other questions you do not need one — every question on this review can be worked out by hand.

Teacher note. This is a classroom check, not an exam. It is cumulative: every item draws on content already taught and assessed in Chapters 1–7, and there is no new content. No content description is assessed here that is not already assessed in its chapter test. It checks what students retain before they move to Level 5, and it gives a Year 5 teacher receiving the class a picture of where the gaps are, one content description at a time. Any item may be read aloud by the teacher.

This review looks back at the mathematics from all seven chapters: Number, Algebra, Measurement, Space, Statistics and Probability. There are 25 questions in 2 sessions. Nothing in it is new — every question is about something you did this year. Show your working, so your teacher can see what you know.

Attempt every question. Show your working where the question asks for it.

Session 1 — Number and Algebra

Guidance duration: about 25 minutes.

Q1. (a) Fill in the missing number in this sequence of multiples of 6: 6, 12, ____, 24, 30. (1 mark)

(b) Count on by 7s to finish the sequence: 28, 35, ____, _____. (1 mark)

Q2. No calculator for this question. Work out both parts, and show how the digits move.

(a) 38×10 (½ mark)

(b) $4\,500 \div 100$ (½ mark)

Q3. Show your working. Choose a strategy that suits the numbers.

(a) Work out $375 + 248$. Use place value partitioning, and show the parts you add. (1 mark)

(b) Work out $72 \div 4$. Check your answer with a multiplication. (1 mark)

Q4. Five adults each touch on with myki for a 2-hour trip in Melbourne (Zone 1+2). The fare is \$2.85 each.

Source: Transport Victoria, *myki fares, Melbourne*, transport.vic.gov.au, retrieved 2026-08-20.

(a) Round \$2.85 to the nearest dollar. Use that to estimate the total cost of the five fares. (1 mark)

(b) Mia says the five fares cost about \$20. Use your estimate to decide if Mia can be right. Explain how you know. (1 mark)

Q5. (a) Follow this algorithm.

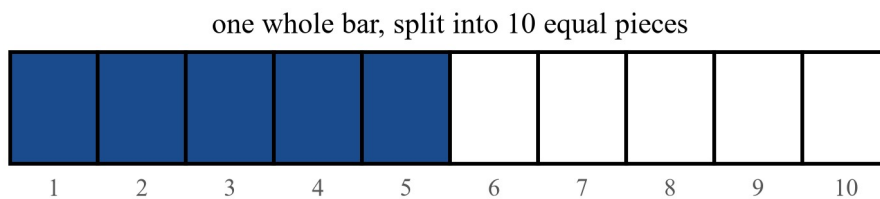
Step 1: Start at 5. Write it down. Step 2: Multiply your number by 2. Write down the answer. Step 3: Multiply your new number by 2. Write down the answer. Step 4: Multiply your new number by 2. Write down the answer. Step 5: Stop.

What set of numbers does the algorithm generate? (1 mark)

(b) Describe a pattern you can see in the set. (1 mark)

Q6. Count on by quarters. Fill in the two blanks: $\frac{5}{4}$, $\frac{6}{4}$, ____, ____. (1 mark)

Q7. (a) Look at the bar.

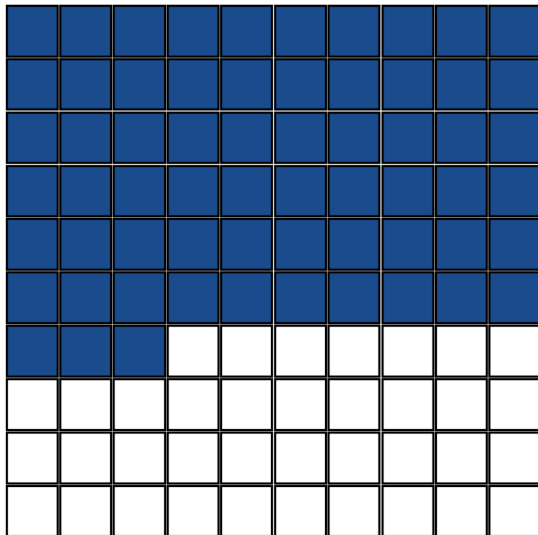


A bar split into 10 equal pieces, with 5 pieces shaded.

Write the shaded amount as a decimal. (1 mark)

(b) Look at the square.

one whole square = 100 equal pieces



A square split into 100 equal pieces, with 63 pieces shaded.

Write the shaded amount as a decimal. (1 mark)

Q8. (a) Fill in the box: $\frac{1}{2} = \frac{\square}{8}$. (1 mark)

(b) Write $\frac{1}{4}$ as a decimal. (1 mark)

Q9. At the school fête, a jar of jam costs \$4.53. (The dollar amount in this question is made up for you to practise with.)

Australia stopped using the 1-cent and 2-cent coins in 1992, so a **cash** total is rounded to the nearest 5 cents. A **card** total is not rounded.

Source: Royal Australian Mint, *Fast facts*, ramint.gov.au, retrieved 2026-08-20.

- (a) You pay by cash. Work out what you pay. Do it by hand, and say why the total moves the way it does. (1 mark)
- (b) You pay with a \$5 note. How much change do you get? You may check your subtraction with a calculator or a spreadsheet if one is available. (1 mark)

Q10. Five children each buy a single bus fare on a Victorian town bus. A child's single fare costs \$1.50.

Source: Head, Transport for Victoria, *Victorian Regional Bus Fares Supplement* (from 1 January 2025), ptv.vic.gov.au, retrieved 2026-08-20.

- (a) Write a number sentence and find the cost of the five fares altogether. (1 mark)
- (b) The children pay with a \$10 note. How much change do they get? Write the answer in a sentence about the children. (1 mark)

Q11. No calculator for this question.

