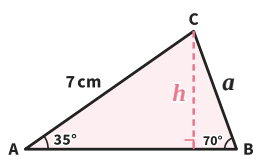


Sine Rule: Finding a Side

1

Drop the height h from C. Find h , then find a .



Left triangle $h = 7 \times \sin 35^\circ = 4.02$

Right triangle $h = a \times \sin 70^\circ$

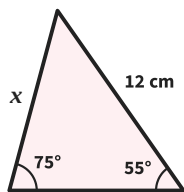
$a = 4.02 \div \sin 70^\circ$

$a = 4.3 \text{ cm}$

2

Opposite sides and angles pair up.

Find x to 1 decimal place.



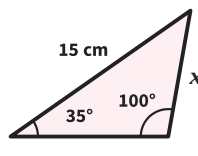
$$\frac{x}{\sin 55^\circ} = \frac{12}{\sin 75^\circ}$$

$$x = \frac{12 \times \sin 55^\circ}{\sin 75^\circ}$$

$x = 10.2 \text{ cm}$

3

Find x to 1 decimal place.



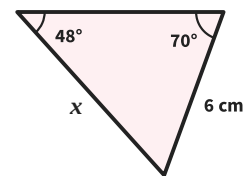
$$\frac{x}{\sin 35^\circ} = \frac{15}{\sin 100^\circ}$$

$$x = \frac{15 \times \sin 35^\circ}{\sin 100^\circ}$$

$x = 8.7 \text{ cm}$

4

Find x to 1 decimal place.



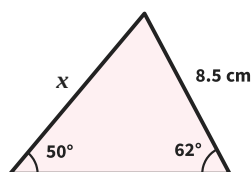
$$\frac{x}{\sin 70^\circ} = \frac{6}{\sin 48^\circ}$$

$$x = \frac{6 \times \sin 70^\circ}{\sin 48^\circ}$$

$x = 7.6 \text{ cm}$

5

Find x to 1 decimal place.



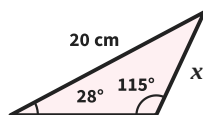
$$\frac{x}{\sin 62^\circ} = \frac{8.5}{\sin 50^\circ}$$

$$x = \frac{8.5 \times \sin 62^\circ}{\sin 50^\circ}$$

$x = 9.8 \text{ cm}$

6

Find x to 1 decimal place.



$$\frac{x}{\sin 28^\circ} = \frac{20}{\sin 115^\circ}$$

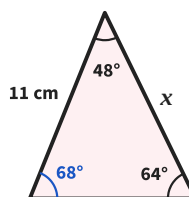
$$x = \frac{20 \times \sin 28^\circ}{\sin 115^\circ}$$

$x = 10.4 \text{ cm}$

7

Notice the change!

Find x to 1 decimal place.



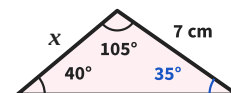
$$\frac{x}{\sin 68^\circ} = \frac{11}{\sin 64^\circ}$$

$$x = \frac{11 \times \sin 68^\circ}{\sin 64^\circ}$$

$x = 11.3 \text{ cm}$

8

Find x to 1 decimal place.



$$\frac{x}{\sin 35^\circ} = \frac{7}{\sin 40^\circ}$$

$$x = \frac{7 \times \sin 35^\circ}{\sin 40^\circ}$$

$x = 6.2 \text{ cm}$

Sine Rule: Finding a Side further practice

9

In triangle PQR, angle QPR = 38° , angle PQR = 74° and PQ = 16 cm. Find QR to 1 decimal place.

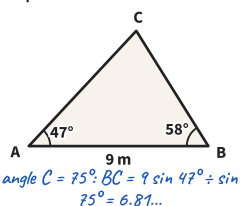
angle PRQ = $180 - 38 - 74 = 68^\circ$

$QR = 16 \times \sin 38^\circ \div \sin 68^\circ$

Answer $QR = 10.6 \text{ cm}$

10

A flower bed is the triangle ABC. How much fencing is needed to go all the way round it? Give your answer to 1 decimal place.



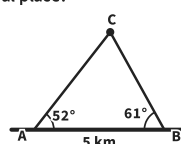
angle C = 75° , $BC = 9 \sin 47^\circ \div \sin 75^\circ = 6.81...$

$AC = 9 \sin 58^\circ \div \sin 75^\circ = 7.90...$

Answer 23.7 m

11

Coastguards at A and B on a straight coast are 5 km apart. Each sees a boat at C. Angle CAB = 52° and angle CBA = 61° . How far is the boat from A, to 1 decimal place?



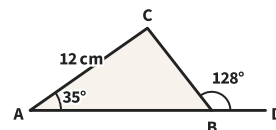
angle ACB = $180 - 52 - 61 = 67^\circ$

$AC = 5 \times \sin 61^\circ \div \sin 67^\circ$

Answer 4.8 km

12

ABD is a straight line. Find BC to 1 decimal place.



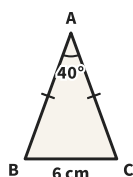
angle ABC = $180 - 128 = 52^\circ$

$BC = 12 \times \sin 35^\circ \div \sin 52^\circ$

Answer $BC = 8.7 \text{ cm}$

13

Triangle ABC is isosceles with AB = AC. Find AB to 1 decimal place.



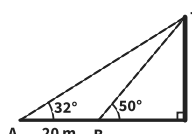
angle ABC = $(180 - 40) \div 2 = 70^\circ$

$AB = 6 \times \sin 70^\circ \div \sin 40^\circ$

Answer $AB = 8.8 \text{ cm}$

14

From A the angle of elevation of the top T of a wind turbine is 32° . From B, 20 m nearer, it is 50° . Find the height of the turbine to 1 decimal place.



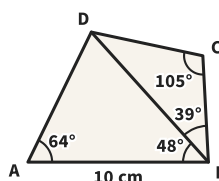
angle ATB = $50 - 32 = 18^\circ$, $BT = 20 \sin 32^\circ \div \sin 18^\circ$

height = $BT \times \sin 50^\circ$

Answer 26.3 m

15

Find CD to 1 decimal place.



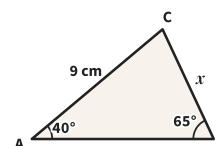
$BD = 10 \sin 64^\circ \div \sin 68^\circ = 9.69... \text{ cm}$

$CD = 9.69... \times \sin 39^\circ \div \sin 105^\circ$

Answer $CD = 6.3 \text{ cm}$

16

Tom writes $x \div \sin 65^\circ = 9 \div \sin 40^\circ$. Explain his mistake and find x to 1 decimal place.



x is opposite 40° and 9 cm is opposite 65°

$x \div \sin 40^\circ = 9 \div \sin 65^\circ$

Answer $x = 6.4 \text{ cm}$