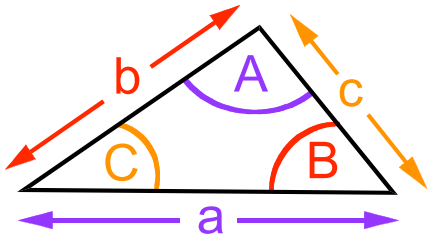
The sine rule



What's the difference between b and B?

The diagram above can represent any triangle. There are three angles, *A*, *B* and *C*. Each angle faces a side, the side being named after the angle that faces it. So the side opposite angle *A* is called side *a*.

Does the sine rule work for any triangle?

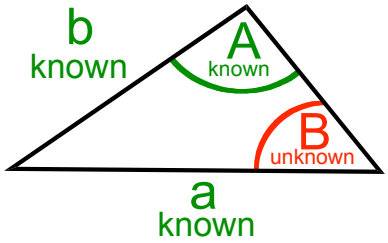
The sine rule can be used for any triangle, right-angled or not. However, there are less complicated methods for finding sides and angles in right-angled triangles, so you will find you only need to use the sine rule for non-right triangles.

What is the rule?

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

Why do I need the sine rule?

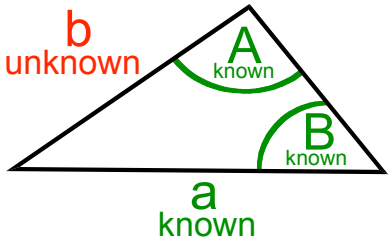
You know: two sides and an angle opposite one of the sides
You want to find: the other angle opposite one of the sides



If you feel confident with rearranging equations, you can rearrange the sine rule to find the angle *B* directly:

$$B = \sin^{-1}\left(\frac{b\sin A}{a}\right)$$

You know: two angles and a side opposite one of the angles
You want to find: the other side opposite one of the angles



You can also rearrange the sine rule in this situation, to find side *b* directly:

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