$7 \times 8 = \underline{\quad}$, so $56 \div 7 = \underline{\quad}$. (1 mark)

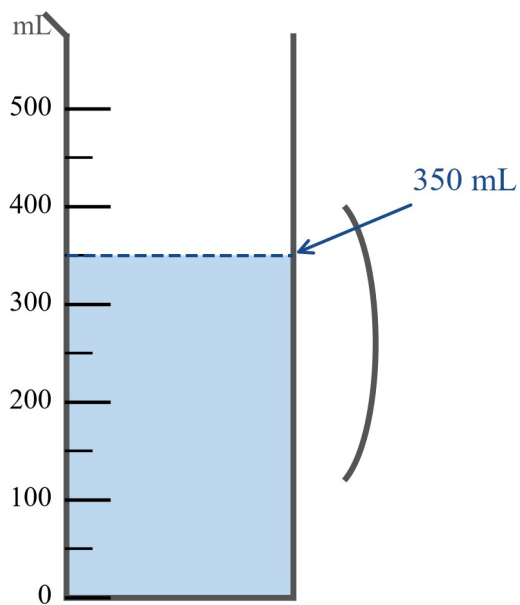
Q12. Find the number that goes in each box.

- (a) $47 + \square = 120$ (1 mark)
- (b) $\square - 38 = 55$ (1 mark)

Session 2 — Measurement, Space, Statistics and Probability

Guidance duration: about 25 minutes.

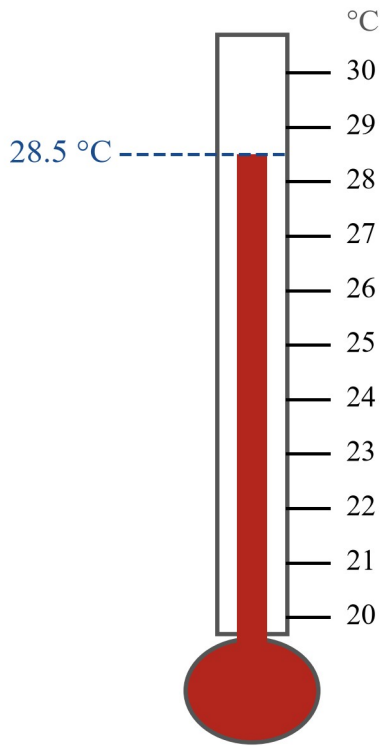
Q13. (a) Look at the measuring jug.



A measuring jug marked in millilitres. Numbers are shown at 0, 100, 200, 300, 400 and 500 millilitres, with a mark every 50 millilitres. The water level is at 350 millilitres.

What is the reading on the jug? (1 mark)

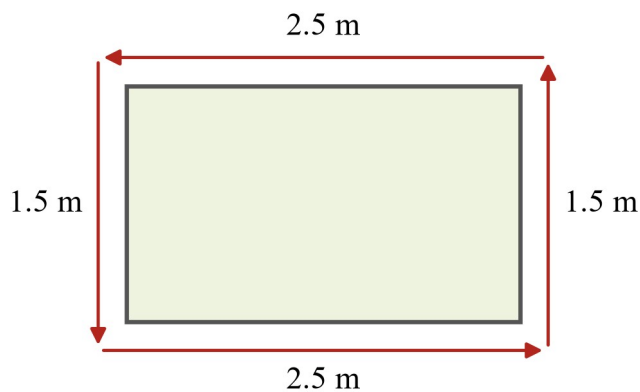
(b) Look at the thermometer.



A thermometer marked in degrees Celsius from 20 to 30, with a mark at every degree. The red liquid stops halfway between 28 and 29, at 28.5 degrees.

What temperature does the thermometer show? (1 mark)

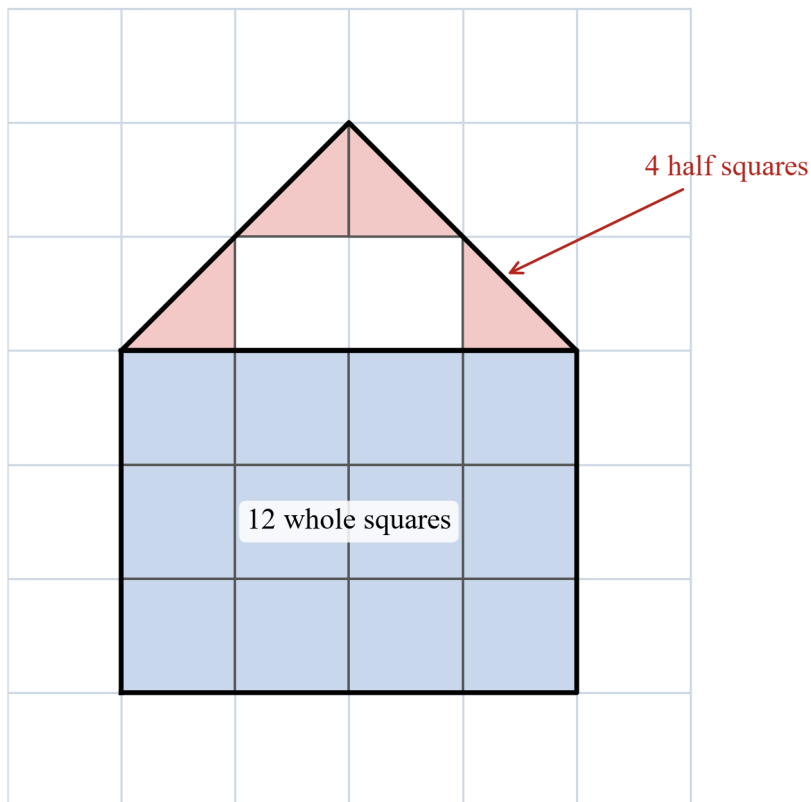
Q14. (a) Look at the garden bed.



