

GCSE Maths: Pythagoras with coordinates, isosceles and equilateral triangles (Foundation): answers

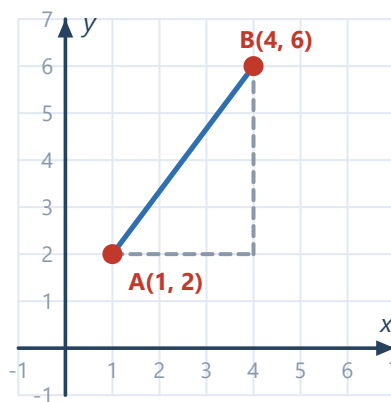
GCSE Maths - Pythagoras and Trigonometry - Foundation - Lesson 20.3

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch20-pythagoras-trigonometry/foundation/pythagoras-with-coordinates-isosceles-and-equilateral/

Exercise 20D Coordinates, isosceles and equilateral triangles Calculator allowed

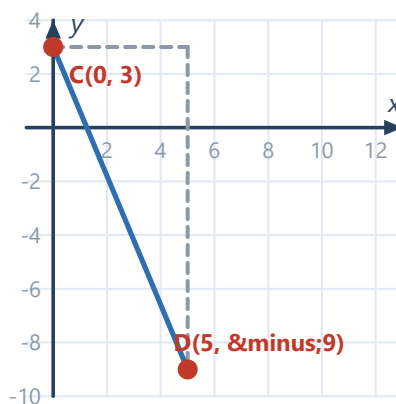
- 1 Work out the distance between each pair of points. Give your answers correct to 1 decimal place when they are not whole numbers.

(a) A(1, 2) and B(4, 6)



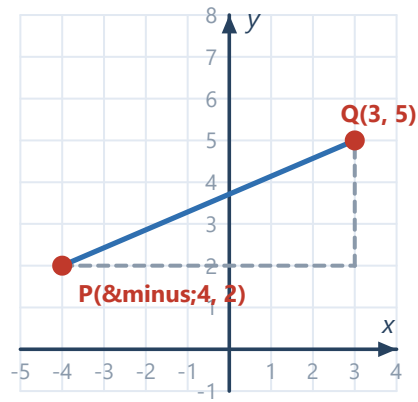
Answer: 5

(b) C(0, 3) and D(5, -9)



