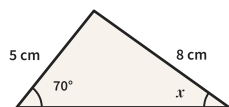


Sine Rule: Finding an Angle

1

Find angle x to 1 decimal place.



each angle over the side opposite it

$$\frac{\sin x}{5} = \frac{\sin 70^\circ}{8}$$

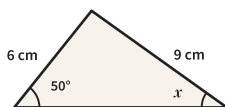
multiply both sides by 5

$$\sin x = \frac{0.5873}{1}$$

$$x = 36.0^\circ$$

2

Find angle x to 1 decimal place.



each angle over the side opposite it

$$\frac{\sin x}{6} = \frac{\sin 50^\circ}{9}$$

multiply both sides by 6

$$\sin x = \frac{0.5107}{1}$$

$$x = 30.7^\circ$$

3

Find angle x to 1 decimal place.



each angle over the side opposite it

$$\frac{\sin x}{4} = \frac{\sin 65^\circ}{7}$$

multiply both sides by 4

$$\sin x = \frac{0.5179}{1}$$

$$x = 31.2^\circ$$

4

Find angle x to 1 decimal place.



each angle over the side opposite it

$$\frac{\sin x}{7} = \frac{\sin 80^\circ}{10}$$

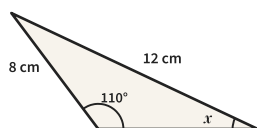
multiply both sides by 7

$$\sin x = \frac{0.6894}{1}$$

$$x = 43.6^\circ$$

5

Find angle x to 1 decimal place.



each angle over the side opposite it

$$\frac{\sin x}{8} = \frac{\sin 110^\circ}{12}$$

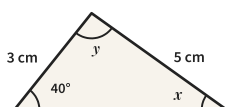
multiply both sides by 8

$$\sin x = \frac{0.6265}{1}$$

$$x = 38.8^\circ$$

6

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



$$\frac{\sin x}{3} = \frac{\sin 40^\circ}{5}$$

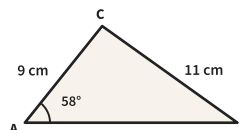
$$\sin x = \frac{0.3857}{1}$$

$$x = 22.7^\circ, y = 117.3^\circ$$

Answer

7

In triangle ABC, AC = 9 cm, BC = 11 cm and angle A = 58° . Find angle B to 1 decimal place.

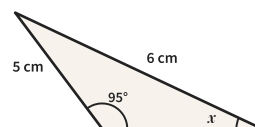


$$\sin B = 0.6939$$

$$\text{Angle B} = 43.9^\circ$$

8

Find angle x to 1 decimal place.



$$\sin x = 0.8302$$

$$x = 56.1^\circ$$

Sine Rule: Finding an Angle *further practice*

9

In triangle PQR, angle QPR = 64° , QR = 11 cm and PQ = 8 cm. Find angle PRQ to 1 decimal place.

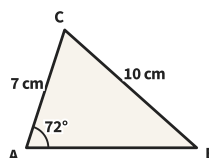
$$\sin R \div 8 = \sin 64^\circ \div 11$$

$$\sin R = 8 \times \sin 64^\circ \div 11 = 0.653...$$

$$\text{Answer } R = 40.8^\circ$$

10

Find the length AB to 1 decimal place.



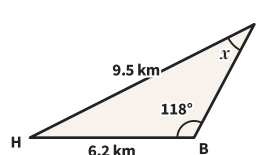
$$\sin B = 7 \sin 72^\circ \div 10, \text{ so } B = 41.7^\circ, \text{ then } C = 66.2^\circ$$

$$AB = 10 \times \sin C \div \sin 72^\circ$$

$$\text{Answer } AB = 9.6 \text{ cm}$$

11

A boat sails from the harbour H to a buoy B, then to a lighthouse L. Find angle BLH, marked x , to 1 decimal place.



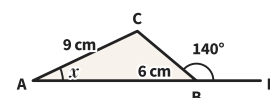
$$\sin x \div 6.2 = \sin 118^\circ \div 9.5$$

$$\sin x = 0.576...$$

$$\text{Answer } x = 35.2^\circ$$

12

ABD is a straight line. Find angle BAC, marked x , to 1 decimal place.



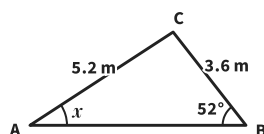
$$\text{angle } ABC = 180 - 140 = 40^\circ$$

$$\sin x = 6 \times \sin 40^\circ \div 9$$

$$\text{Answer } x = 25.4^\circ$$

13

Two rafters AC and BC of a roof meet at C. AB is a level beam. Find the angle the longer rafter makes with the beam, marked x , to 1 decimal place.



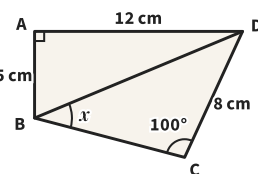
$$\sin x \div 3.6 = \sin 52^\circ \div 5.2$$

$$\sin x = 0.545...$$

$$\text{Answer } x = 33.1^\circ$$

14

Find angle CBD, marked x , to 1 decimal place.



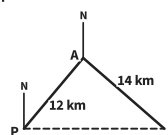
$$BD = \sqrt{5^2 + 12^2} = 13 \text{ cm}$$

$$\sin x = 8 \times \sin 100^\circ \div 13$$

$$\text{Answer } x = 37.3^\circ$$

15

A boat sails 12 km from port P on a bearing of 040° to A. It then sails 14 km to B, which is due east of P. Find the bearing of B from A, to 1 decimal place.



$$\text{angle } APB = 50^\circ, \sin B = 12 \sin 50^\circ \div 14, \text{ so } B = 41.0^\circ$$

$$\text{angle } PAB = 89.0^\circ, \text{ bearing} = 220 - 89.0...$$

$$\text{Answer } 131.0^\circ$$

16

One angle of a triangle is 50° . Lily uses the sine rule and gets $\sin x = 0.6$, so $x = 36.9^\circ$. Ben says x could be 143.1° because $\sin 143.1^\circ$ is also 0.6. Who is right? Explain.

$$143.1 + 50 = 193.1, \text{ more than } 180^\circ$$

$$\text{so } 143.1^\circ \text{ cannot fit in the triangle}$$

$$\text{Answer } \text{Lily}$$