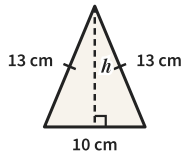


# Area and Pythagoras

1

Find the height  $h$ , then the area of the triangle.



$$h^2 = 13^2 - 5^2 = 144$$

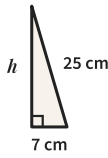
$$h = 12$$

$$\text{Area} = \frac{1}{2} \times 10 \times 12 = 60$$

Answer 60 cm<sup>2</sup>

2

Find the missing side  $h$ , then the area of the triangle.



$$h^2 = 25^2 - 7^2 = 576$$

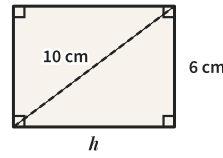
$$h = 24$$

$$\text{Area} = \frac{1}{2} \times 7 \times 24 = 84$$

Answer 84 cm<sup>2</sup>

3

A rectangle is 6 cm wide and its diagonal is 10 cm. Find its length  $h$ , then its area.



$$h^2 = 10^2 - 6^2 = 64$$

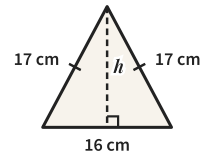
$$h = 8$$

$$\text{Area} = 8 \times 6 = 48$$

Answer 48 cm<sup>2</sup>

4

Find the height  $h$ , then the area of the triangle.

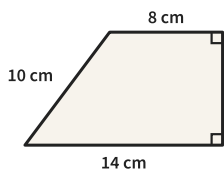


$$\text{Area} = \frac{1}{2} \times 16 \times 15 = 120$$

Answer 120 cm<sup>2</sup>

5

Find the area of this trapezium.

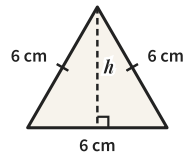


$$\text{the height is } \sqrt{10^2 - 6^2} = 8$$

Answer 88 cm<sup>2</sup>

6

Find the area of this equilateral triangle to 1 decimal place.

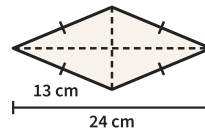


$$h = \sqrt{27} = 5.196$$

Answer 15.6 cm<sup>2</sup>

7

A rhombus has sides of 13 cm. Its long diagonal is 24 cm. Find the area of the rhombus.

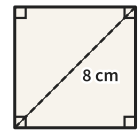


$$\text{half the other diagonal is } \sqrt{13^2 - 12^2} = 5$$

Answer 120 cm<sup>2</sup>

8

A square has a diagonal of 8 cm. Find its area.



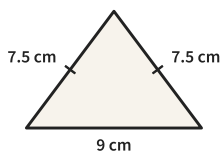
$$s^2 + s^2 = 64, \text{ so } s^2 = 32$$

Answer 32 cm<sup>2</sup>

# Area and Pythagoras further practice

9

Find the area of this isosceles triangle.

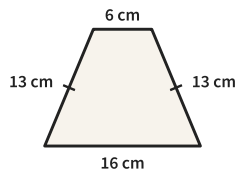


$$h = \sqrt{7.5^2 - 4.5^2} = 6$$

Answer 27 cm<sup>2</sup>

10

Find the area of this isosceles trapezium.



$$\text{each overhang is 5 cm, so } h = 12$$

Answer 132 cm<sup>2</sup>

11

A right angled triangle has an area of 30 cm<sup>2</sup>. One of the shorter sides is 5 cm. Find its perimeter.

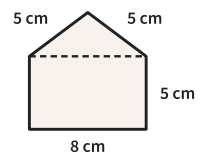


$$\text{the other side is 12 cm, the hypotenuse is 13 cm}$$

Answer 30 cm

12

This shape is a rectangle with an isosceles triangle on top. Find its area.

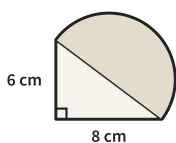


$$\text{the roof is 3 cm tall: } 40 + 12$$

Answer 52 cm<sup>2</sup>

13

A semicircle is drawn on the longest side of this right angled triangle. Find the total area to 1 decimal place.



$$\text{the diameter is 10 cm: } 24 + \frac{1}{2} \times \pi \times 5^2$$

Answer 63.3 cm<sup>2</sup>

14

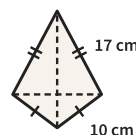
A garden plot is an isosceles triangle with sides 25 m, 25 m and 14 m. Turf costs £4.50 per m<sup>2</sup>. How much will it cost to turf the plot?

$$h = 24 \text{ m, area } 168 \text{ m}^2$$

Answer £756

15

A kite has two sides of 10 cm and two of 17 cm. Its short diagonal is 16 cm. Find the area of the kite.

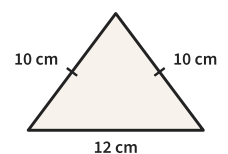


$$\text{the long diagonal is } 6 + 15 = 21 \text{ cm}$$

Answer 168 cm<sup>2</sup>

16

Jo says the area of an isosceles triangle with sides 10 cm, 10 cm and 12 cm is  $\frac{1}{2} \times 12 \times 10 = 60 \text{ cm}^2$ . Explain her mistake and find the area.



$$10 \text{ cm is the sloping side, not the height; } h = 8$$

Answer 48 cm<sup>2</sup>