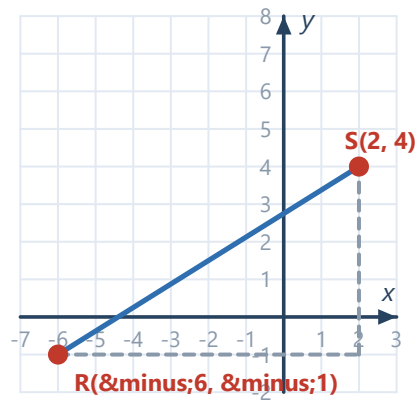
Answer: 13

- (c) $P(-4, 2)$ and $Q(3, 5)$



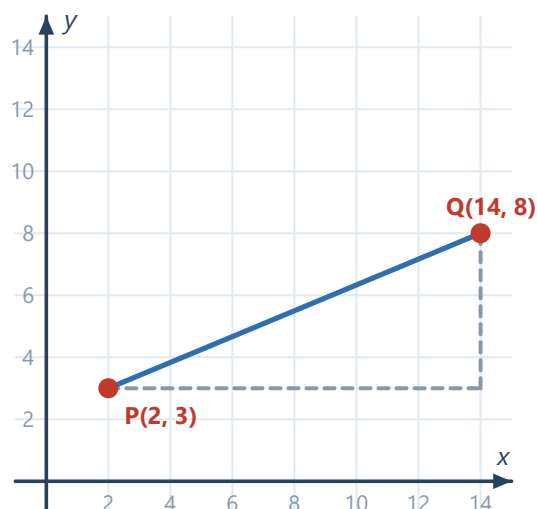
Answer: 7.6

- (d) $R(-6, -1)$ and $S(2, 4)$



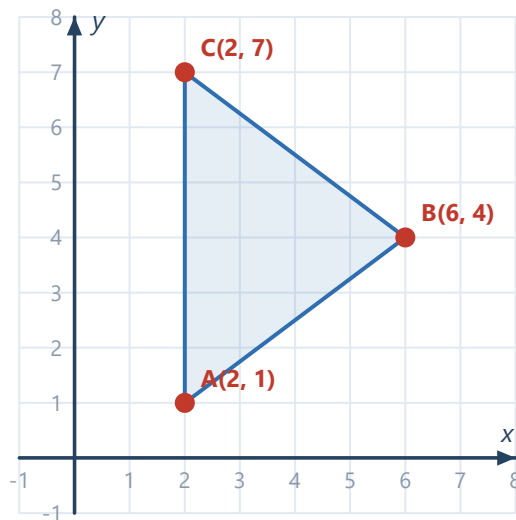
Answer: 9.4

- 2 On a map, each grid square is 1 km wide. A town P is at $(2, 3)$ and a town Q is at $(14, 8)$. Work out the straight-line distance from P to Q.



Answer: 13 km

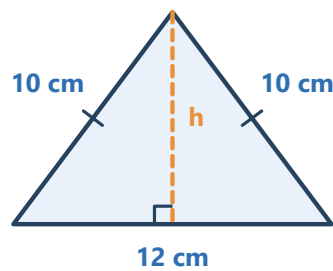
- 3 A(2, 1), B(6, 4) and C(2, 7) are the vertices of a triangle. Show that triangle ABC is isosceles.



Answer: $AB = BC = 5$, so it is isosceles

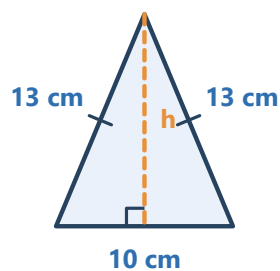
- 4 Each isosceles triangle has the equal sides and the base shown. Work out the perpendicular height h of each triangle.

- (a) Equal sides 10 cm, base 12 cm



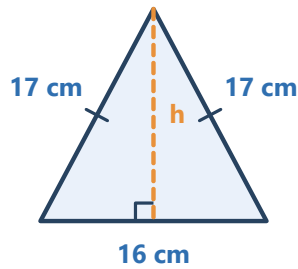
Answer: 8 cm

- (b) Equal sides 13 cm, base 10 cm



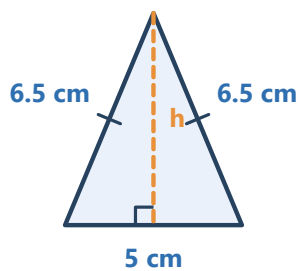
Answer: 12 cm

- (c) Equal sides 17 cm, base 16 cm



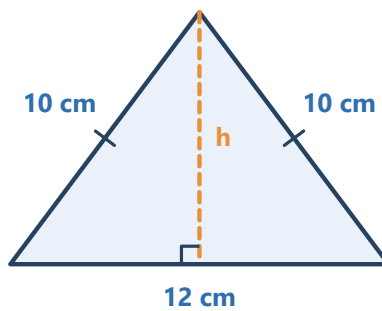
Answer: 15 cm

- (d) Equal sides 6.5 cm, base 5 cm



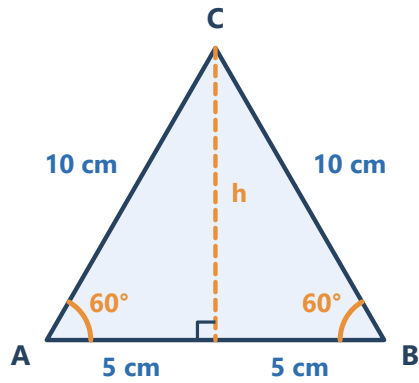
Answer: 6 cm

- 5 An isosceles triangle has two sides of length 10 cm and a base of 12 cm. Work out its area.



