

WA5MMGMM1

Modelling with measurement and geometry

Core + Challenge

NAPLAN-style

Problem Solving with Measurement — Marking Key

I can use maps, nets, flips, slides, turns, metric units and time to solve real problems.

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

A Warm up: 16 B Practise: 23 C Think it through: 10 D Challenge: 9 **Total: 58**

Gold shading in this key shows what the child should have shaded or drawn. Accept any correct arrangement unless the question fixes it.

A Warm up *answers*

/ 16 marks

Q	Answer	Model answer / notes	Marks
1	BBQ	Go across to column N, then up to row 2. The map is shown above for items 1–4.	1
2	E5	Column E, row 5. Letter first, then number.	1
3	B3	Column B, row 3.	1
4	Games	North is up: D2 → D3 → D4, the Games.	1
5	slide	Same way round, just moved across and up: a slide (translation).	1
6	flip	A mirror image, the same distance each side of a mirror line: a flip (reflection).	1
7	turn	Turned a quarter turn, not a mirror image: a turn (rotation).	1
8	turn	Turned upside down by a half turn (not a mirror image): a turn (rotation).	1
9	Yes	A cross shape: 4 in a row with one square above and one below. It folds into a cube.	1
10	No	A 2 by 3 block: when folded, squares overlap and there is no lid.	1
11	Yes	A staircase: it folds into a cube.	1

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Q	Answer	Model answer / notes	Marks
12	No	5 squares in a row: the two end squares would overlap.	1
13	7 cm ²	Count the squares: $4 + 2 + 1 = 7$ cm ² .	1
14	12 cm ³	3 long $\times$ 2 deep $\times$ 2 high = 12 cubes (count the hidden ones).	1
15	4:20 pm	$16 - 12 = 4$, after noon: 4:20 pm.	1
16	2300 g	2 kg = 2000 g; $2000 + 300 = 2300$ g.	1

B

Practise *answers and working*

/ 23 marks

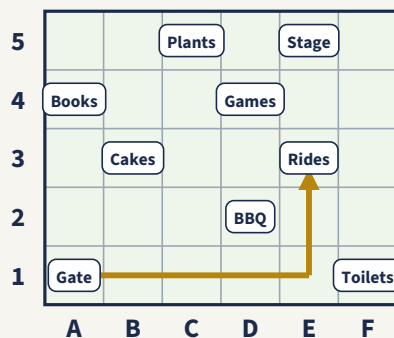
Q	Answer	Working / sample response	Marks
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- 1 Yes, with 2 kg 500 g to spare

82 + 38 + 15 kg 500 g + 22 = 157 kg 500 g.
 157 kg 500 g + 20 kg = 177 kg 500 g, which is under 180 kg (2 kg 500 g to spare). So yes.
1 mark: 157 kg 500 g (or 177 kg 500 g).
1 mark: yes, with a reason.

2

- 2 a) Rides (E3) b) 120 m

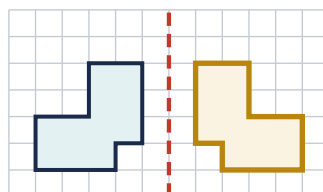


a) A1 $\rightarrow$ E1 (4 east), then E1 $\rightarrow$ E3 (2 north): the Rides.
 b) $4 + 2 = 6$ squares. $6 \times 20 = 120$ m.

3

1 mark: path drawn.
1 mark: Rides.
1 mark: 120 m.

- 3 Reflection drawn

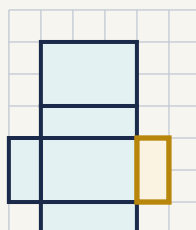


Each corner is the same distance from the mirror line on the other side (e.g. 1 square from the line stays 1 square from it).

2

2 marks: reflection correct. 1 mark: correct shape but one or two corners wrong.

- 4 b) 22 cm² c) 6

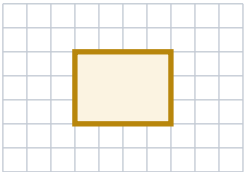


a) A 1 by 2 rectangle joined to the right side of the base.
 b) $6 + 3 + 3 + 6 + 2 + 2 = 22$ cm².
 c) The box is 3 cm $\times$ 2 cm $\times$ 1 cm: $3 \times 2 \times 1 = 6$ cubes.

3

1 mark for each part (accept the missing face in any correct place).