A rectangular garden bed. The top and bottom sides are labelled 2.5 metres and the other two sides are labelled 1.5 metres. An arrow shows the direction around the boundary.

Find the perimeter of the garden bed. Show your working. (1 mark)

(b) Look at the house shape on grid paper.



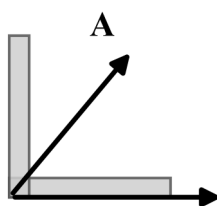
A house shape on grid paper. The body of the house covers 12 whole squares and the roof is made of 4 half squares shaded a different colour.

What is the area of the house shape? Count the squares, and show how you dealt with the half squares. (1 mark)

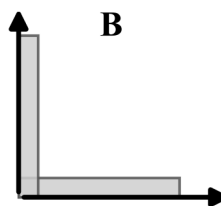
Q15. (a) The school concert starts at 11:45 am and finishes at 12:20 pm. How long is the concert? (1 mark)

(b) A movie is 150 minutes long. How many hours and minutes is that? (1 mark)

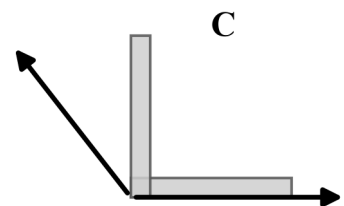
Q16. Look at the three angles, each laid on a right-angle template.



fits inside the corner of the template
less than a right angle — acute



matches the corner of the template exactly
equal to a right angle — right



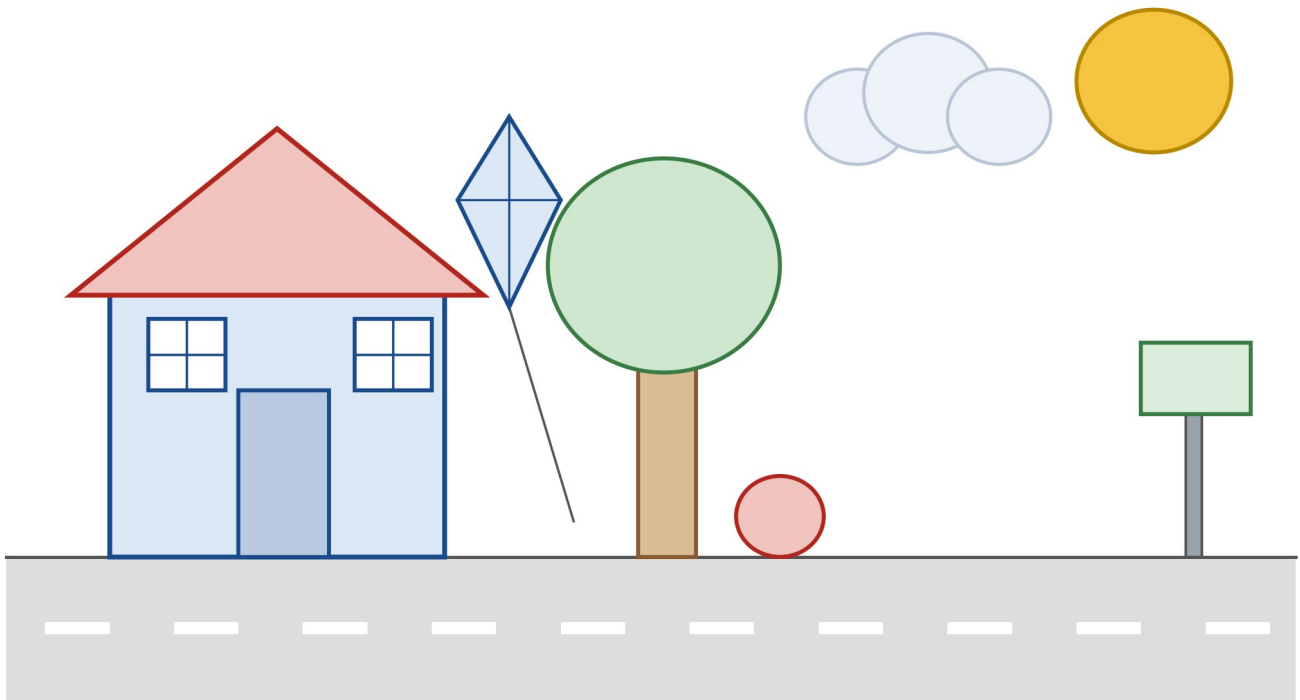
goes past the corner of the template
more than a right angle — obtuse

A grey right-angle template shown three times, each time with a black angle laid on it. Angle A fits inside the corner of the template. Angle B matches the corner of the template exactly. Angle C goes past the corner of the template.

Name each angle: A, B and C. Choose from acute, right, obtuse, straight angle, reflex and revolution. (1 mark)

Q17. I am a three-dimensional object. My base is a square. My other faces are triangles, and they all meet at one vertex on top. What object am I? (1 mark)

Q18. Look at the street scene. It is drawn using flat shapes, with no labels.



A street scene drawn from flat shapes, with no labels: a house with a triangle roof, rectangle walls, rectangle door and two square windows; a tree with a rectangle trunk and circle leaves; a kite made of triangles with a straight string; a circle ball; a rectangle road with a dashed centre line; a cloud made of circles; a circle sun; and a rectangle sign on a rectangle post.

