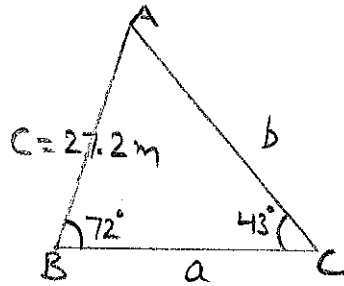


3.1
Sine Law

Ex.1 Determine length 'b'



Sol. As per our need and the information given, we can use either of the following formulas.

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

{ This may be used to determine angles }

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

{ This may be used to determine side lengths }

In this case, we are asked to determine side length 'b'.

∴ We can use the formula $\frac{b}{\sin B} = \frac{c}{\sin C}$

$$\Rightarrow \frac{b}{\sin 72^\circ} = \frac{27.2}{\sin 43^\circ}$$

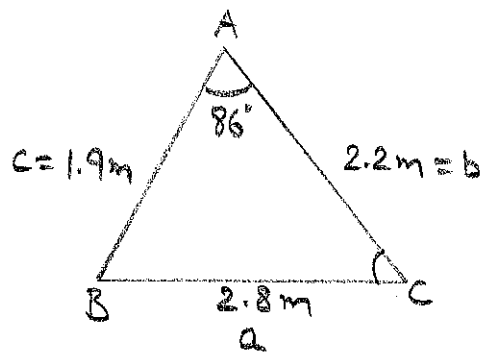
$$\Rightarrow b = \frac{(27.2)(\sin 72^\circ)}{\sin 43^\circ} = \frac{(27.2)(0.95)}{0.68} = \frac{25.84}{0.68} = 38 \text{ m}$$

Note: If you want to determine side 'a', first determine $\angle A = 180^\circ - (72^\circ + 43^\circ) = 65^\circ$

Then use formula $\frac{a}{\sin A} = \frac{c}{\sin C}$

EX. 2

Determine $\angle C$



Sol. As we want to determine an angle.

We can use the formula $\rightarrow \frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$

We can pick $\frac{\sin C}{c} = \frac{\sin A}{a}$

$$\frac{\sin C}{1.9} = \frac{\sin 86^\circ}{2.8}$$

$$\sin C = \frac{(\sin 86^\circ)(1.9)}{2.8}$$

$$\sin C = \frac{(0.99)(1.9)}{2.8}$$

$$\sin C = \frac{1.89}{2.8}$$

$$\sin C = 0.67$$

$$\sin^{-1}(\sin C) = \sin^{-1}(0.67)$$

$$\boxed{C = 42.60^\circ}$$