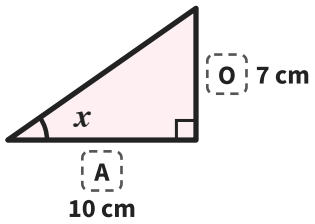
Trigonometry: Finding an Angle with SOH CAH TOA

ANSWERS

1

Find the angle x to 2 decimal places.



$$\tan x = \frac{7}{10}$$

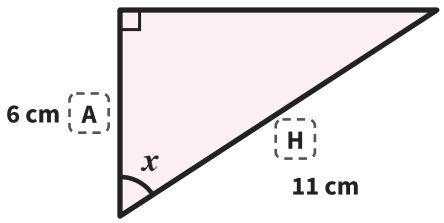
Use the inverse to find the angle.

$x = \tan^{-1}(7 \div 10)$

$x =$ 34.99°

2

Find the angle x to 2 decimal places.



$$\cos x = \frac{6}{11}$$

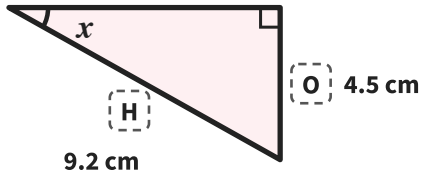
Use the inverse to find the angle.

$x = \cos^{-1}(6 \div 11)$

$x =$ 56.94°

3

Find the angle x to 2 decimal places.



$$\sin x = \frac{4.5}{9.2}$$

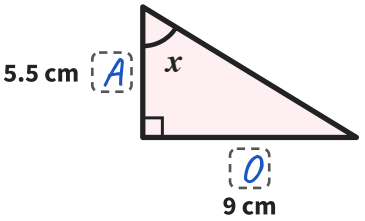
Use the inverse to find the angle.

$x = \sin^{-1}(4.5 \div 9.2)$

$x =$ 29.28°

4

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



$$\tan x = \frac{9}{5.5}$$

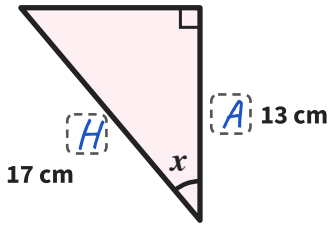
Use the inverse to find the angle.

$x = \tan^{-1}(9 \div 5.5)$

$x =$ 58.57°

5

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



$$\cos x = \frac{13}{17}$$

Use the inverse to find the angle.

$x = \cos^{-1}(13 \div 17)$

$x =$ 40.12°

6

The opposite is 7 cm and the hypotenuse is 10 cm. To find the angle, Raj types $\sin^{-1}(10 \div 7)$ and his calculator says Math ERROR. Explain Raj's mistake, then find the angle to 2 decimal places.

O over H: the fraction is upside down

$x = \sin^{-1}(7 \div 10)$

Answer 44.43°

7

A football is on the penalty spot, 11 m from the goal line. The crossbar is 2.44 m above the ground. Find the angle between the ground and the line from the ball up to the crossbar.
Give your answer to 2 decimal places.

$\tan x = \frac{2.44}{11}$

$x = \tan^{-1}(2.44 \div 11)$

Answer 12.51°

8

A funicular railway climbs 120 m in height along 320 m of straight track. Find the angle between the track and the horizontal. Give your answer to 2 decimal places.

$\sin x = \frac{120}{320}$

$x = \sin^{-1}(120 \div 320)$

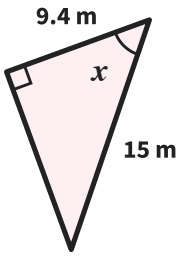
Answer 22.02°

Trigonometry: Finding an Angle with SOH CAH TOA *further practice*

ANSWERS

9

Find the angle x to 2 decimal places.



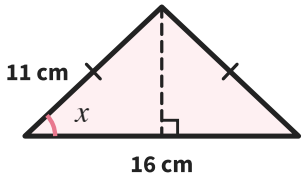
$\cos x = \frac{9.4}{15}$

$x = \cos^{-1}(9.4 \div 15)$

$x =$ 51.20°

10

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



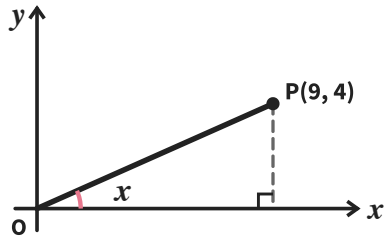
half the base = 8

$x = \cos^{-1}(8 \div 11)$

$x =$ 43.34°

11

P is the point (9, 4). Find the angle x between OP and the x axis, to 2 decimal places.



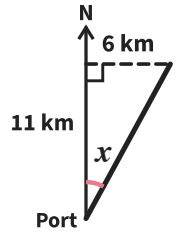
$\tan x = \frac{4}{9}$

$x = \tan^{-1}(4 \div 9)$

$x =$ 23.96°

12

A boat sails in a straight line from a port. It ends up 6 km east and 11 km north of the port. Find the bearing it sailed on, to 2 decimal places.



$\tan x = \frac{6}{11}$

$x = \tan^{-1}(6 \div 11)$

Bearing 028.61°

13

The first drop of a roller coaster falls 45 m over a horizontal distance of 22 m. The designer wants it steeper than 60°. Is it steep enough? Show how you know.

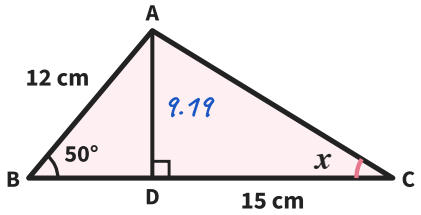
$\tan x = \frac{45}{22}$

$x = 63.95°$

Answer Yes, it is 63.95°

14

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



AD = 12 × sin 50° = 9.193

$x = \tan^{-1}(9.193 \div 15)$

$x =$ 31.50°

15

Ski run A drops 3 m over a horizontal distance of 20 m. Ski run B drops 5 m along 30 m of straight slope. Which run is steeper, and by how many degrees? Give your answer to 2 decimal places.

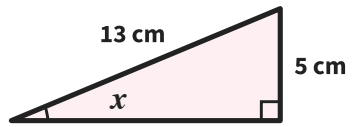
A: $\tan^{-1}(3 \div 20) = 8.53°$

B: $\sin^{-1}(5 \div 30) = 9.59°$

Answer B, by 1.06°

16

Sam says $x = \cos^{-1}(5 \div 13) = 67.38°$. Explain Sam's mistake. Then find x to 2 decimal places.



O and H: use sin, not cos

$x = \sin^{-1}(5 \div 13)$

$x =$ 22.62°