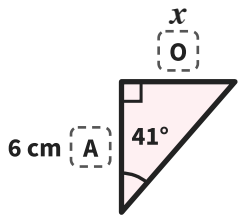
Trigonometry: Finding a Side with Tan

ANSWERS

1

Find x to 2 decimal places.



$\tan 41° = \frac{x}{6}$

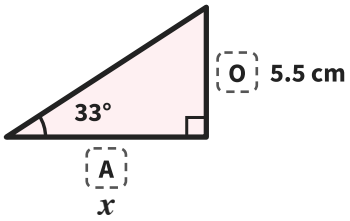
Make the unknown the subject of the formula.

$x = 6 \times \tan 41°$

$x =$ 5.22 cm

2

Find x to 2 decimal places.



$\tan 33° = \frac{5.5}{x}$

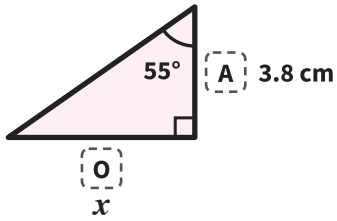
Make the unknown the subject of the formula.

$x = 5.5 \div \tan 33°$

$x =$ 8.47 cm

3

Find x to 2 decimal places.



$\tan 55° = \frac{x}{3.8}$

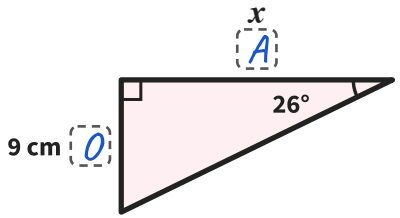
Make the unknown the subject of the formula.

$x = 3.8 \times \tan 55°$

$x =$ 5.43 cm

4

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



$\tan 26° = \frac{9}{x}$

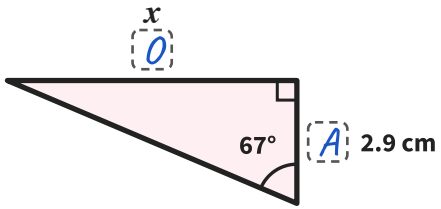
Make the unknown the subject of the formula.

$x = 9 \div \tan 26°$

$x =$ 18.45 cm

5

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



$\tan 67° = \frac{x}{2.9}$

Make the unknown the subject of the formula.

$x = 2.9 \times \tan 67°$

$x =$ 6.83 cm

6

The opposite is 9 cm and the angle is 70°. To find the adjacent, Ava works out $9 \times \tan 70°$ and gets 24.73 cm. Explain Ava's mistake, then find the adjacent to 2 decimal places.

$\tan 70° = \frac{9}{x}$: x on the bottom, divide

$x = 9 \div \tan 70°$

Answer 3.28 cm

7

A rocket rises straight up from its launch pad. Ellie stands 120 m from the pad. When she looks up at the rocket at 52° to the ground, how high is it? Give your answer to 2 decimal places.

$\tan 52° = \frac{x}{120}$

$x = 120 \times \tan 52°$

Answer 153.59 m

8

A street lamp is 6.5 m tall. Zoe looks up at the top of it at 23° above the ground. How far is she from the bottom of the lamp? Give your answer to 2 decimal places.

$\tan 23° = \frac{6.5}{x}$

$x = 6.5 \div \tan 23°$

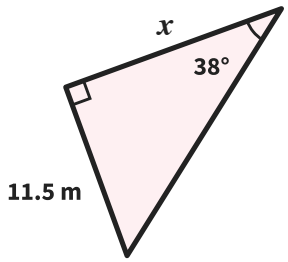
Answer 15.31 m

Trigonometry: Finding a Side with Tan *further practice*

ANSWERS

9

Find x to 2 decimal places.



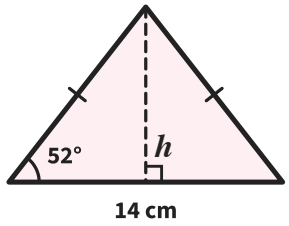
$\tan 38° = \frac{11.5}{x}$

$x = 11.5 \div \tan 38°$

$x =$ 14.72 m

10

The triangle is isosceles and its base is 14 cm. Find its height, h, to 2 decimal places.



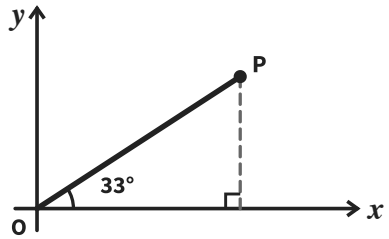
half the base = 7

$h = 7 \times \tan 52°$

$h =$ 8.96 cm

11

OP makes an angle of 33° with the x axis, and P has x coordinate 9. Find the y coordinate of P, to 2 decimal places.



$\tan 33° = \frac{y}{9}$

$y = 9 \times \tan 33°$

$y =$ 5.84

12

Max looks up at the top of a wind turbine at 17° above the level ground. The turbine is 85 m tall. How far is Max from its base? Give your answer to 2 decimal places.

$\tan 17° = \frac{85}{x}$

$x = 85 \div \tan 17°$

Answer 278.02 m

13

A spotlight on the floor is 5 m from a wall that is 7.5 m tall. It points up at 55° to the floor. Does its beam hit the wall, or go over the top?
Show how you know.

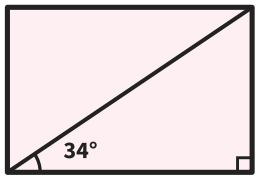
$x = 5 \times \tan 55°$

$x = 7.14$

Answer It hits the wall, 7.14 m up

14

The diagonal of this rectangle makes an angle of 34° with its 12 cm side. Find the area of the rectangle, to 2 decimal places.



height = $12 \times \tan 34° = 8.094$

area = 12×8.094

Area 97.13 cm^2

15

From the same spot, Kai looks up at the tops of two trees. Tree A is 25 m away, seen at 31°. Tree B is 40 m away, seen at 21°. Which tree is taller, and by how much? Give your answer to 2 decimal places.

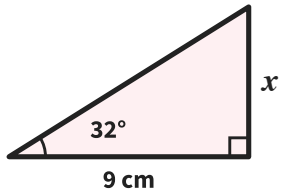
A: $25 \times \tan 31° = 15.02$

B: $40 \times \tan 21° = 15.35$

Answer B, by 0.33 m

16

Sam writes $\tan 32° = \frac{9}{x}$, so **x = 14.40 cm**. Explain Sam's mistake. Then find x to 2 decimal places.



tan is O over A, and x is O

$\tan 32° = x/9$

$x =$ 5.62 cm