

WA7MMGTW1

Two-dimensional space

Core + Challenge

Area of Triangles — Marking Key

I can find the area of any triangle using the base and perpendicular height, and work backwards to find a missing length.

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: 22 Section C Reasoning: 9 Section D Challenge: 11 **Total: 58**

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	30 cm ²	$\frac{1}{2} \times 10 \times 6 = 30$
2	20 cm ²	$\frac{1}{2} \times 8 \times 5 = 20$
3	42 cm ²	$\frac{1}{2} \times 12 \times 7 = 42$
4	18 cm ²	$\frac{1}{2} \times 9 \times 4 = 18$
5	60 cm ²	$\frac{1}{2} \times 15 \times 8 = 60$
6	10.5 cm ²	$\frac{1}{2} \times 7 \times 3 = 10.5$
7	110 cm ²	$\frac{1}{2} \times 20 \times 11 = 110$
8	16 cm ²	$\frac{1}{2} \times 6.4 \times 5 = 16$
9	5 m ²	$\frac{1}{2} \times 2.5 \times 4 = 5$
10	65 cm ²	$\frac{1}{2} \times 13 \times 10 = 65$
11	24 cm ²	$\frac{1}{2} \times 6 \times 8 = 24$
12	30 m ²	$\frac{1}{2} \times 5 \times 12 = 30$
13	6 cm	$24 \times 2 \div 8 = 6$
14	10 cm	$35 \times 2 \div 7 = 10$
15	120 mm ²	$\frac{1}{2} \times 15 \times 16 = 120$
16	0.3 m ²	$\frac{1}{2} \times 1.2 \times 0.5 = 0.3$

B

Core answers, working and marks

/ 22 marks

Q	Answer	Working / sample response	Marks
1	42 cm ²	$\frac{1}{2} \times 12 \times 7 = 42$ 1 mark: working 1 mark: 42 cm ²	2
2	27 m ²	The legs are the base and height: $\frac{1}{2} \times 9 \times 6 = 27$ (10.8 m is not needed) 1 mark: correct lengths 1 mark: 27 m ²	2
3	20 cm ²	$\frac{1}{2} \times 5 \times 8 = 20$ 1 mark: working 1 mark: 20 cm ²	2
4	6.3 m ²	$\frac{1}{2} \times 3 \times 4.2 = 6.3$ 1 mark each	2
5	6 m	$18 \times 2 = 36$; $36 \div 6 = 6$ 1 mark: working 1 mark: 6 m	2
6	6000 cm ² = 0.6 m ²	One: $\frac{1}{2} \times 40 \times 25 = 500$ cm ² $12 \times 500 = 6000$ cm ² $6000 \div 10\,000 = 0.6$ m ² 1 mark: 500 1 mark: 6000 1 mark: 0.6 m ²	3
7	24 square units	base AB = 8, height = 6; $\frac{1}{2} \times 8 \times 6 = 24$ 1 mark: base and height 1 mark: 24	2
8	3 tins	$\frac{1}{2} \times 9 \times 2.8 = 12.6$ m ² $12.6 \div 5 = 2.52$ L Round up: 3 tins 1 mark: area 1 mark: 2.52 1 mark: 3 tins	3
9	50 cm ²	$10 \times 10 = 100$; $100 \div 2 = 50$ 1 mark each	2
10	70 cm ² each	Shaded: $\frac{1}{2} \times 14 \times 10 = 70$ Unshaded: $140 - 70 = 70$ 1 mark each	2

C Reasoning *sample answers and marking criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	Half a rectangle	Draw a rectangle with the same base and height around the triangle; the triangle fills exactly half of it. <i>1 mark: diagram</i> <i>1 mark: explanation</i>	2
2	Used the sloping side	10.8 m is not perpendicular to the 9 m base; the height is 6 m. <i>1 mark each</i>	2
3	Same base and height	The perpendicular distance between parallel lines is constant, so both heights are equal. <i>1 mark: same height</i> <i>1 mark: same area</i>	2
4	It stays the same	e.g. $b = 8, h = 6: A = 24$; $b = 16, h = 3: A = 24$ $\times 2$ and $\div 2$ cancel out <i>1 mark: example</i> <i>1 mark: same</i> <i>1 mark: reason</i>	3

D Challenge *solutions and marking criteria*

/ 11 marks

Q	Answer	Working / sample response	Marks
1	$b = 6 \text{ cm}, h = 12 \text{ cm}$	$\frac{1}{2} \times b \times 2b = b \times b = 36$ $b = 6, h = 12$ <i>1 mark: $b \times b = 36$</i> <i>1 mark: $b = 6$</i> <i>1 mark: $h = 12$</i>	3
2	4.8 cm	Area = $\frac{1}{2} \times 6 \times 8 = 24$ $24 = \frac{1}{2} \times 10 \times h$ $h = 4.8$ <i>1 mark: area 24</i> <i>1 mark: equation</i> <i>1 mark: 4.8</i>	3
3	13 square units	Rectangle $6 \times 5 = 30$ Subtract three right triangles: $6 + 6 + 5 = 17$ $30 - 17 = 13$ <i>1 mark: 30</i> <i>1 mark: 17</i> <i>1 mark: 13</i>	3
4	\$175 000	$\frac{1}{2} \times 40 \times 25 = 500 \text{ m}^2$ $500 \times 350 = 175\,000$ <i>1 mark: area</i> <i>1 mark: price</i>	2