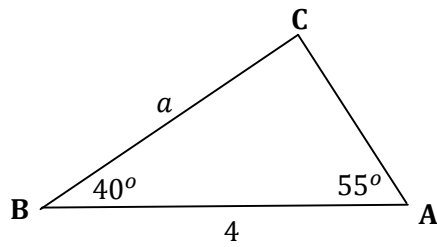


C11 - 2.11 - Sine/Cosine Law Notes Solve the Triangle

Solve for a.



$$C = 180^\circ - 40^\circ - 55^\circ = 85^\circ$$

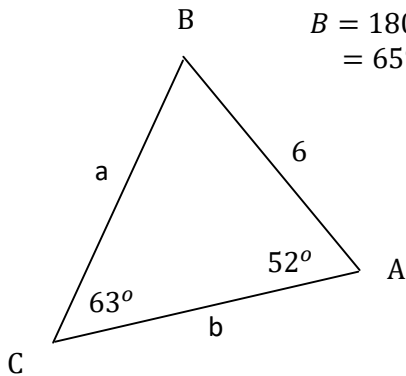
$$\frac{a}{\sin A} = \frac{c}{\sin C}$$

$$\frac{a}{\sin 55^\circ} = \frac{4}{\sin 85^\circ}$$

$$\frac{a}{0.819} = 4.015$$
~~$$0.819 \times \frac{a}{0.819} = 4.015 \times 0.819$$~~

$$a = 3.289$$

Solve the triangle.



$$B = 180^\circ - 63^\circ - 52^\circ = 65^\circ$$

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

$$\frac{a}{\sin 52^\circ} = \frac{6}{\sin 63^\circ}$$

$$\frac{a}{0.788} = 6.734$$
~~$$0.788 \times \frac{a}{0.788} = 6.734 \times 0.788$$~~

$$a = 6.734 \times 0.788$$

$$a = 5.306$$

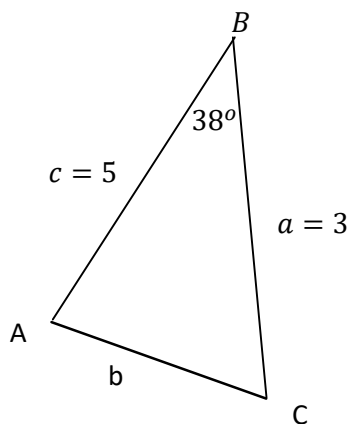
$$\frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{b}{\sin 65^\circ} = \frac{6}{\sin 63^\circ}$$

$$\frac{b}{0.906} = 6.734$$
~~$$0.906 \times \frac{b}{0.906} = 6.734 \times 0.906$$~~

$$b = 6.101$$

Solve the triangle *Find the angle opposite of the smaller side 1st.



Cosine Law: Switched b and c

$$c^2 = a^2 + b^2 - 2abc \cos C$$

$$b^2 = a^2 + c^2 - 2ac \cdot \cos B$$

$$b^2 = 3^2 + 5^2 - 2(3)(5) \cdot \cos(38^\circ)$$

$$b^2 = 9 + 25 - 30 \cos(38^\circ)$$

$$b^2 = 34 - 23.64$$

$$b^2 = 10.36$$

$$\sqrt{b^2} = \sqrt{10.36}$$

$$b = 3.22$$

Sine Law:

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

$$\frac{\sin A}{3} = \frac{\sin 38^\circ}{3.22}$$

$$\frac{\sin A}{3} = 0.19$$

$$3 \times \frac{\sin A}{3} = 0.19 \times 3$$

$$\sin A = 0.57$$

$$A = 35^\circ$$

180° in a triangle:

$$C = 180^\circ - 38^\circ - 35^\circ = 107^\circ$$