

Pythagoras and Trigonometry

ANSWERS

Calculator | 30 minutes | Total marks: 28

Name Class

- 1 (a) A rectangle is 40 cm long and 9 cm wide.

Work out the length of its diagonal.

$$40^2 + 9^2 = 1681 \text{ (1)}$$

Answer 41 (1) cm [2 marks]

- (b) An isosceles triangle has two sides of 13 cm and a base of 10 cm.

Work out the height of the triangle.

$$\text{half the base is } 5 \text{ (1)}$$

$$13^2 - 5^2 = 144 \text{ (1)}$$

Answer 12 (1) cm [3 marks]

- 2 A triangle has sides of length 8 cm, 15 cm and 17 cm.

Is the triangle right angled?

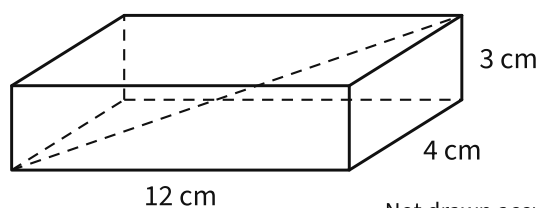
You **must** show your working.

$$8^2 + 15^2 = 289 \text{ (1)}$$

$$17^2 = 289, \text{ so yes (1)}$$

[2 marks]

- 3 The diagram shows a cuboid.



Work out the length of the diagonal shown by the dashed line.

$$12^2 + 4^2 + 3^2 \text{ (1)} \\ = 169 \text{ (1)}$$

Answer 13 (1) cm [3 marks]

4

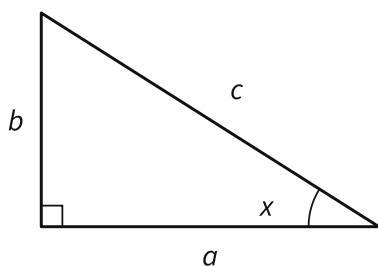
Here is a right angled triangle.

Write one word from the box next to each side.

adjacent

hypotenuse

opposite



Not drawn accurately

a adjacent (1)

b opposite (1)

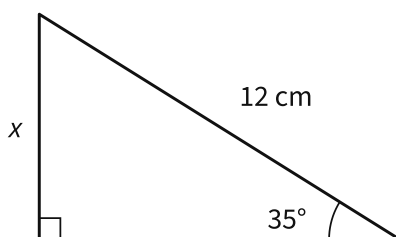
c hypotenuse (1)

[3 marks]

5

(a) Work out the length of x .

Give your answer to 2 decimal places.



Not drawn accurately

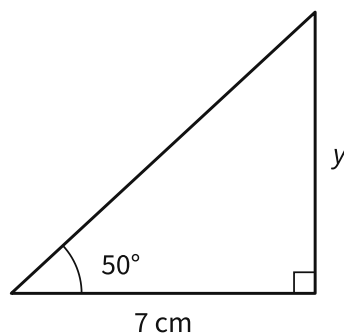
$$\sin 35^\circ = \frac{x}{12} \quad (1)$$

$$x = 12 \times \sin 35^\circ \quad (1)$$

$$x = \underline{6.88} \text{ cm} \quad (1) \quad [3 \text{ marks}]$$

(b) Work out the length of y .

Give your answer to 2 decimal places.



Not drawn accurately

$$\tan 50^\circ = \frac{y}{7} \quad (1)$$

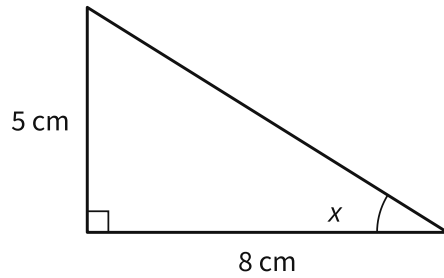
$$y = 7 \times \tan 50^\circ \quad (1)$$

$$y = \underline{8.34} \text{ cm} \quad (1) \quad [3 \text{ marks}]$$

6

Work out the size of angle x .

Give your answer to 1 decimal place.



Not drawn accurately

$$\tan x = \frac{5}{8} \quad (1)$$

$$x = \tan^{-1}(5 \div 8) \quad (1)$$

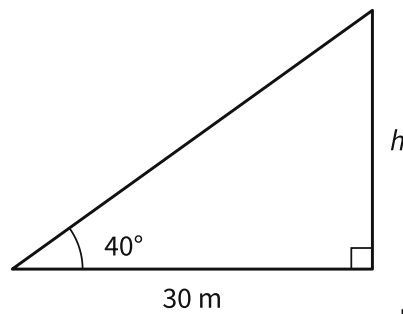
$$x = \underline{32.0 \quad (1)}^\circ \quad [3 \text{ marks}]$$

7

Jo stands 30 m from the base of a tower. The angle of elevation of the top of the tower is 40° .

Work out the height, h , of the tower.

Give your answer to 1 decimal place.



Not drawn accurately

$$\tan 40^\circ = \frac{h}{30} \quad (1)$$

$$h = 30 \times \tan 40^\circ \quad (1)$$

$$h = \underline{25.2 \quad (1)} \text{ m} \quad [3 \text{ marks}]$$

8

A is the point $(-2, 1)$ and B is the point $(4, 9)$

Work out the length of the line AB.

6 across and 8 up (1)

$$6^2 + 8^2 = 100 \text{ (1)}$$

Answer 10 (1) units [3 marks]

Question	Topic	RAG
1	I can solve problems using Pythagoras' theorem	
2	I can test whether a triangle is right angled	
3	I can use Pythagoras' theorem in 3D	
4	I can label the sides of a right angled triangle	
5	I can use trigonometry to find a side	
6	I can use trigonometry to find an angle	
7	I can use an angle of elevation	
8	I can find the length of a line between two points	