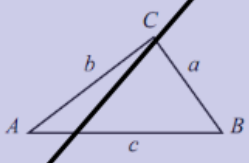
The Sine Rule

we use the Sine Rule when we have opposites

From the GCSE formula sheet...

In any triangle ABC



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

Cosine Rule $a^2 = b^2 + c^2 - 2bc\cos A$

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

we only ever use two bits of it!

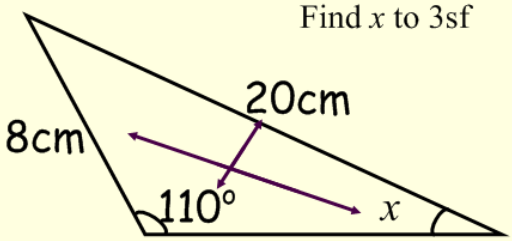
$$\frac{a}{\sin(A)} = \frac{b}{\sin(B)}$$

Whatever we want to find goes on top, if we were finding an angle we would use:

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

This makes it easier to rearrange

Find x to 3sf



We have opposites: so we use the Sine rule

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

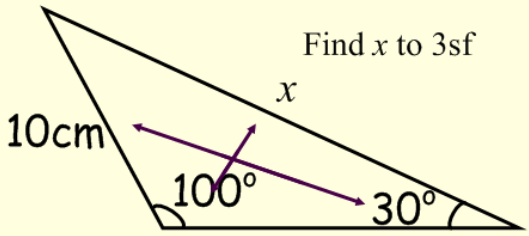
$$\frac{\sin(x)}{8} = \frac{\sin(110)}{20}$$

$$\sin(x) = \frac{\sin(110)}{20} \times 8$$

$$x = \sin^{-1}\left(\frac{\sin(110)}{20} \times 8\right)$$

We can then put this in the calculator

Find x to 3sf



We have opposites: so we use the Sine rule

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

$$\frac{x}{\sin(100)} = \frac{10}{\sin(30)}$$

$$x = \frac{10}{\sin(30)} \times \sin(100)$$

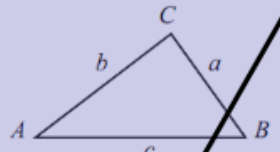
We can then put this in the calculator

The Cosine Rule

we use the Cosine Rule when we don't have opposites

From the GCSE formula sheet...

In any triangle ABC



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

Cosine Rule $a^2 = b^2 + c^2 - 2bc\cos A$

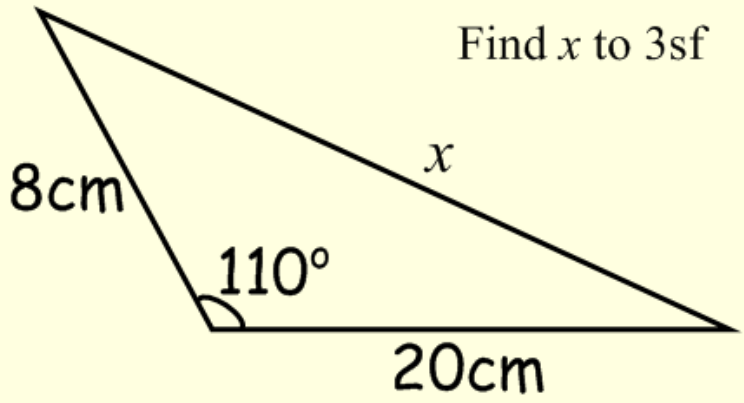
Area of triangle $= \frac{1}{2}ab\sin C$

When we are finding a side we just have to substitute the numbers in

When we are finding an angle we have to rearrange the formula:

$$\cos(A) = \frac{b^2 + c^2 - a^2}{2bc}$$

Find x to 3sf



$a^2 = b^2 + c^2 - 2bc\cos(A)$

The angle always goes with cos, it is big A

big A is opposite little a

the other two sides are b and c

$x^2 = (20)^2 + (8)^2 - 2(20)(8)\cos(110)$

We can then put this in the calculator

this is x^2 we have to square root to find x

Area of Any Triangle