

WA7MMGTW2

Two-dimensional space

Core + Challenge

Area and Perimeter of Composite Shapes — Marking Key

I can find the area and perimeter of composite shapes made from rectangles by splitting, subtracting and finding missing lengths.

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

Marks summary

Section A Fluency: 16 Section B Core: 23 Section C Reasoning: 9 Section D Challenge: 11 **Total: 59**

Fluency: 1 mark each; accept an equivalent unsimplified answer for half credit at tutor's discretion.

A Fluency *answers and working*

/ 16 marks

Q	Answer	Working
1	3 cm	$8 - 5 = 3$
2	4 cm	$10 - 6 = 4$
3	68 cm ²	$10 \times 8 - 4 \times 3 = 80 - 12$
4	36 cm	$10 + 5 + 4 + 3 + 6 + 8$
5	84 cm ²	12×7
6	24 cm ²	6×4
7	60 cm ²	$84 - 24$
8	46 cm	$12 + 7 + 3 + 4 + 6 + 4 + 3 + 7$
9	27 cm ²	9×3
10	18 cm ²	6×3
11	54 cm ²	$27 + 18 + 9$
12	36 cm	same as a 9×9 square: 4×9
13	24 cm ²	4×6
14	36 cm ²	12×3
15	60 cm ²	$24 + 36$
16	42 cm	$4 + 6 + 4 + 3 + 12 + 3 + 4 + 6$

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B

Core answers, working and marks

/ 23 marks

Q	Answer	Working / sample response	Marks
1	29 m ² ; \$1305	$7 \times 3 + 4 \times 2 = 21 + 8 = 29$ $29 \times 45 = 1305$ 1 mark: split 1 mark: 29 m ² 1 mark: \$1305	3
2	126 m ²	$150 - 24 = 126$ 1 mark: subtract 1 mark: 126	2
3	44 m ²	$24 + 20 = 44$ 1 mark each	2
4	6 cm and 5 cm; P = 54 cm; A = 146 cm ²	$16 - 10 = 6$; $11 - 6 = 5$ $P = 16 + 6 + 6 + 5 + 10 + 11 = 54$ $A = 16 \times 6 + 10 \times 5 = 146$ 1 mark: missing sides 1 mark: P 1 mark: A	3
5	496 cm ²	$1200 - 704 = 496$ 1 mark: both areas 1 mark: 496	2
6	25.2 m ²	$27 - 1.8 = 25.2$ 1 mark each	2
7	23.1 m	$P = 7 + 3 + 3 + 2 + 4 + 5 = 24$ $24 - 0.9 = 23.1$ 1 mark: 24 m 1 mark: 23.1 m	2
8	45 cm ² ; 36 cm	$5 \times 9 = 45$ 12 edges $\times 3 = 36$ 1 mark each	2
9	\$3630	$36 + 30 = 66 \text{ m}^2$ $66 \times 55 = 3630$ 1 mark: parts 1 mark: 66 1 mark: \$3630	3
10	30 tiles	$6 + 1.5 = 7.5 \text{ m}^2$ $7.5 \div 0.25 = 30$ 1 mark each	2

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C

Reasoning *sample answers and marking criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	Both give 68 cm^2	Add: $6 \times 8 + 4 \times 5 = 48 + 20 = 68$ Subtract: $10 \times 8 - 4 \times 3 = 68$ <i>1 mark each</i>	2
2	Steps slide out to a square	The horizontal steps add to 9 and the vertical steps add to 9, like the sides of the square. <i>2 marks</i>	2
3	Corner: same; middle of side: longer	A: cut from a corner, $P = 36 = 2 \times (10 + 8)$, the same as the full rectangle B: cut from the middle of a side, $P = 46 > 38$ <i>1 mark: A</i> <i>1 mark: B</i> <i>1 mark: conclusion</i>	3
4	No: 46 cm vs 42 cm	Same area does not mean same perimeter. <i>1 mark: perimeters</i> <i>1 mark: conclusion</i>	2

D

Challenge *solutions and marking criteria*

/ 11 marks

Q	Answer	Working / sample response	Marks
1	216 m^2	Paths: $2 \times 20 + 2 \times 14 - 2 \times 2 = 64$ (the centre square is counted once) $280 - 64 = 216$ <i>1 mark: overlap</i> <i>1 mark: 64</i> <i>1 mark: 216</i>	3
2	8 cm; 32 cm	$52 + 12 = 64$; $64 \div 8 = 8$ Corner cut keeps $P = 2 \times (8 + 8) = 32$ <i>1 mark: 64</i> <i>1 mark: width 8</i> <i>1 mark: 32</i>	3
3	\$1740	Corner cut: $P = 2 \times (18 + 15) = 66$ $(66 - 8) \times 30 = 1740$ <i>1 mark: 58 m</i> <i>1 mark: \$1740</i>	2
4	2×3 rectangle: 10 cm	Row: 14 cm 2×3 rectangle: 10 cm More shared edges means a shorter perimeter. <i>1 mark: 14</i> <i>1 mark: 10</i> <i>1 mark: reason</i>	3