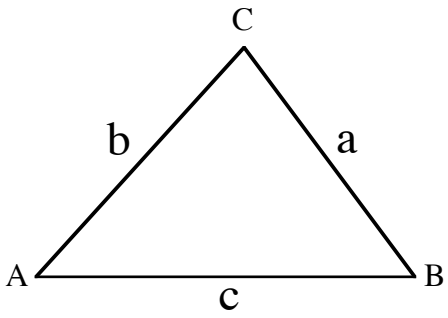
# CHAPTER 18: TRIGONOMETRY: TRIANGLE FORMULAE

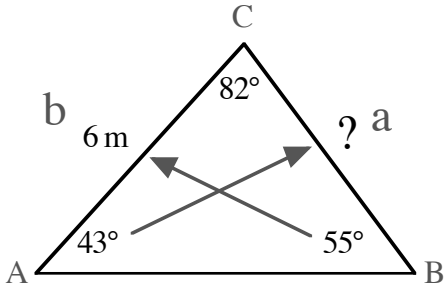
## SINE RULE




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

NOTE: requires at least one side and its opposite angle to be known.

### FINDING AN UNKNOWN SIDE




Find the length of side BC

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

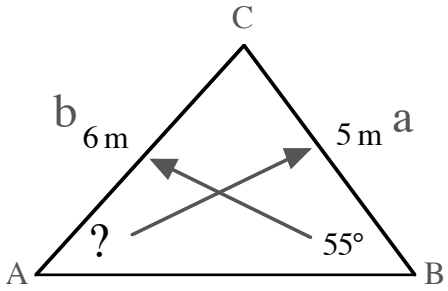
$$\frac{a}{\sin 43°} = \frac{6}{\sin 55°}$$

$$a = \frac{6}{\sin 55°} \times \sin 43°$$

$$= 4 \cdot 995.....$$

$$BC \approx 5 \cdot 0 \ m$$

### FINDING AN UNKNOWN ANGLE




Find the size of angle BAC.

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

$$\frac{\sin A}{5} = \frac{\sin 55°}{6}$$

$$\sin A = \frac{\sin 55°}{6} \times 5$$

$$= 0 \cdot 682.....$$

$$A = \sin^{-1} 0 \cdot 682.....$$

$$= 43 \cdot 049.....$$

$$\angle BAC \approx 43.0°$$