

Triangle Geometry

We can use the Sine and Cosine Rule to work out unknown angles and sides in triangles. The following formulae are given in the formula booklet

The Sine Rule

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

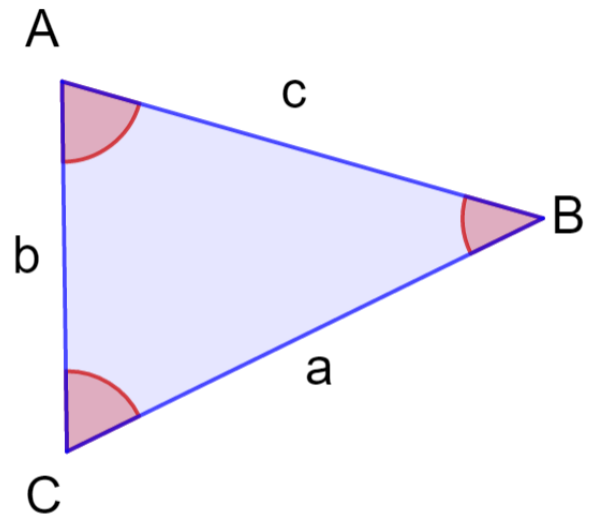
The Cosine Rule

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

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

Area of a Triangle

$$\text{Area} = \frac{1}{2} ab \sin C$$



Ambiguous Case

Whenever we use the Sine Rule or the Area of a Triangle formula to find an angle, sometimes there are **2 different possible answers**.

This is because $\sin \theta = \sin(180 - \theta)$

We can also show this geometrically: In the triangle ABC, we are told that $\widehat{BAC} = 20^\circ$, AC = 20cm and BC = 9cm.

There are two possible positions for B and therefore 2 different possible angles for \widehat{ABC}