Name two flat shapes you can see in the drawing, and say where each one is. (1 mark)

Q19. The Melbourne Showgrounds are at Ascot Vale in Melbourne. They are owned by the Royal Agricultural Society of Victoria, and the Melbourne Royal Show is held there every year. Here is the simple map of the showgrounds drawn for this book.

Source: Wikipedia, Melbourne Showgrounds, retrieved 2026-08-20. Source: The Royal Agricultural Society of Victoria, Melbourne Royal Show, retrieved 2026-08-20.

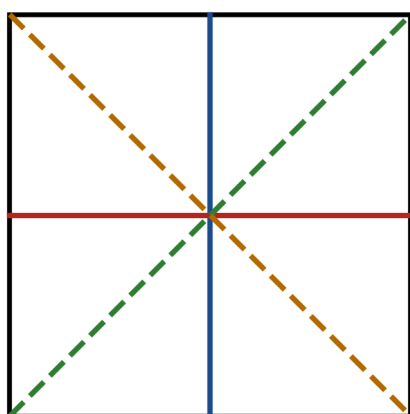
	A	B	C	D	E
1	gate	showbags	food stalls	rides	Grand Pavilion
2	Animal Nursery	main arena			Exhibition Pavilion
3	toilets			water	car park
4			first aid		

A simple map, drawn for this book.

A simple map of the Melbourne Showgrounds on a grid with columns A to E and rows 1 to 4, showing the gate, showbags, food stalls, rides, the Grand Pavilion, the Animal Nursery, the main arena, the Exhibition Pavilion, toilets, water, the car park and first aid

- Give the grid reference of the showbags. (1 mark)
- You start at the gate. You walk 1 square down, then 1 square right. Which feature are you at now? (1 mark)

Q20. Look at the square.



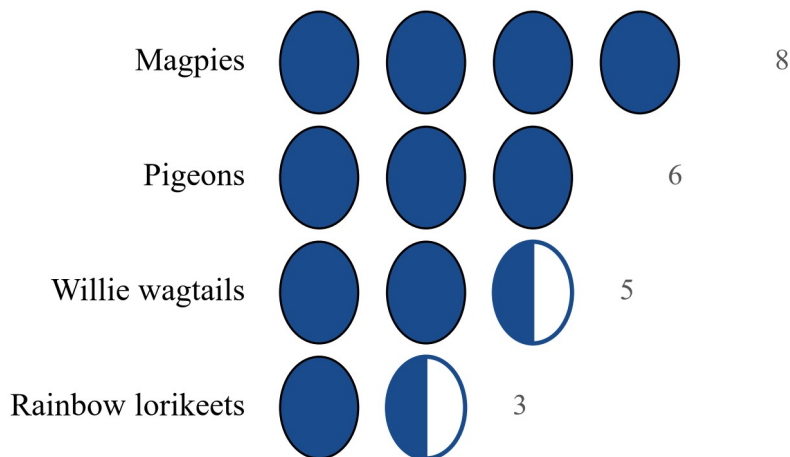
4 lines of symmetry

A square with its four lines of symmetry drawn: a vertical blue line, a horizontal red line, and two dashed corner-to-corner lines in green and amber.

How many lines of symmetry does a square have? (1 mark)

Q21. A class counted the birds seen in the school yard in one morning. The pictograph shows what they counted.

Birds seen in the school yard — one morning count



Key: = 2 birds A half symbol stands for 1 bird.

A pictograph of birds seen in the school yard in one morning count, with a key of one symbol = 2 birds. Magpies 8 (4 symbols), pigeons 6 (3 symbols), willie wagtails 5 (two and a half symbols), rainbow lorikeets 3 (one and a half symbols).

How many willie wagtails were counted? Read the key carefully. (1 mark)

Q22. A class asked 20 students, “How many brothers and sisters do you have?” Here are the results.

Brothers and sisters	0	1	2	3	4
Students	4	3	5	4	4

Is this data bunched or spread? How do you know? (1 mark)

Q23. Noah wants to find out the favourite sport of all the students at his school. He asks only the 10 students on his soccer team. Explain why his survey may not tell him about the whole school. (1 mark)

Q24. (a) Put these three events in order from least likely to most likely.

A. It is summer in Melbourne in December.

B. You toss a coin and it lands on tails.

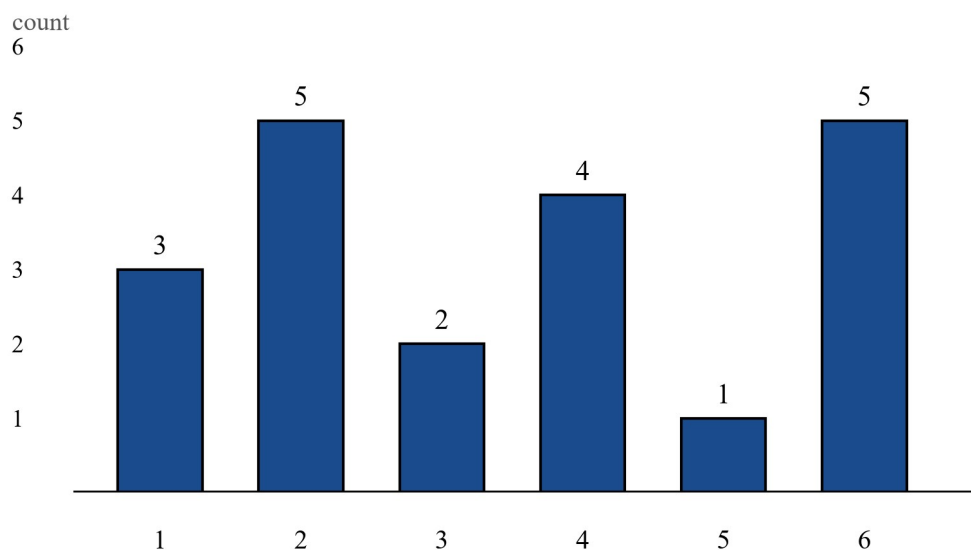
C. You roll a 0 on a die.

