

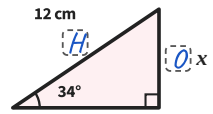
Trigonometry: Missing Sides and Angles, Mixed

ANSWERS

Red

1

X is a side. Use $\sin$. Find X to 1 decimal place.



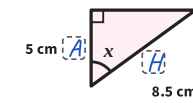
$$\sin 34^\circ = \frac{X}{12}$$

$$X = 12 \times \sin 34^\circ$$

$$X = 6.7 \text{ cm}$$

2

X is an angle. Use $\cos$. Find X to 1 decimal place.



$$\cos X = \frac{5}{8.5}$$

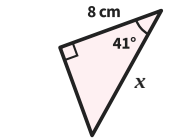
$$X = \cos^{-1}\left(\frac{5}{8.5}\right)$$

$$X = 54.0^\circ$$

Amber

5

Ring the ratio. Find X to 1 decimal place.



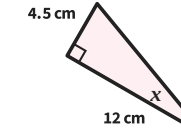
$$\cos 41^\circ = \frac{8}{X}$$

$$X = 8 \div \cos 41^\circ$$

$$X = 10.6 \text{ cm}$$

6

Ring the ratio. Find X to 1 decimal place.



$$\tan X = \frac{4.5}{12}$$

$$X = \tan^{-1}(4.5 \div 12)$$

$$X = 20.6^\circ$$

Green

9

A boat sails from a harbour on a bearing of 040° for 23 km. How far north of the harbour is it now, to 1 decimal place?



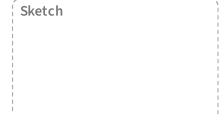
$$\cos 40^\circ = \frac{x}{23}$$

$$x = 23 \times \cos 40^\circ$$

$$\text{Answer } 17.6 \text{ km}$$

10

A straight road rises 45 m over a level distance of 600 m. Find the angle between the road and the level ground, to 1 decimal place.



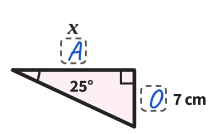
$$\tan x = \frac{45}{600}$$

$$x = \tan^{-1}(45 \div 600)$$

$$\text{Answer } 4.3^\circ$$

3

X is a side. Use $\tan$. Find X to 1 decimal place.



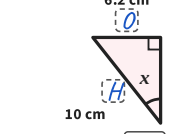
$$\tan 25^\circ = \frac{X}{7}$$

$$X = 7 \times \tan 25^\circ$$

$$X = 15.0 \text{ cm}$$

4

X is an angle. Use $\sin$. Find X to 1 decimal place.



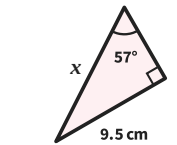
$$\sin X = \frac{6.2}{10}$$

$$X = \sin^{-1}\left(\frac{6.2}{10}\right)$$

$$X = 38.3^\circ$$

7

Ring the ratio. Find X to 1 decimal place.



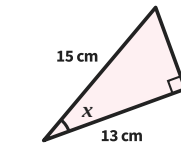
$$\cos 57^\circ = \frac{9.5}{X}$$

$$X = 9.5 \div \cos 57^\circ$$

$$X = 11.3 \text{ cm}$$

8

Ring the ratio. Find X to 1 decimal place.



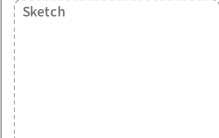
$$\cos X = \frac{13}{15}$$

$$X = \cos^{-1}(13 \div 15)$$

$$X = 29.9^\circ$$

11

A straight zip wire drops 18 m from start to finish. It slopes at 11° to the horizontal. How long is the wire, to 1 decimal place?



$$\sin 11^\circ = \frac{18}{x}$$

$$x = 18 \div \sin 11^\circ$$

$$\text{Answer } 94.3 \text{ m}$$

12

A drone flies 65 m in a straight line, climbing at 52° to the level ground. Ama is 80 m from the point directly below it. Find the angle between the ground and her line of sight to the drone, to 1 decimal place.



$$h = 65 \times \sin 52^\circ = 51.22$$

$$x = \tan^{-1}(51.22 \div 80)$$

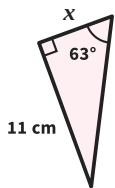
$$\text{Answer } 32.6^\circ$$

Trigonometry: Missing Sides and Angles, Mixed further practice

ANSWERS

13

Find x to 1 decimal place.



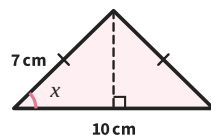
$$\tan 63^\circ = \frac{11}{x}$$

$$x = 11 \div \tan 63^\circ$$

$$x = 5.6 \text{ cm}$$

14

The triangle is isosceles. Find the angle x to 1 decimal place.



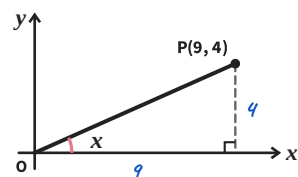
$$\cos x = \frac{5}{7}$$

$$x = \cos^{-1}(5 \div 7)$$

$$x = 44.4^\circ$$

15

O is the origin and P is the point (9, 4). Find the angle x between OP and the x axis, to 1 decimal place.



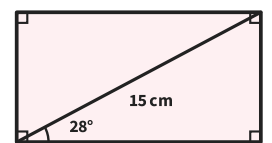
$$\tan x = \frac{4}{9}$$

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

$$x = 24.0^\circ$$

16

The diagonal of a rectangle is 15 cm long. It makes an angle of 28° with the longer side. Find the area of the rectangle, to 1 decimal place.



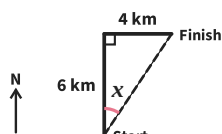
$$\text{short side} = 15 \times \sin 28^\circ = 7.042$$

$$\text{long side} = 15 \times \cos 28^\circ = 13.244$$

$$\text{Area} = 93.3 \text{ cm}^2$$

17

Kai walks 6 km due north, then 4 km due east. Find the bearing of where he finishes from where he started, to the nearest degree.



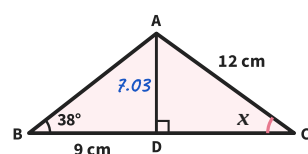
$$\tan x = \frac{4}{6}$$

$$x = \tan^{-1}(4 \div 6) = 33.69^\circ$$

$$\text{Bearing } 034^\circ$$

18

Find the angle x to 1 decimal place.



$$AD = 9 \times \tan 38^\circ = 7.032$$

$$x = \sin^{-1}(7.032 \div 12)$$

$$x = 35.9^\circ$$

19

Ramp A is 6 m long along its slope and rises 0.5 m. Ramp B rises 0.4 m over a level distance of 4.5 m. Which ramp is steeper, and by how many degrees? Give your answer to 1 decimal place.

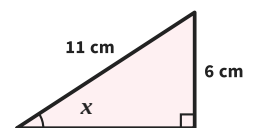
$$A: \sin^{-1}(0.5 \div 6) = 4.78^\circ$$

$$B: \tan^{-1}(0.4 \div 4.5) = 5.08^\circ$$

$$\text{Answer } \text{Ramp B, by } 0.3^\circ$$

20

Sam writes $\tan x = \frac{6}{11}$, so $x = 28.6^\circ$. Explain Sam's mistake. Then find x to 1 decimal place.



$$11 \text{ cm is the hypotenuse, so not } \tan$$

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

$$x = 33.7^\circ$$