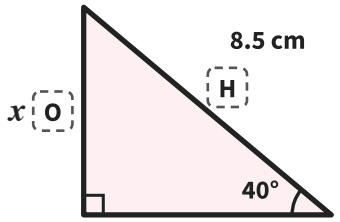
Trigonometry: sides and angles mixed

ANSWERS

1

Find x to 2 decimal places.



$\sin$ [40] $° = \frac{x}{8.5}$

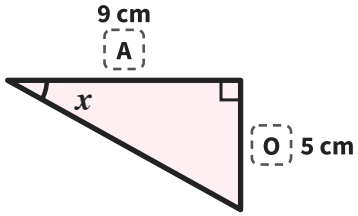
Make the unknown the subject of the formula.

$x = 8.5 \times \sin 40°$

$x =$ 5.46 cm

2

Find the angle x to 2 decimal places.



$\tan x = \frac{5}{9}$

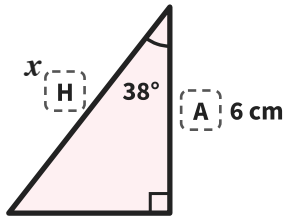
Use the inverse to find the angle.

$x = \tan^{-1}(5 \div 9)$

$x =$ 29.05°

3

Find x to 2 decimal places.



$\cos$ [38] $° = \frac{6}{x}$

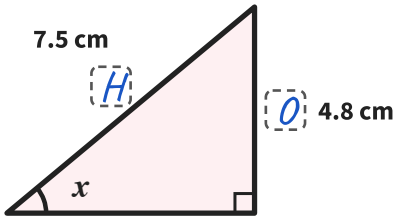
Make the unknown the subject of the formula.

$x = 6 \div \cos 38°$

$x =$ 7.61 cm

4

Label O and H, then find the angle x to 2 decimal places.



$\sin x = \frac{4.8}{7.5}$

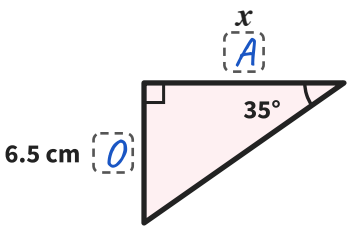
Use the inverse to find the angle.

$x = \sin^{-1}(4.8 \div 7.5)$

$x =$ 39.79°

5

Label O and A, then find x to 2 decimal places.



$\tan$ [35] $° = \frac{6.5}{x}$

Make the unknown the subject of the formula.

$x = 6.5 \div \tan 35°$

$x =$ 9.28 cm

6

The adjacent is 5 cm and the hypotenuse is 8 cm. To find the angle, Leo types cos(5 ÷ 8), gets 0.99994 and says the angle is about 1°. Explain Leo's mistake, then find the angle to 2 decimal places.

An angle needs the inverse

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

Answer 51.32°

7

A straight path crosses a rectangular park from one corner to the opposite corner. It makes an angle of 38° with the 120 m side of the park.
How long is the path? Give your answer to 2 decimal places.

$\cos 38° = \frac{120}{x}$

$x = 120 \div \cos 38°$

Answer 152.28 m

8

A seesaw is 3.6 m long. One end is on the ground and the other end is 0.9 m above the ground. Find the angle between the seesaw and the ground.
Give your answer to 2 decimal places.

$\sin x = \frac{0.9}{3.6}$

$x = \sin^{-1}(0.9 \div 3.6)$

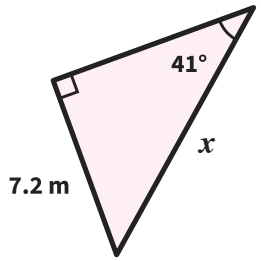
Answer 14.48°

Trigonometry: sides and angles mixed *further practice*

ANSWERS

9

Find x to 2 decimal places.



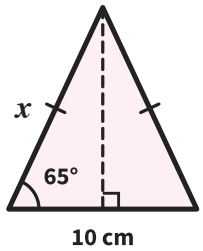
$\sin 41° = \frac{7.2}{x}$

$x = 7.2 \div \sin 41°$

$x =$ 10.97 m

10

The triangle is isosceles.
Find the length x to 2 decimal places.



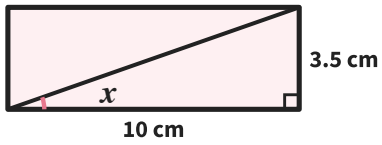
half the base = 5

$x = 5 \div \cos 65°$

$x =$ 11.83 cm

11

Find the angle x between the diagonal and the longer side of the rectangle, to 2 decimal places.



$\tan x = \frac{3.5}{10}$

$x = \tan^{-1}(3.5 \div 10)$

$x =$ 19.29°

12

A hot air balloon is held down by one straight rope, 60 m long, tied to the ground. The rope makes an angle of 70° with the ground. How high is the balloon end of the rope?
Give your answer to 2 decimal places.

$\sin 70° = \frac{x}{60}$

$x = 60 \times \sin 70°$

Answer 56.38 m

13

A phone 15 cm long leans back on a stand. Its bottom edge is on the desk and its top edge is 12 cm above the desk. The phone is easiest to read at an angle between 50° and 60° to the desk. Is it? Show how you know.

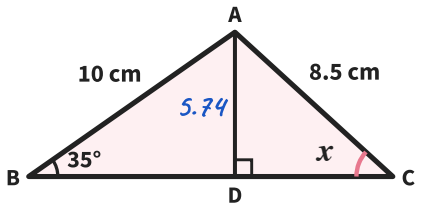
$\sin x = \frac{12}{15}$

$x = 53.13°$

Answer Yes, it is 53.13°

14

Find AD, then find the angle x to 2 decimal places.



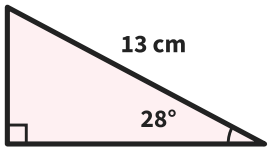
$AD = 10 \times \sin 35° = 5.736$

$x = \sin^{-1}(5.736 \div 8.5)$

$x =$ 42.44°

15

Find the perimeter of the triangle, to 2 decimal places.



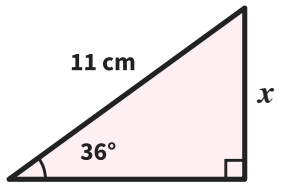
$13 \times \sin 28° = 6.10$

$13 \times \cos 28° = 11.48$

Perimeter 30.58 cm

16

Tom works out
$x = 11 \div \sin 36° =$ **18.71 cm.**
Without a calculator, explain how you know Tom is wrong. Then find x to 2 decimal places.



x must be less than 11, the hypotenuse

$x = 11 \times \sin 36°$

$x =$ 6.47 cm