(1 mark)

(b) You toss a coin, and then you spin a spinner with four equal coloured parts. Are the coin toss and the spin independent or dependent? Give a reason. (1 mark)

Q25. Ava rolled a die 20 times and made this column graph of her results.

20 rolls of a die



A column graph of 20 die rolls. The columns show the counts for each number: 1 came up 3 times, 2 came up 5 times, 3 came up 2 times, 4 came up 4 times, 5 came up 1 time and 6 came up 5 times.

(a) Which number or numbers came up most often? (1 mark)

(b) Ava rolls the same die 20 more times. Does she have to get the same results? Explain your answer. (1 mark)

Total: 40 marks

Marking guide

This is a classroom check, not an exam. There are **40 marks**. It is untimed: the guidance durations (about 25 minutes for each session) are for a teacher planning a lesson, and the review may be run across two sessions if that suits the class (§7). Pencils and paper are the only equipment needed; the scales, maps and graphs are printed in the paper. Any item may be read aloud by the teacher. The review is cumulative across the whole book: there is no new content, and no CD is assessed here that is not already assessed in its chapter test — all 25 CDs are assessed in chapter tests T1–T7 (the six task CDs additionally in tasks K1–K5), and this review draws one item from every one of them. No multiple-choice items are used (0 of 40 marks; §7 allows no more than a quarter of the marks of any test for multiple choice, and it is used sparingly because at this level it hides method).

Rubrics are written in the language of each CD's achievement-standard extract from the authority file (`maths_4.json`), quoted verbatim below, and they score the strategy as well as the answer where the rubric says so. Where a mark requires a strategy or a reason, a correct answer alone does not earn it; if the answer is right but no working is shown, ask the student to tell you how they worked it before awarding the mark. Calculator rules follow D7: Q2 (VC2M4N05) and Q11 (VC2M4A02) are calculator-free, and Q9 (VC2M4N08) appears in both forms — by hand in part (a), with an optional digital-tool check in part (b).

Marks

Q	Session	Strand	CD	Owner	Marks
Q1	1	Number	VC2M4N02	1A	2
Q2	1	Number	VC2M4N05	1B	1
Q3	1	Number	VC2M4N06	1C	2
Q4	1	Number	VC2M4N07	1D	2
Q5	1	Number	VC2M4N10	1E	2
Q6	1	Number	VC2M4N04	2A	1
Q7	1	Number	VC2M4N01	2B	2
Q8	1	Number	VC2M4N03	2C	2
Q9	1	Number	VC2M4N08	2D	2
Q10	1	Number	VC2M4N09	2E	2
Q11	1	Algebra	VC2M4A02	3A	1
Q12	1	Algebra	VC2M4A01	3B	2
Q13	2	Measurement	VC2M4M01	4A	2
Q14	2	Measurement	VC2M4M02	4B	2
Q15	2	Measurement	VC2M4M03	4C	2
Q16	2	Measurement	VC2M4M04	4D	1
Q17	2	Space	VC2M4SP0 1	5A	1
Q18	2	Space	VC2M4SP0 2	5B	1
Q19	2	Space	VC2M4SP0 3	5C	2
Q20	2	Space	VC2M4SP0 4	5D	1
Q21	2	Statistics	VC2M4ST0 1	6A	1

Q	Session	Strand	CD	Owner	Marks
Q22	2	Statistics	VC2M4ST02	6B	1
Q23	2	Statistics	VC2M4ST03	6C	1
Q24	2	Probability	VC2M4P01	7A	2
Q25	2	Probability	VC2M4P02	7B	2
				Total	40

Strand totals: Number 18 · Algebra 3 · Measurement 7 · Space 5 · Statistics 3 · Probability 4. All six strands and all 25 CDs appear.

Achievement-standard extracts

The extracts below are quoted verbatim from `maths_4.json`; some appear in the file as sentence fragments, and are quoted as they stand.

CD	Achievement-standard extract
VC2M4N01, VC2M4N05	“students use their understanding of place value to represent tenths and hundredths in decimal form and to multiply natural numbers by multiples of 10.”
VC2M4N02, VC2M4N06, VC2M4A02	“They use their proficiency with addition, subtraction, multiplication facts for tens ($\times 10$) and related division facts to perform arithmetic operations to add and subtract, and multiply and divide numbers efficiently.”
VC2M4N03	“They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations.”
VC2M4N04	“Students count and represent familiar fractions on a number line.”
VC2M4N07	“They choose rounding and estimation strategies to determine whether results of calculations are reasonable.”
VC2M4N08, VC2M4N09	“Students use mathematical modelling to solve financial and other practical problems, formulating the problem using number sentences, solving the problem choosing efficient strategies and interpreting the results in terms of the situation.”
VC2M4N10	“They follow and create algorithms that generate sets of numbers and identify emerging patterns.”
VC2M4A01	“Students find unknown values in numerical equations involving addition and subtraction.”
VC2M4M01	“Students use appropriate scaled instruments and appropriate units to measure length, mass, capacity and temperature.”
VC2M4M02	“They measure and approximate perimeters and areas for regular and irregular shapes.”
VC2M4M03	“They convert between units of time when solving problems involving duration.”
VC2M4M04	“Students compare angles relative to a right angle using angle names.”
VC2M4SP01, VC2M4SP02	“Students represent and approximate shapes and objects

CD	Achievement-standard extract
	from their environment.”
VC2M4SP03	“Students create and interpret grid references.”
VC2M4SP04	“They identify line and rotational symmetry in plane shapes and create symmetrical patterns.”
VC2M4ST01, VC2M4ST02	“Students create many-to-one data displays, assess the suitability of displays for representing data and informally discuss the shape of distributions and variation in data.”
VC2M4ST03	“They use surveys and digital tools to generate categorical or discrete numerical data in statistical investigations and communicate their findings in context.”
VC2M4P01	“Students order events or the outcomes of chance experiments in terms of likelihood and identify whether events are independent or dependent.”
VC2M4P02	“They conduct repeated chance experiments and describe the variation in results.”

