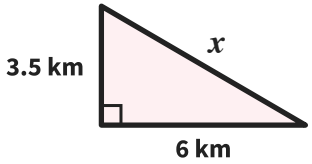
Pythagoras in Context

ANSWERS

1

Sam cycles 6 km east, then 3.5 km north. How far is Sam from the start, in a straight line?



$x^2 = 6^2 + 3.5^2$

$x^2 = 36 + 12.25$

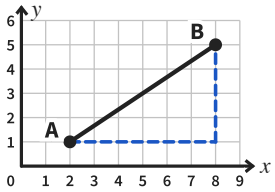
$x^2 = 48.25$

$x = \sqrt{48.25}$

$x =$ 6.95 km

2

A is (2, 1) and B is (8, 5). Find the length of AB.



$AB^2 = 6^2 + 4^2$

$AB^2 = 36 + 16$

$AB^2 = 52$

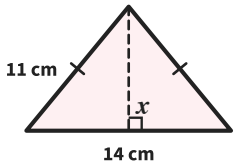
$AB = \sqrt{52}$

AB = 7.21 units

3

The triangle is isosceles.

Find its height, x.



$x^2 = 11^2 - 7^2$

$x^2 = 121 - 49$

$x^2 = 72$

$x = \sqrt{72}$

$x =$ 8.49 cm

4

A straight path crosses a rectangular garden from one corner to the opposite corner. The path is 13.5 m long and the garden is 9 m wide.
Sketch it, then find the length of the garden.

sketch

$x^2 = 13.5^2 - 9^2$

$x^2 = 182.25 - 81$

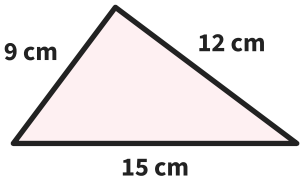
$x^2 = 101.25$

$x = \sqrt{101.25}$

$x =$ 10.06 m

5

Is this triangle right-angled?
Show how you know.



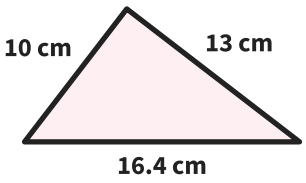
$9^2 + 12^2 = 225$

$15^2 = 225$

Answer: Yes

6

Is this triangle right-angled?
Show how you know.



$10^2 + 13^2 = 269$

$16.4^2 = 268.96$

Answer: No, $269 \neq 268.96$

7

Find the distance between the points (−4, 2) and (2, −5).

across 6, down 7

$x^2 = 6^2 + 7^2 = 85$

Answer: 9.22 units

8

Zoe is checking a triangle with sides 20 cm, 21 cm and 29 cm.
She writes $20^2 + 29^2 = 1241$ and $21^2 = 441$, so it is not right-angled.
Explain Zoe's mistake.
Is the triangle right-angled?

the longest side, 29, is the hypotenuse

$20^2 + 21^2 = 841 = 29^2$

Answer: Yes

Pythagoras in Context *further practice*

ANSWERS

9

A boat sails 12.5 km north, then 7 km west. How far is it from where it started? Give your answer to 2 decimal places.

north, then west: a right angle

$x^2 = 12.5^2 + 7^2 = 205.25$

Answer 14.33 km

10

P is (−1, −7) and Q is (5, 2). Find the length of PQ, to 2 decimal places.

across 6, up 9

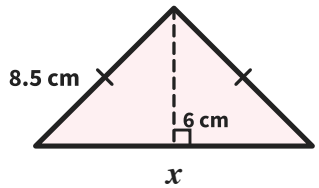
$PQ^2 = 6^2 + 9^2 = 117$

PQ = 10.82 units

11

The triangle is isosceles.

Find the length of its base, x, to 2 decimal places.



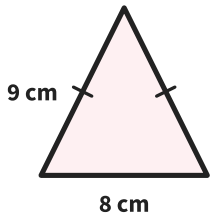
half = $\sqrt{(8.5^2 - 6^2)} = 6.0208...$

$x = 2 \times 6.0208...$

x = 12.04 cm

12

The triangle is isosceles. Find its area, to 2 decimal places.



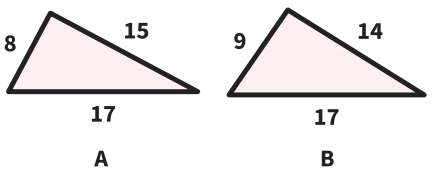
height = $\sqrt{(9^2 - 4^2)} = \sqrt{65}$

area = $\frac{1}{2} \times 8 \times \sqrt{65}$

Area 32.25 cm^2

13

Which of these triangles is right-angled? Show how you know. (Sides in cm.)



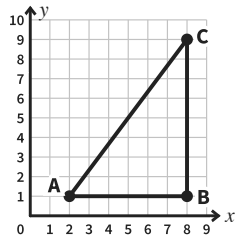
A: $8^2 + 15^2 = 289 = 17^2$

B: $9^2 + 14^2 = 277$, not 289

Answer A

14

Find the perimeter of triangle ABC.



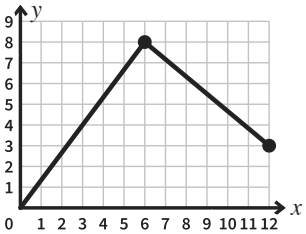
AB = 6, BC = 8

$AC = \sqrt{(6^2 + 8^2)} = 10$

Perimeter 24 units

15

A drone flies in a straight line from (0, 0) to (6, 8), then in a straight line to (12, 3). The grid is in km. How far does it fly altogether? Give your answer to 2 decimal places.



first leg $\sqrt{(6^2 + 8^2)} = 10$

second leg $\sqrt{(6^2 + 5^2)} = 7.81$

Answer 17.81 km

16

A triangle has sides of 5 cm, 5 cm and 7 cm. Explain why it is not right-angled. How long would the longest side have to be for it to be right-angled? Give your answer to 2 decimal places.

$5^2 + 5^2 = 50$, but $7^2 = 49$

the longest side would be $\sqrt{50}$

Answer 7.07 cm