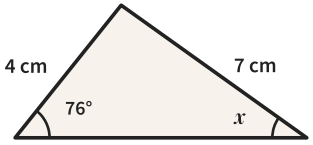
The Sine Rule: Finding an Angle

ANSWERS

1

Find angle x to 1 decimal place.



each angle over the side opposite it

$$\frac{\sin x}{4} = \frac{\sin 76^\circ}{7}$$

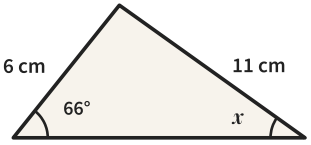
multiply both sides by 4

$\sin x =$ 0.5545

$x =$ 33.7°

2

Find angle x to 1 decimal place.



each angle over the side opposite it

$$\frac{\sin x}{6} = \frac{\sin 66^\circ}{11}$$

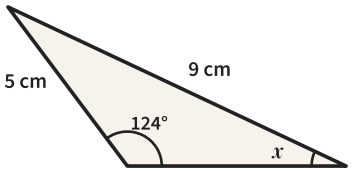
multiply both sides by 6

$\sin x =$ 0.4983

$x =$ 29.9°

3

Find angle x to 1 decimal place.



each angle over the side opposite it

$$\frac{\sin x}{5} = \frac{\sin 124^\circ}{9}$$

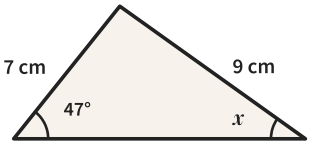
multiply both sides by 5

$\sin x =$ 0.4606

$x =$ 27.4°

4

Find angle x to 1 decimal place.



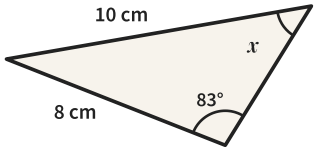
$$\frac{\sin x}{7} = \frac{\sin 47^\circ}{9}$$

$\sin x =$ 0.5688

$x =$ 34.7°

5

Find angle x to 1 decimal place.



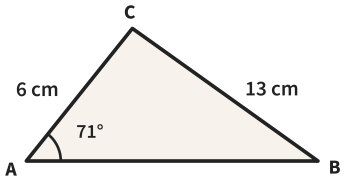
$$\frac{\sin x}{8} = \frac{\sin 83^\circ}{10}$$

$\sin x =$ 0.7940

$x =$ 52.6°

6

In triangle ABC, AC = 6 cm, BC = 13 cm and angle A = 71°. Find angle B to 1 decimal place.

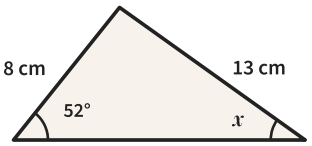


$\sin B = 0.4364$

Angle B = 25.9°

7

Aisha rounds $\sin x$ to 0.48, then gets $x = 28.7°$. Explain her mistake. Then find x to 1 decimal place.

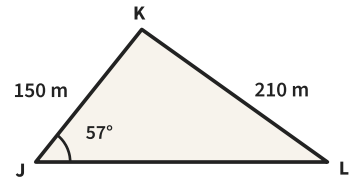


she rounded $\sin x$ too early: $\sin x = 0.4849...$

$x =$ 29.0°

8

The corners of a triangular park are J, K and L. JK = 150 m, KL = 210 m and angle KJL = 57°. Find angle JLK to 1 decimal place.



$\sin L \div 150 = \sin 57^\circ \div 210$

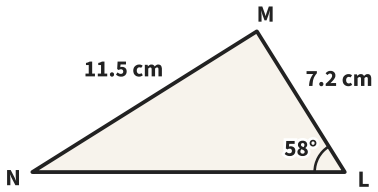
Angle JLK = 36.8°

The Sine Rule: Finding an Angle *further practice*

ANSWERS

9

Find angle LNM to 1 decimal place.



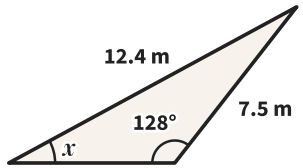
$\sin N \div 7.2 = \sin 58° \div 11.5$

$\sin N = 0.5309...$

Angle LNM $32.1°$

10

Find angle x to 1 decimal place.



$\sin x \div 7.5 = \sin 128° \div 12.4$

$\sin x = 0.4766...$

$x =$ $x = 28.5°$

11

In triangle XYZ, angle X = 47°, YZ = 15.2 cm and XZ = 9.6 cm. Find angle Y to 1 decimal place.

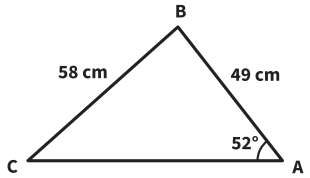
XZ is opposite Y, YZ is opposite X

$\sin Y = 9.6 \times \sin 47° \div 15.2$

Angle Y $27.5°$

12

Three tubes of a bike frame make a triangle ABC. AB = 49 cm, BC = 58 cm and angle BAC = 52°. Find angle ACB to 1 decimal place.



$\sin C \div 49 = \sin 52° \div 58$

$\sin C = 0.6657...$

Angle ACB $41.7°$

13

A side of 4 cm is opposite angle x.
A side of 9 cm is opposite an angle of 70°.
Kofi types $\sin^{-1}(9 \times \sin 70° \div 4)$ and his calculator says Math ERROR.
Explain his mistake, then find x to 1 decimal place.

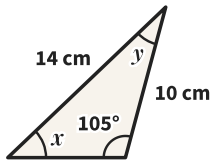
$\sin x \div 4 = \sin 70° \div 9$, so × 4 both sides

$\sin x = 4 \times \sin 70° \div 9$

$x =$ $x = 24.7°$

14

Find angle x, then angle y. Give both to 1 decimal place.



$\sin x = 10 \times \sin 105° \div 14$

$y = 180 - 105 - 43.6$

Answer $x = 43.6°, y = 31.4°$

15

A side of 9 cm is opposite angle x.
A side of 12 cm is opposite an angle of 40°. Is x more or less than 30°? Show how you know.

$\sin x = 9 \times \sin 40° \div 12 = 0.4820...$

less than $\sin 30° = 0.5$

Answer Less: $x = 28.8°$

16

In triangle DEF, angle D = 104°.
Ruby uses the sine rule and finds angle E = 31.2°. Zara says angle E could be 148.8°, because sin 148.8° = sin 31.2°.
Who is right? Explain.

104 + 148.8 = 252.8, more than 180°

a triangle can't have two obtuse angles

Answer Ruby