VC2M4M01’s extract names length, mass, capacity and temperature; the CD also requires durations (TOC §1’s recorded mismatch). Q13 asks capacity and temperature readings only, so the rubric below needs no duration exception on this paper.

Question-by-question rubric

Q1 — 2 marks (VC2M4N02). The student uses proficiency with number facts to continue sequences of multiples, performing the arithmetic efficiently.

- 1 mark: 18.
- 1 mark: 42 and 49 (both required).

Q2 — 1 mark (VC2M4N05). The student uses understanding of place value to multiply natural numbers by multiples of 10, without a calculator. Both parts are required for the mark; look for the digit shift in the working.

- 1 mark: 380 and 45. $\times 10$ moves every digit one place to the left (a 0 holds the ones place); $\div 100$ moves every digit two places to the right.

Q3 — 2 marks (VC2M4N06). The student performs arithmetic operations to add and divide numbers efficiently, using a written strategy. Each mark requires a strategy shown as well as the correct answer; award $\frac{1}{2}$ for a correct answer with no working.

- 1 mark: $375 + 248 = 623$ with place value partitioning shown (for example $300 + 200 = 500$, $70 + 40 = 110$, $5 + 8 = 13$, then $500 + 110 + 13 = 623$; bridging or another efficient strategy is accepted).
- 1 mark: $72 \div 4 = 18$, checked with $18 \times 4 = 72$. The division is exact — there is no remainder, as VC2M4N06 requires.

Q4 — 2 marks (VC2M4N07). The student chooses rounding and estimation strategies to determine whether a result is reasonable.

- 1 mark: \$2.85 rounds to \$3, and $5 \times \$3 = \15 , so the total is about \$15.
- 1 mark: Mia cannot be right, with a reason tied to the estimate — each fare is less than \$3, so five fares cost less than $5 \times \$3 = \15 , and \$20 is more than \$15. (Exact total: $5 \times \$2.85 = \14.25 .)

Q5 — 2 marks (VC2M4N10). The student follows an algorithm that generates a set of numbers and identifies an emerging pattern.

- 1 mark: the set 5, 10, 20, 40 (all four required).
- 1 mark: any true pattern from the 1E work — expected: each number is double the one before (the rule is $\times 2$ every time). Accept also: the numbers get bigger and bigger, and each is a multiple of 5.

Q6 — 1 mark (VC2M4N04). The student counts familiar fractions — here counting on by quarters through mixed numerals to 2 wholes.

- 1 mark: $\frac{7}{4}$ and $\frac{8}{4}$ (both required; accept *two* for $\frac{8}{4}$, since 2A renames eight-quarters as 2).

Q7 — 2 marks (VC2M4N01). The student uses understanding of place value to represent tenths and hundredths in decimal form.

- 1 mark: 0.5 (5 shaded tenths).
- 1 mark: 0.63 (63 shaded hundredths).

Q8 — 2 marks (VC2M4N03). The student recognises common equivalent fractions and makes connections between fraction and decimal notations.

- 1 mark: 4 (halving to quarters doubles to eighths: $\frac{1}{2} = \frac{4}{8}$).
- 1 mark: 0.25 (a quarter is 25 hundredths).

Q9 — 2 marks (VC2M4N08). The student uses mathematical modelling to solve a financial problem — a purchase with cash change to the nearest 5 cents — formulating the problem with a number sentence, choosing an efficient strategy and interpreting the result in terms of the situation. Part (a) is done by hand; part (b) may be checked with a digital tool, so the item appears in both forms the CD requires.

- 1 mark: \$4.55, with the rounding explained — \$4.53 sits 3c past the \$4.50 step, and a cash total 3c or 4c past a step rounds up, so the cash payment is \$4.55.
- 1 mark: 45c change — $\$5.00 - \$4.55 = \$0.45$. The number sentence must be shown; a calculator or spreadsheet check is permitted but the answer must be the cash change, not the card amount.

Q10 — 2 marks (VC2M4N09). The student uses mathematical modelling to solve a practical financial problem, formulating it with a number sentence, choosing an efficient strategy and interpreting the result in terms of the situation.

- 1 mark: $5 \times \$1.50 = \7.50 , number sentence written (repeated addition of \$1.50 is accepted).
- 1 mark: \$2.50 change — $\$10 - \$7.50 = \$2.50$ — stated in a sentence about the children (for example “They get \$2.50 back”). The mark requires the interpretation in context, not the number alone.

Q11 — 1 mark (VC2M4A02). The student recalls multiplication facts up to 10×10 and applies the fact to the related division fact, without a calculator.

- 1 mark: 56 and 8 (both required).

Q12 — 2 marks (VC2M4A01). The student finds unknown values in numerical equations involving addition and subtraction.

- 1 mark: $\square = 73$ ($120 - 47 = 73$).
- 1 mark: $\square = 93$ ($55 + 38 = 93$). Look for the inverse connection when asking students how they know; check: $47 + 73 = 120$ ✓ and $93 - 38 = 55$ ✓.

