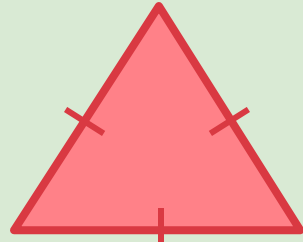


What do you need to know?

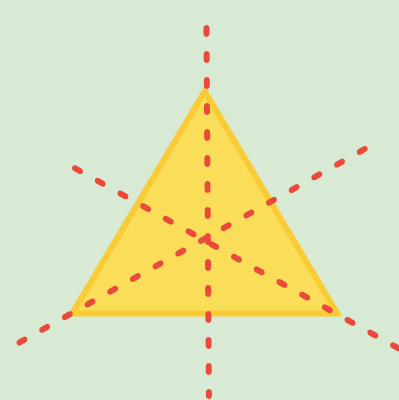
Triangles are 2D shapes with 3 straight edges and 3 vertices.

There are 3 types of triangles:

Equilateral triangles:



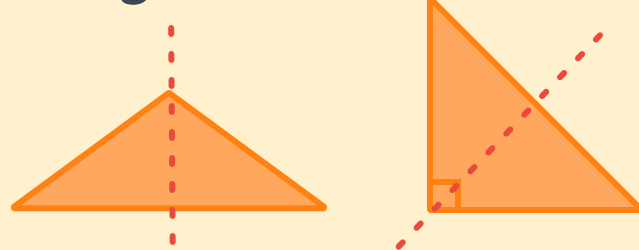
- Have 3 equal sides and 3 equal angles.
- Have 3 lines of symmetry.
- Never have right-angles.



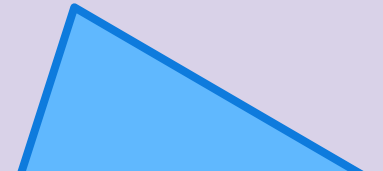
Isosceles triangles:



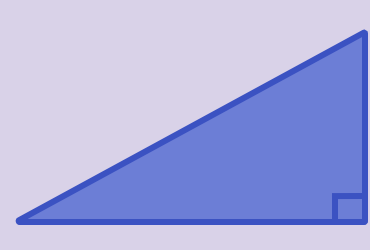
- Have 2 equal sides and 2 equal angles.
- Have 1 line of symmetry.
- If one of the angles is a right-angle, we call this a **right-angled isosceles triangle**.



Scalene triangles:

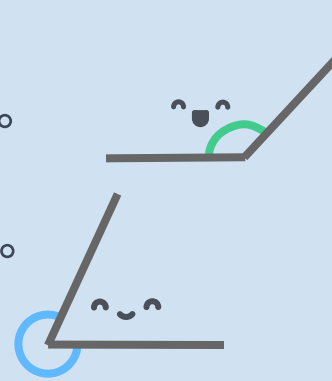
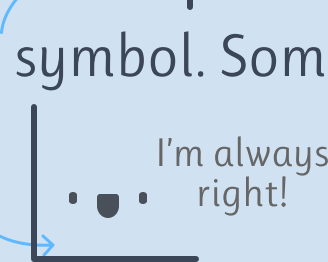
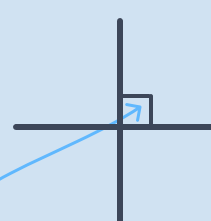


- Have sides and angles that are all unequal.
- Have no lines of symmetry
- If **one** of the angles is a right-angle, we call this a **right-angled scalene triangle**.



Key vocabulary:

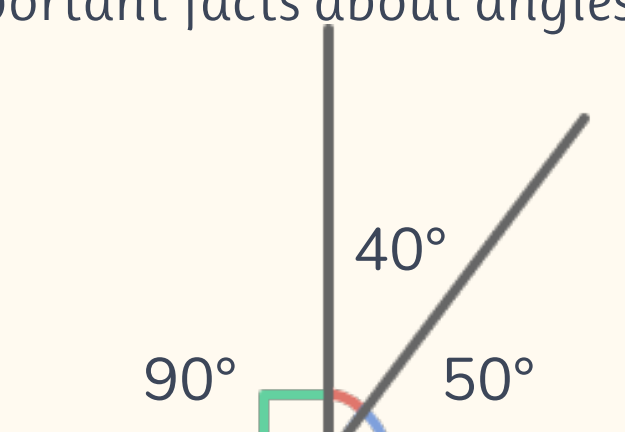
- ★ **Perpendicular lines** are two straight lines that meet at a right-angle.
- ★ A **right-angle** is 90° and you can recognise it from this small square symbol. Some triangles have a right-angle but they never have more than one!
- ★ **Acute angles** are between 0° and 90°
- ★ **Obtuse angles** are between 90° and 180°
- ★ **Reflex angles** are between 180° and 360°