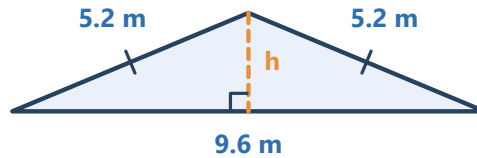
Answer: 48 cm^2

- 6 An equilateral triangle has sides of length 10 cm. Work out its height. Give your answer correct to 2 decimal places.



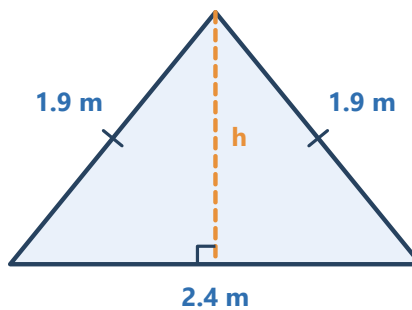
Answer: 8.66 cm

- 7 A roof is supported by an isosceles triangular frame. The two sloping beams are each 5.2 m long and the horizontal span is 9.6 m. Work out the height of the roof frame.



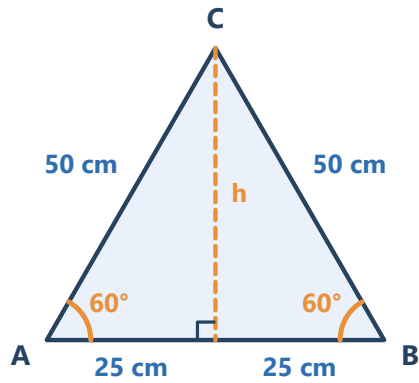
Answer: 2 m

- 8 The cross-section of a tent is an isosceles triangle. The sloping sides are 1.9 m long and the base is 2.4 m wide. Work out the height of the tent. Give your answer correct to 2 decimal places.



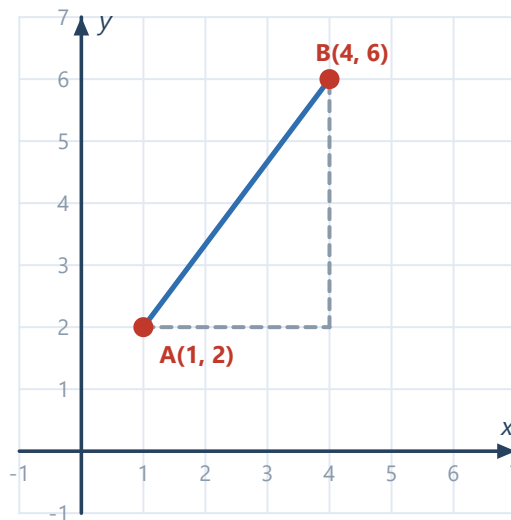
Answer: 1.47 m

- 9 A road sign is an equilateral triangle of side 50 cm. Work out the area of the sign. Give your answer correct to 1 decimal place.



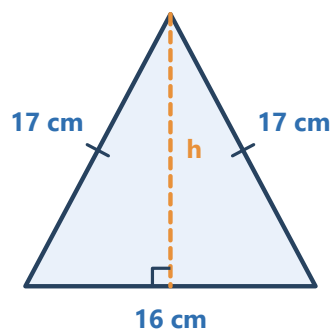
Answer: 1082.5 cm^2

- 10** Zara says: "The distance between A(1, 2) and B(4, 6) is $3 + 4 = 7$." Explain why Zara is wrong and work out the correct distance.



Answer: Zara added the steps. The distance is 5.

- 11** Isosceles triangle ABC has $AB = AC = 17 \text{ cm}$ and $BC = 16 \text{ cm}$. **Show that** its area is 120 cm^2 .



Answer: Height 15 cm, area = $\frac{1}{2} \times 16 \times 15 = 120 \text{ cm}^2$