Q13 — 2 marks (VC2M4M01). The student uses appropriate scaled instruments and appropriate units to measure capacity and temperature, interpreting a printed scale reading, including a partial unit.

- 1 mark: 350 mL (the water sits on the mark two steps past 300, counting by 50s).
- 1 mark: 28.5 °C (the liquid stops halfway between 28 and 29 — the partial unit is the point of the item).

Q14 — 2 marks (VC2M4M02). The student measures and approximates perimeters and areas for regular and irregular shapes, using formal and informal units. No area formula — counting is the assessed method.

- 1 mark: 8 metres — $2.5 + 1.5 + 2.5 + 1.5 = 8$, all four sides added.
- 1 mark: 14 squares — 12 whole squares, and 4 half squares make 2 whole squares: $12 + 2 = 14$.

Q15 — 2 marks (VC2M4M03). The student converts between units of time when solving problems involving duration, including a situation crossing midday from am into pm.

- 1 mark: 35 minutes — for example 11:45 am to 12:00 pm is 15 minutes, and 12:00 pm to 12:20 pm is 20 minutes: $15 + 20 = 35$. The count goes straight through midday.
- 1 mark: 2 hours 30 minutes — 150 minutes holds 2 lots of 60 minutes with 30 left over.

Q16 — 1 mark (VC2M4M04). The student compares angles relative to a right angle using angle names. All three names are required for the mark.

- 1 mark: A is acute (less than a right angle), B is right (matches the right angle), C is obtuse (more than a right angle).

Q17 — 1 mark (VC2M4SP01). The student represents and approximates shapes and objects, here by identifying an object from its geometric properties. (The extract carried on this CD is shared with VC2M4SP02; the item scores the CD's geometric-properties content.)

- 1 mark: a square-based pyramid — a square base with triangle faces meeting at one vertex on top.

Q18 — 1 mark (VC2M4SP02). The student represents and approximates objects in the environment using combinations of familiar shapes.

- 1 mark: any two correct shape-and-position pairs from the unlabeled drawing — for example a triangle (a roof, or part of the kite), a rectangle (the walls, the door, the trunk, the road, the sign), a square (a window), a circle (the sun, the ball, the tree's leaves, part of the cloud).

Q19 — 2 marks (VC2M4SP03). The student creates and interprets grid references on an alphanumeric grid, locating positions and following a pathway.

- 1 mark: B1 (letter first, then number).
- 1 mark: the main arena — 1 down from A1 lands on A2, and 1 right lands on B2, which the map shows as part of the main arena.

Q20 — 1 mark (VC2M4SP04). The student identifies line symmetry in a plane shape.

- 1 mark: 4 lines of symmetry.

Q21 — 1 mark (VC2M4ST01). The student interprets a many-to-one data display, reading the key where one symbol stands for more than one datum.

- 1 mark: 5 willie wagtails — two and a half symbols, and each symbol stands for 2 birds: $2 + 2 + 1 = 5$. The mark requires reading the key; a count of symbols alone (2 or 3) does not earn it.

Q22 — 1 mark (VC2M4ST02). The student informally discusses the shape of a distribution and the variation in the data, using the bunched-or-spread language of 6B. No mean, median, mode or range.

- 1 mark: spread, with a reason — the counts are much the same at every value from 0 to 4 (they run 4, 3, 5, 4, 4), with no bunch at one or two values.

Q23 — 1 mark (VC2M4ST03). The student reasons about how survey data is generated in a statistical investigation and communicates a judgement in context.

- 1 mark: any answer that recognises the sample does not cover the population — for example: he only asked students on his soccer team, so most students were never asked; students on a soccer team may already like soccer, so the results can speak for the team but not for the whole school.

Q24 — 2 marks (VC2M4P01). The student orders events in terms of likelihood and identifies whether events are independent or dependent. Chance is described in words only — no numerical probabilities.

- 1 mark: C, B, A — rolling a 0 on a die is impossible, a coin landing on tails might happen, and it is certain that December is a summer month in Melbourne.
- 1 mark: independent, with a reason — the coin toss does not change the chance of any spinner result, and the spinner does not change the chance of heads or tails.

Q25 — 2 marks (VC2M4P02). The student reads the results of a repeated chance experiment and describes the variation in results.

- 1 mark: 2 and 6 — both came up 5 times, more than any other number (both numbers required).
- 1 mark: no, with a reason that recognises variation — the die is a chance generator, so the results vary from run to run; the same results are possible, but they do not have to happen.

Solutions

Q1. (a) Count on by 6s: 6, 12, 18, 24, 30 — the missing number is 18. (b) Count on by 7s: $28 + 7 = 35$, $35 + 7 = 42$, and $42 + 7 = 49$. The sequence is 28, 35, 42, 49.

Q2. No calculator — this is place value work (VC2M4N05). (a) $\times 10$ moves every digit one place to the left, and a 0 holds the ones place: $38 \times 10 = \mathbf{380}$. (b) $\div 100$ moves every digit two places to the right: $4\,500 \div 100 = \mathbf{45}$.

Q3. (a) $375 = 300 + 70 + 5$ and $248 = 200 + 40 + 8$. Add the matching parts: $300 + 200 = 500$, $70 + 40 = 110$, $5 + 8 = 13$. Then $500 + 110 + 13 = \mathbf{623}$. (b) $4 \times 10 = 40$, and $72 - 40 = 32$, and $4 \times 8 = 32$, so $72 \div 4 = 10 + 8 = \mathbf{18}$. Check: $18 \times 4 = 72$. ✓ There is no remainder.