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Q	Answer	Working / sample response	Marks
5	a) 30 b) 7500 mL c) 7 L 500 mL	a) 5 along $\times$ 3 deep $\times$ 2 layers = 30 boxes. b) $30 \times 250 = 7500$ mL. c) 7500 mL = 7 L 500 mL ($7\frac{1}{2}$ L). <i>1 mark for each part.</i>	3
6	a) 08:30 there, 14:40 back b) 5 h 25 min	a) Go on the first ferry: 08:30 (arrives 09:15). 3:30 pm = 15:30: the 14:40 ferry arrives 15:25 (in time); the 16:00 ferry arrives 16:45 (too late). b) 09:15 $\rightarrow$ 14:15 is 5 h, then 25 min more: 5 h 25 min. <i>1 mark: 08:30 ferry.</i> <i>1 mark: 14:40 ferry with reason.</i> <i>1 mark: 5 h 25 min.</i>	3
7	a) 24 m ² b) 20 m c) 4 rolls	a) $6 \times 4 = 24$ m ² . b) $6 + 4 + 6 + 4 = 20$ m. c) 3 rolls = 18 m (not enough); 4 rolls = 24 m. So 4 rolls. <i>1 mark for each part.</i>	3
8	6 times	$24 \text{ m}^2 \times 2 \text{ L} = 48 \text{ L}$. 5 cans = 45 L (not enough); 6 cans = 54 L. So 6 times. <i>1 mark: 48 L.</i> <i>1 mark: 6 times (not 5 r 3).</i>	2
9	3 m by 4 m	 Rectangles with area 12 m²: 1×12, 2×6, 3×4. Perimeters: 26 m, 16 m, 14 m. So the rug is 3 m by 4 m. <i>1 mark: area 12 m².</i> <i>1 mark: perimeter 14 m (3 by 4 either way round).</i>	2

C

Think it through *sample answers and criteria*

/ 10 marks

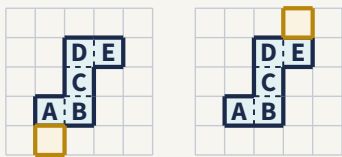
Q	Answer	Working / sample response	Marks
1	No	Having 6 squares is not enough: the squares must be in the right places. If you fold it, the two squares that stick up land on the same face, and one face has no lid. <i>1 mark: No.</i> <i>1 mark: explains two squares overlap / a face is missing.</i>	2
2	False: both hold 24	$4 \times 3 \times 2 = 24$ cubes. $6 \times 2 \times 2 = 24$ cubes. They hold the same number. <i>1 mark: False.</i> <i>1 mark: both volumes are 24 cm³.</i>	2

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Q	Answer	Working / sample response	Marks
		Always Sometimes Never	
3	Sometimes	A square or a heart flipped in its line of symmetry looks the same, so it can be true. The letter F flipped looks back-to-front, so it is not always true. 1 mark: Sometimes. 1 mark: one example each way.	2
4	$5 \text{ m} \times 3 \text{ m}$	$6 \times 2 = 12$, $3 \times 4 = 12$ and $12 \times 1 = 12$: those three have an area of 12 m^2. $5 \times 3 = 15 \text{ m}^2$. 1 mark: $5 \text{ m} \times 3 \text{ m}$. 1 mark: explains the others all have area 12 m^2.	2
5	12 cups	Way 1: 1 L = 1000 mL holds 4 cups of 250 mL, so 3 L holds $3 \times 4 = 12$ cups. Way 2: 3 L = 3000 mL, and $3000 \div 250 = 12$ (or count on in 250s to 3000). 1 mark: 12 cups. 1 mark: two different correct methods.	2

D Challenge solutions and criteria

/ 9 marks

Q	Answer	Working / sample response	Marks
1	$6 \text{ m} \times 6 \text{ m}$, 24 m of fencing	Pairs that multiply to 36: 1×36, 2×18, 3×12, 4×9, 6×6. Perimeters: 74 m, 40 m, 30 m, 26 m, 24 m. The $6 \text{ m} \times 6 \text{ m}$ square needs the least fencing: 24 m. 1 mark: all five pens. 1 mark: their perimeters. 1 mark: $6 \text{ m} \times 6 \text{ m}$ (24 m).	3
2	c) E	 a), b) Any two of the four places: below A, below B, above D or above E (gold squares show two of them). c) A is opposite E. (B is opposite D, and the new square is opposite C.) 1 mark each for two different correct squares. 1 mark: E.	3
3	a) 28 L b) 1:05 pm c) 22 L	a) 400 km is 4 lots of 100 km: $4 \times 7 = 28 \text{ L}$. b) $4 \text{ h } 50 \text{ min} + 30 \text{ min} = 5 \text{ h } 20 \text{ min}$. $07:45 + 5 \text{ h} = 12:45$, $+ 20 \text{ min} = 13:05 = 1:05 \text{ pm}$. c) $50 - 28 = 22 \text{ L}$. 1 mark for each part.	3