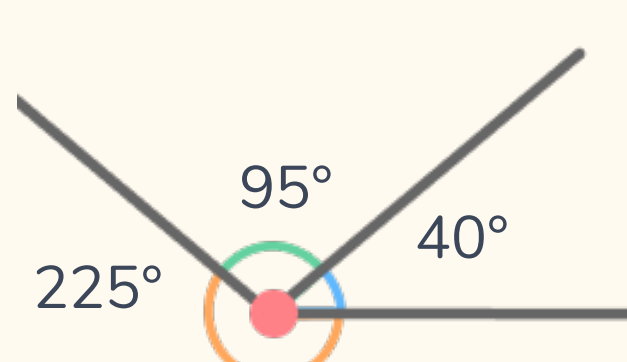
To master triangles, you should also know some important facts about angles:



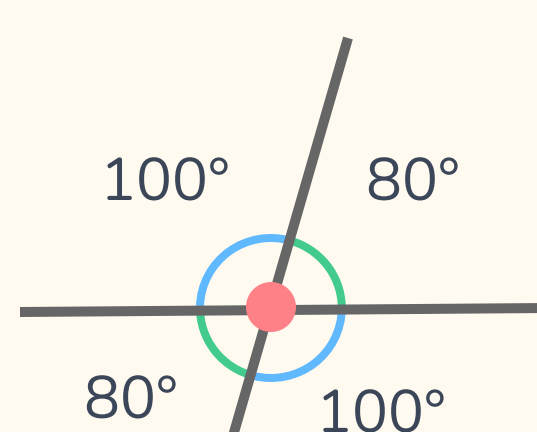
Interior angles in a triangle add up to 180°



Angles on a straight line add up to 180° too!



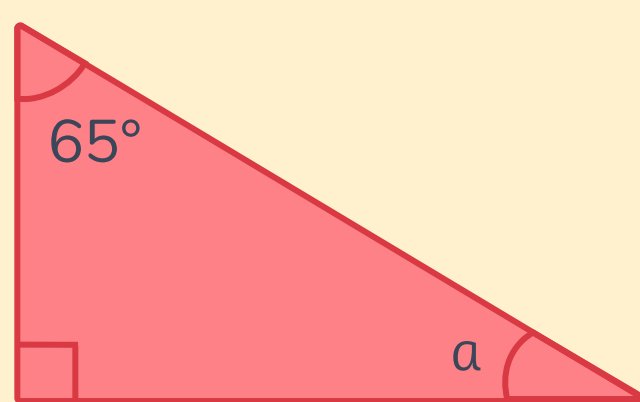
Angles at a point add up to 360°



Vertically opposite angles are equal.

Let's see this in action...

Your teacher has given you a diagram of a triangle and you need to find out the size of the angle marked a .



1) First, work out the total of the angles you've been given: one of them is 65° and the other is a right-angle so:

$$65^\circ + 90^\circ = 155^\circ$$

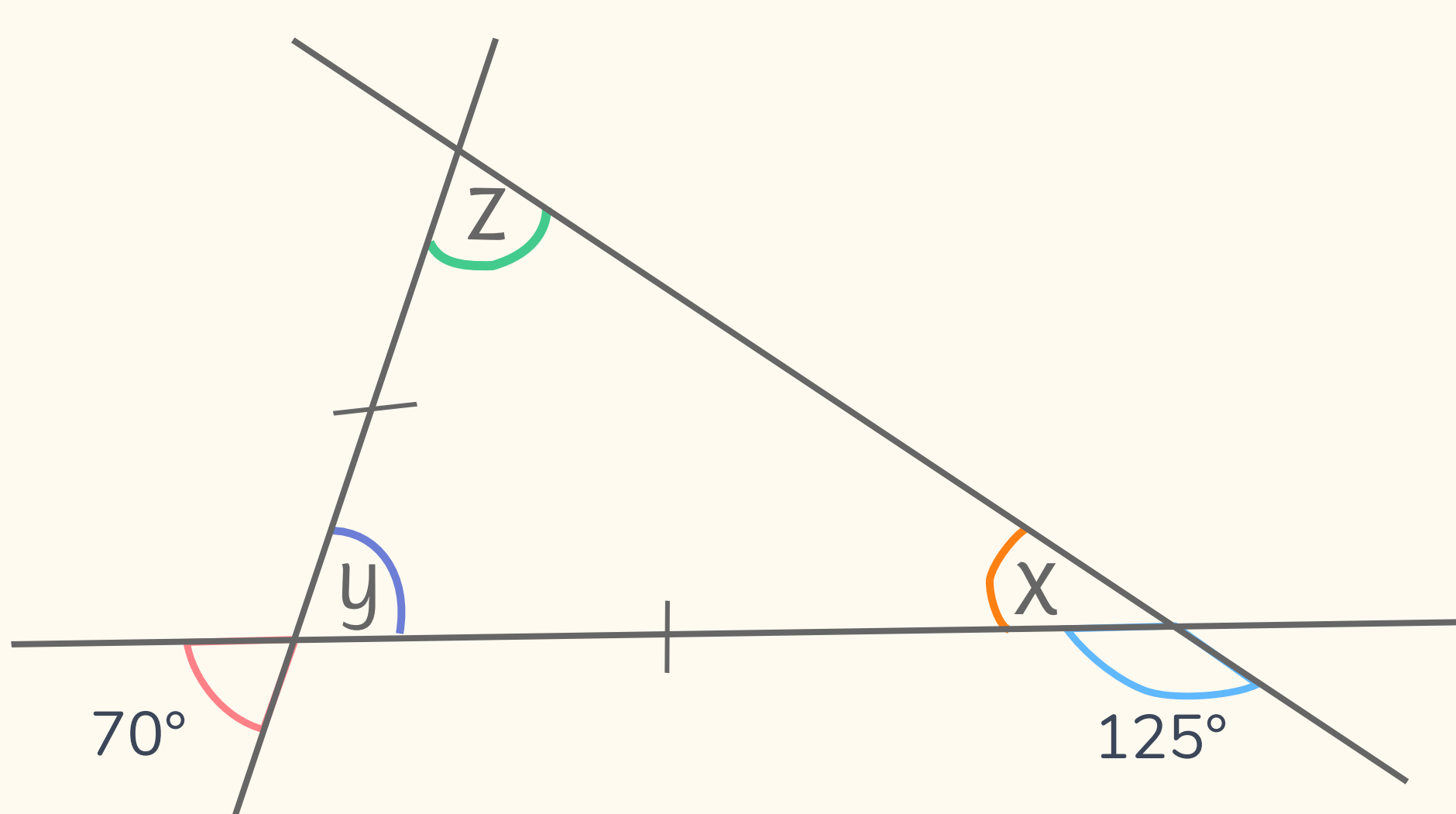
2) Next, because we know that the angles inside a triangle add up to 180° , we can work out the size of a by subtracting the given angles from 180° :

$$a = 180^\circ - 155^\circ$$

$$a = 25^\circ \quad \checkmark$$

Let's look at a different example:

You're getting really good at finding missing angles now, so your teacher has given you this question and asked you to find the size of z .



1) First, let's work out the size of x . We know that angles on a straight line add up to 180° so taking away 125° from 180° will give us the size of x :

$$x = 180^\circ - 125^\circ$$

$$x = 55^\circ$$

2) Now, let's look at y . It's vertically opposite the angle labelled 70° , so it must be 70° too because vertically opposite angles are equal.

3) Finally, because x , y and z form a triangle, they must all add up to 180° . So:

$$z = 180^\circ - (55^\circ + 70^\circ)$$

$$z = 180^\circ - 125^\circ$$

$$z = 55^\circ \quad \checkmark$$

4) So z is 55° too! We know this must be correct because the hatch marks show that 2 sides are equal. This means that the triangle is an isosceles triangle and must also have two equal angles: x and z are equal.

Tips!

Hatch marks are useful little lines that show that sides of a shape are equal in length. Isosceles triangles have 2 hatch marks because 2 of its sides are equal. Equilateral triangles have 3 because all of its sides are equal.

Make sure you look out for them!

