

GCSE Maths: Trigonometry: finding angles (Higher): answers

GCSE Maths - Pythagoras and Trigonometry - Higher - Lesson 20.5

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/higher/trigonometry-finding-angles/

Exercise 20G Finding angles with the inverse functions

Calculator allowed

1 Use the inverse function on your calculator to find x . Give each answer correct to 1 decimal place.

(a) $\sin x = 0.6$



Answer: 36.9°

(b) $\cos x = 0.25$



Answer: 75.5°

(c) $\tan x = 1.2$



Answer: 50.2°

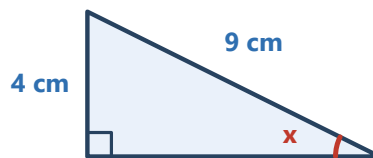
(d) $\sin x = \frac{3}{7}$



Answer: 25.4°

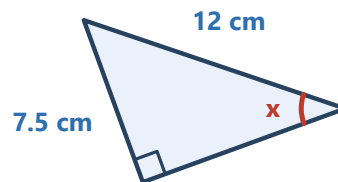
- 2 Work out the size of angle x in each triangle. Give your answers correct to 1 decimal place. All lengths are in centimetres.

(a)



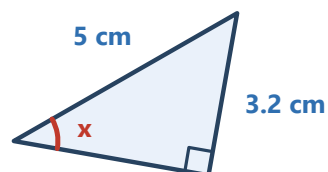
Answer: 26.4°

(b)



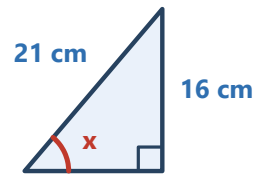
Answer: 38.7°

(c)



Answer: 39.8°

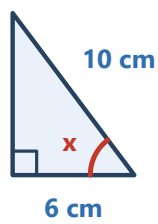
(d)



Answer: 49.6°

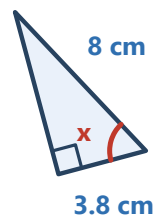
3 Work out the size of angle x in each triangle. Give your answers correct to 1 decimal place. All lengths are in centimetres.

(a)



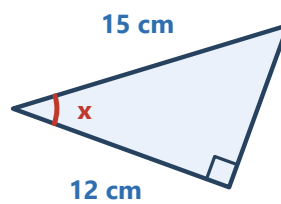
Answer: 53.1°

(b)



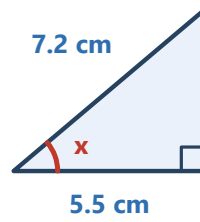
Answer: 61.6°

(c)



Answer: 36.9°

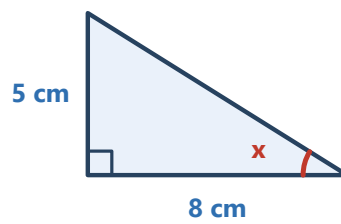
(d)



Answer: 40.2°

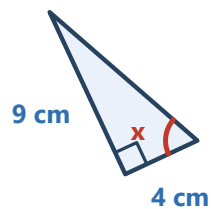
- 4 Work out the size of angle x in each triangle. Give your answers correct to 1 decimal place. All lengths are in centimetres.

(a)



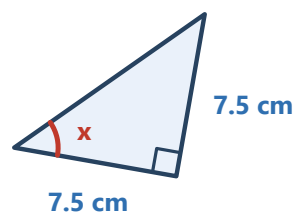
Answer: 32.0°

(b)



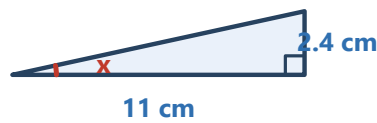
Answer: 66.0°

(c)



Answer: 45.0°

(d)



Answer: 12.3°

- 5 A ramp is 5 m long and rises 0.8 m. Work out the angle the ramp makes with the horizontal, correct to 1 decimal place.