Q4. (a) \$2.85 rounds to \$3. Five fares at about \$3 each: $5 \times \$3 = \mathbf{\$15}$, so the total is about \$15. (b) Mia cannot be right. Each fare is less than \$3, so five fares cost less than $5 \times \$3 = \15 — and \$20 is more than \$15. The exact total is $5 \times \$2.85 = \14.25 , which is close to the estimate of \$15.

Q5. (a) Start at 5. Multiply by 2 $\rightarrow$ 10. Multiply by 2 $\rightarrow$ 20. Multiply by 2 $\rightarrow$ 40. The set is **5, 10, 20, 40**. (b) Each number is **double the one before**, because the rule is *multiply by 2* every time.

Q6. Count on by quarters: $\frac{5}{4}, \frac{6}{4}, \frac{7}{4}, \frac{8}{4}$. Eight-quarters is 2 wholes, so the count lands on 2. The blanks are $\frac{7}{4}$ and $\frac{8}{4}$ (or *two*).

Q7. (a) The bar is split into 10 equal pieces and 5 are shaded: 5 tenths, written **0.5**. (b) The square is split into 100 equal pieces and 63 are shaded: 63 hundredths, written **0.63**.

Q8. (a) Cut each half into 4 pieces and each piece doubles: 2 pieces become 4 out of 8, so $\frac{1}{2} = \frac{4}{8}$. The box is **4**. (b) A quarter is 25 hundredths, so $\frac{1}{4} = \mathbf{0.25}$.

Q9. (a) The 5-cent steps are totals ending in 0c or 5c. \$4.53 is 3c past the \$4.50 step, and a cash total 3c or 4c past a step rounds up, so you pay **\$4.55**. (b) Change from \$5: $\$5.00 - \$4.55 = \mathbf{\$0.45}$, so you get **45c** back. Check with a calculator or spreadsheet if one is available: $5 - 4.55 = 0.45$. ✓ (A card would charge the exact \$4.53 — card totals are not rounded.)

Q10. (a) Five fares at \$1.50 each is 5 equal groups: $5 \times \$1.50 = \mathbf{\$7.50}$. (b) Change from \$10: $\$10 - \$7.50 = \$2.50$. **The children get \$2.50 change.**

Q11. No calculator — this is fact recall (VC2M4A02). $7 \times 8 = \mathbf{56}$, and the related division fact is $56 \div 7 = \mathbf{8}$.

Q12. (a) $47 + \square = 120$. Think $120 - 47 = 73$, so $\square = \mathbf{73}$. Check: $47 + 73 = 120$. ✓ (b) $\square - 38 = 55$. Addition undoes subtraction: $55 + 38 = 93$, so $\square = \mathbf{93}$. Check: $93 - 38 = 55$. ✓

Q13. (a) The jug counts by 50 mL. The water sits two steps past 300, on the 350 mark: **350 mL**. (b) The thermometer marks every degree. The red liquid stops halfway between 28 and 29: **28.5 °C**.

Q14. (a) The perimeter is the distance around the boundary. Add all four sides: $2.5 + 1.5 + 2.5 + 1.5 = \mathbf{8 \text{ metres}}$. (b) Count the squares: 12 whole squares, and the 4 half squares pair up to make 2 whole squares. $12 + 2 = \mathbf{14 \text{ squares}}$.

Q15. (a) Jump 11:45 am $\rightarrow$ 12:00 pm, which is 15 minutes, then 12:00 pm $\rightarrow$ 12:20 pm, which is 20 minutes. $15 + 20 = 35$. The concert is **35 minutes** long — the count goes straight through midday, from am into pm. (b) 60 minutes make 1 hour. 150 minutes is 120 minutes + 30 minutes, and 120 minutes = 2 hours, so the movie is **2 hours 30 minutes** long.

Q16. Angle A fits inside the corner of the right-angle template, so it is less than a right angle: **acute**. Angle B matches the corner exactly: **right**. Angle C goes past the corner, so it is more than a right angle: **obtuse**.

Q17. A **square-based pyramid**. Its base is a square, and its triangle faces all meet at one vertex on top — that is how 5A tells a pyramid from a prism.

Q18. Any two correct pairs. For example: a **triangle** (the roof), a **rectangle** (the walls), a **square** (a window) and a **circle** (the sun or the ball).

Q19. (a) Follow the letter B down and the number 1 across: the showbags are at **B1**. (b) From the gate at A1, 1 square down lands on A2, and 1 square right lands on B2. The map shows the **main arena** at B2 (it also takes up C2).

Q20. A square has **4** lines of symmetry: a vertical line, a horizontal line, and two corner-to-corner lines.

Q21. The key says one symbol = 2 birds. The willie wagtail row has two and a half symbols: $2 + 2 + 1 = 5$ **willie wagtails**.

Q22. The data is **spread**. The counts are much the same at every value from 0 to 4 — they run 4, 3, 5, 4, 4 — so there is no bunch at one or two values.

Q23. Noah asked only the 10 students on his soccer team, so most students at the school were never asked. Students on a soccer team may already like soccer, so the results can speak for the team, but they may not tell Noah about the whole school.

Q24. (a) Rolling a 0 on a die is impossible — a die shows 1, 2, 3, 4, 5 or 6. A coin landing on tails might happen. December is a summer month in Melbourne, so that is certain. From least likely to most likely: **C, B, A**. (b)

Independent. The coin toss does not change the chance of any spinner result, and the spinner does not change the chance of heads or tails — what happens with one does not change the chance of the other.

Q25. (a) Read the tallest columns: 2 came up 5 times and 6 came up 5 times. **2 and 6** came up most often. (b) **No**. Rolling a die is a chance experiment, so the results vary from run to run. Ava might get the same results, but she does not have to — and with 20 more rolls, the counts are likely to land differently.