Sine Rule: Finding an Angle

ANSWERS

1

Find angle x to 1 decimal place.

$$\sin x = 0.74$$

$x = \sin^{-1}(0.74)$

$x =$ 47.7°

2

Find angle x to 1 decimal place.

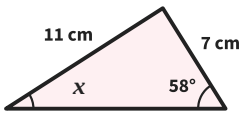
$$\sin x = \frac{2}{7}$$

$x = \sin^{-1}(2 \div 7)$

$x =$ 16.6°

3

Find angle x to 1 decimal place.



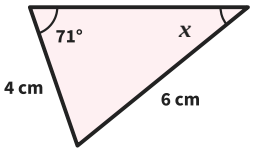
$\frac{\sin x}{7} = \frac{\sin 58°}{11}$

$\sin x = \frac{7 \times \sin 58°}{11} = 0.5397$

$x =$ 32.7°

4

Find angle x to 1 decimal place.



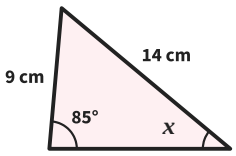
$\frac{\sin x}{4} = \frac{\sin 71°}{6}$

$\sin x = \frac{4 \times \sin 71°}{6} = 0.6303$

$x =$ 39.1°

5

Find angle x to 1 decimal place.



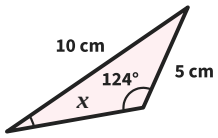
$\frac{\sin x}{9} = \frac{\sin 85°}{14}$

$\sin x = \frac{9 \times \sin 85°}{14} = 0.6404$

$x =$ 39.8°

6 *Notice the change!*

Find angle x to 1 decimal place.



$\frac{\sin x}{5} = \frac{\sin 124°}{10}$

$\sin x = \frac{5 \times \sin 124°}{10} = 0.4145$

$x =$ 24.5°

7

In triangle PQR, PQ = 6 cm, QR = 9 cm and angle P = 98°. Find angle R to 1 decimal place.

$\frac{\sin R}{6} = \frac{\sin 98°}{9}$

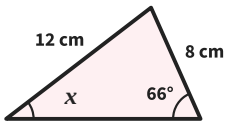
$\sin R = \frac{6 \times \sin 98°}{9} = 0.6602$

$R =$ 41.3°

8

Leo says $x = 66 \times 8 \div 12 = 44°$.

Explain his mistake. Then find x to 1 decimal place.



angles are not in proportion

$\sin x = \frac{8 \times \sin 66°}{12} = 0.6090$

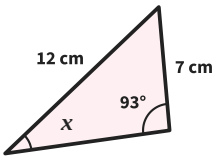
$x =$ 37.5°

Sine Rule: Finding an Angle *further practice*

ANSWERS

9

Find angle x to 1 decimal place.



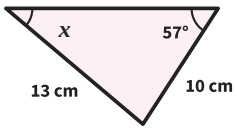
$\frac{\sin x}{7} = \frac{\sin 93°}{12}$

$\sin x = \frac{7 \times \sin 93°}{12} = 0.5825$

$x =$ 35.6°

10

Find angle x to 1 decimal place.



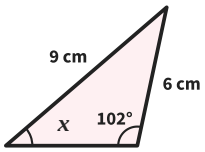
$\frac{\sin x}{10} = \frac{\sin 57°}{13}$

$\sin x = \frac{10 \times \sin 57°}{13} = 0.6451$

$x =$ 40.2°

11

Find angle x. Then find the third angle of the triangle. Give both to 1 decimal place.



$\sin x = \frac{6 \times \sin 102°}{9}$ ∴ $x = 40.7°$

$180 - 102 - 40.70$

Third angle 37.3°

12

In triangle ABC, AC = 11 cm, BC = 15 cm and angle A = 39°. Find angle B to 1 decimal place.

BC is opposite A, AC is opposite B

$\sin B = \frac{11 \times \sin 39°}{15}$

$B =$ 27.5°

13

A panel on a climbing wall is a triangle. Two of its edges are 2.4 m and 3.2 m long. The angle opposite the 3.2 m edge is 84°. Find the angle opposite the 2.4 m edge, to 1 decimal place.

$\frac{\sin x}{2.4} = \frac{\sin 84°}{3.2}$

$\sin x = \frac{2.4 \times \sin 84°}{3.2}$

Answer 48.2°

14

A side of 5 cm is opposite angle x. A side of 2.5 cm is opposite an angle of 30°. Show that $x = 90°$.

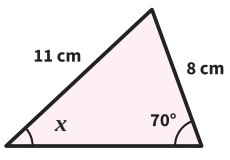
$\sin x = \frac{5 \times \sin 30°}{2.5} = \frac{2.5}{2.5} = 1$

$x = \sin^{-1}(1) = 90°$

Answer $x = 90°$

15

Find the length of the third side, to 1 decimal place.



$x = 43.11°$; third angle 66.89°

third side $= \frac{11 \times \sin 66.89°}{\sin 70°}$

Answer 10.8 cm

16

A side of 6 cm is opposite angle x. A side of 9 cm is opposite 75°. Amir works out $9 \times \sin 75° \div 6$ and gets Math ERROR. Explain why. Then find x.

1.45: more than 1

$\sin x = \frac{6 \times \sin 75°}{9}$

$x =$ 40.1°