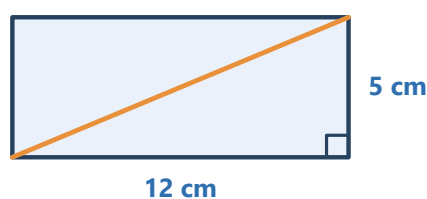
Answer: 9.2°

- 6 A ladder 6 m long stands on level ground with its foot 1.6 m from a vertical wall. Work out the angle between the ladder and the ground, correct to 1 decimal place.



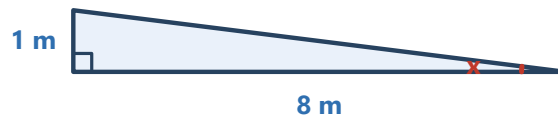
Answer: 74.5°

- 7 The diagram shows a rectangle 12 cm long and 5 cm wide with a diagonal drawn in. Work out the angle x between the diagonal and the longer side, correct to 1 decimal place.



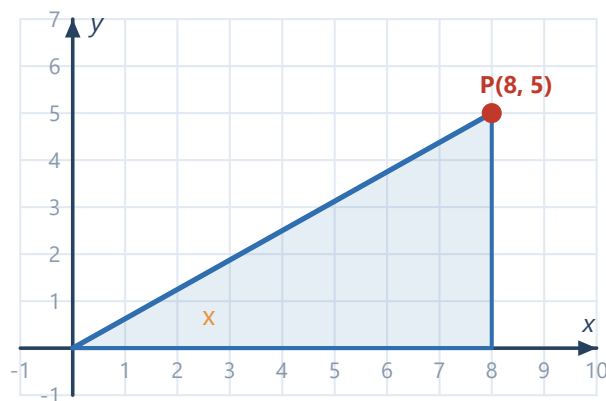
Answer: 22.6°

- 8 A road has a gradient of 1 in 8. This means it rises 1 m for every 8 m measured horizontally. Work out the angle the road makes with the horizontal, correct to 1 decimal place.



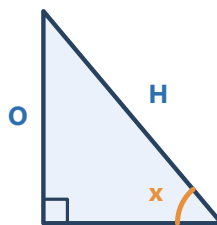
Answer: 7.1°

- 9 The line OP joins the origin O to the point P(8, 5). Work out the angle that OP makes with the x-axis, correct to 1 decimal place.



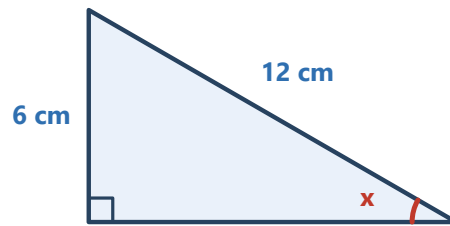
Answer: 32.0°

- 10 Ali writes $\sin x = 1.3$ for a right-angled triangle. Explain why this cannot be right.



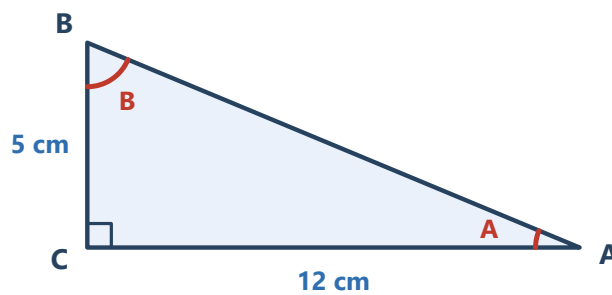
Answer: The opposite side would be longer than the hypotenuse, which is impossible.

- 11 A right-angled triangle has a hypotenuse of 12 cm and a shorter side of 6 cm. **Show that** the angle opposite the 6 cm side is 30° .



Answer: $\sin x = 6 \div 12 = 0.5$, so $x = 30^\circ$

12 Challenge. Triangle ABC has a right angle at C, AC = 12 cm and BC = 5 cm. Work out the size of angle A and angle B, correct to 1 decimal place, and show that your three angles add up to 180° .



Answer: $A = 22.6^\circ$, $B = 67.4^\circ$