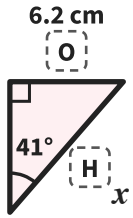
Trigonometry: Finding the Hypotenuse with Sine

ANSWERS

1

Find x to 2 decimal places.



$\sin 41° = \frac{6.2}{x}$

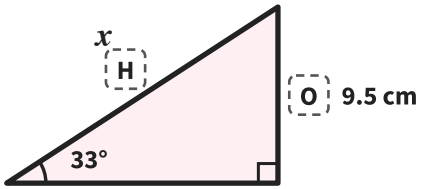
Multiply by x, then divide by sin.

$x = 6.2 \div \sin 41°$

$x =$ 9.45 cm

2

Find x to 2 decimal places.



$\sin 33° = \frac{9.5}{x}$

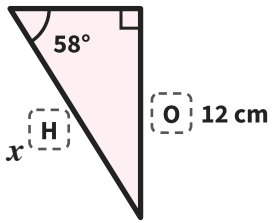
Multiply by x, then divide by sin.

$x = 9.5 \div \sin 33°$

$x =$ 17.44 cm

3

Find x to 2 decimal places.



$\sin 58° = \frac{12}{x}$

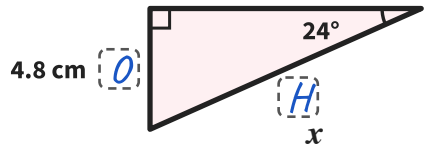
Multiply by x, then divide by sin.

$x = 12 \div \sin 58°$

$x =$ 14.15 cm

4

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



$\sin 24° = \frac{4.8}{x}$

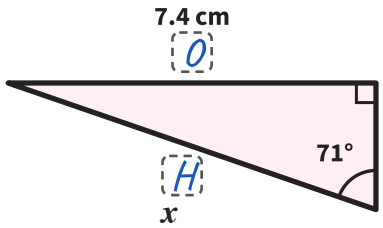
Multiply by x, then divide by sin.

$x = 4.8 \div \sin 24°$

$x =$ 11.80 cm

5

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



$\sin 71° = \frac{7.4}{x}$

Multiply by x, then divide by sin.

$x = 7.4 \div \sin 71°$

$x =$ 7.83 cm

6

The opposite is 8 cm and the angle is 35°.
To find the hypotenuse, Mia works out 8 × sin 35° and gets 4.59 cm.
Explain how you know Mia is wrong, then find the hypotenuse to 2 decimal places.

4.59 < 8, but H is the longest side

$x = 8 \div \sin 35°$

Answer 13.95 cm

7

A straight path up a hill climbs 150 m in height. It slopes at 9° to the horizontal.
How long is the path? Give your answer to 2 decimal places.

$\sin 9° = \frac{150}{x}$

$x = 150 \div \sin 9°$

Answer 958.87 m

8

A submarine dives in a straight line at 12° below the horizontal until it is 90 m deeper. How far has it travelled?
Give your answer to 2 decimal places.

$\sin 12° = \frac{90}{x}$

$x = 90 \div \sin 12°$

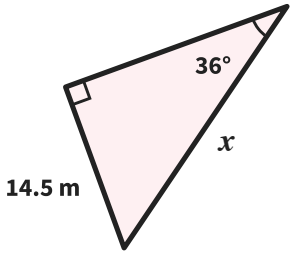
Answer 432.88 m

Trigonometry: Finding the Hypotenuse with Sine *further practice*

ANSWERS

9

Find x to 2 decimal places.



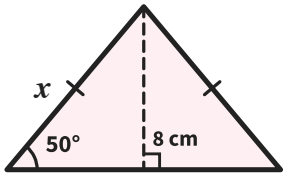
$\sin 36° = \frac{14.5}{x}$

$x = 14.5 \div \sin 36°$

$x =$ 24.67 m

10

The triangle is isosceles and its height is 8 cm. Find the length of each of its equal sides, x, to 2 decimal places.



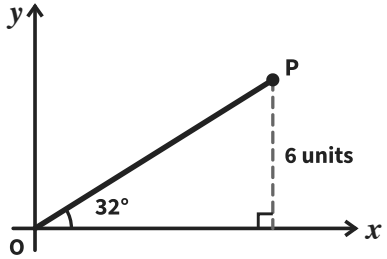
$\sin 50° = \frac{8}{x}$

$x = 8 \div \sin 50°$

$x =$ 10.44 cm

11

P is 6 units above the x axis, on a line from O at 32° to the x axis.
Find the length OP, to 2 decimal places.



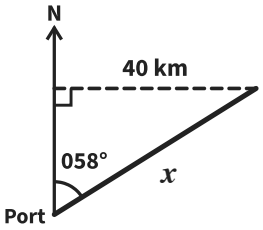
$\sin 32° = \frac{6}{OP}$

$OP = 6 \div \sin 32°$

OP = 11.32 units

12

A boat leaves port and sails in a straight line on a bearing of 058°. How far has it sailed when it is 40 km east of the port? Give your answer to 2 decimal places.



$\sin 58° = \frac{40}{x}$

$x = 40 \div \sin 58°$

$x =$ 47.17 km

13

A cable car must rise 420 m.
Its straight cable can be at most 23° to the horizontal. Is a 1000 m cable long enough? Show how you know.

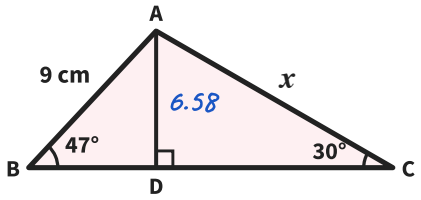
$\sin 23° = \frac{420}{x}$

$x = 420 \div \sin 23° = 1074.91$

Answer No, it needs 1074.91 m

14

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



$AD = 9 \times \sin 47° = 6.582$

$x = 6.582 \div \sin 30°$

$x =$ 13.16 cm

15

Two straight paths climb the same 60 m in height. Path A slopes at 8° to the horizontal and path B at 11°.
Which path is shorter, and by how much? Give your answer to 2 decimal places.

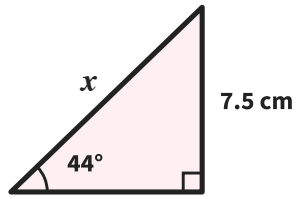
$A: 60 \div \sin 8° = 431.12$

$B: 60 \div \sin 11° = 314.45$

Answer B, by 116.67 m

16

Sam writes $\sin 44° = \frac{x}{7.5}$, so **x = 5.21 cm.** Explain how you know Sam is wrong. Then find x to 2 decimal places.



x is H, so x goes on the bottom

so x must be more than 7.5 cm

$x =$ 10.80 cm