What is a ratio?

A **ratio** is a way to compare two or more quantities. It lets you know how much each quantity is as part of the whole. Ratios are usually shown as two or more numbers separated by a colon, for example 8 : 5 means 8 to 5 and 3 : 2 : 1 means 3 to 2 to 1

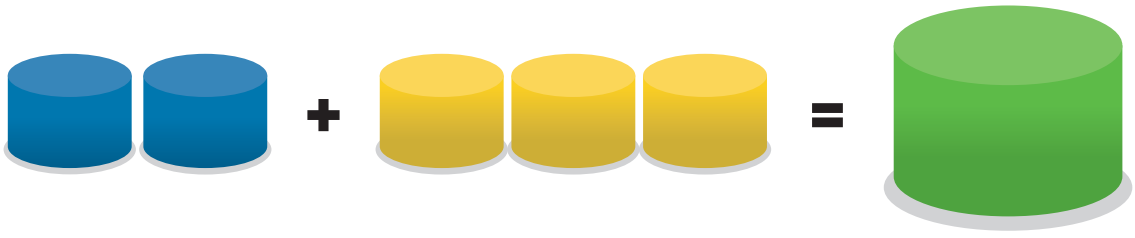
Uses of ratio

Ratios can be used to divide a quantity into parts. Ratio is also used to **scale** amounts, for example in **plan drawings**, **scale models** or **maps**, where really big numbers can be converted to much smaller representations that are still accurate.

Rewarding Learning

Writing ratios

Green paint is made from **2 parts blue** paint and **3 parts yellow** paint.



Therefore, the **ratio** of **blue** paint to **yellow** paint can be written as **2 : 3**

It is important to write ratios in the correct order.
Make sure the numbers either side of the ratio symbol refer to the correct part.

Blue paint	to	Yellow paint	or	Yellow paint	to	Blue paint
2	:	3		3	:	2

The word 'parts' can refer to actual units.
For example, 2 litres of blue paint and 3 litres of yellow paint can make 5 litres of green paint.

Simplifying ratios

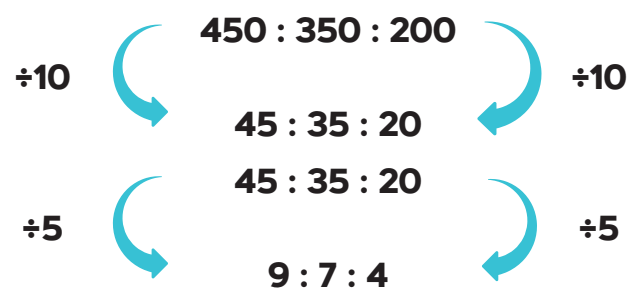
Ratios can be simplified (cancelled down) to the simplest form. This makes them easier to use.

Example
There are **12 girls** and **15 boys** in a class. The ratio of girls to boys is **12 : 15**
Dividing both numbers by **3** we get

For every **4** girls there are **5** boys.
The ratio of girls to boys can be written as **4 : 5**

Ratios can include more than two numbers. When this is the case all three numbers can be simplified.

Example
In a cake mix there are **450 g** of flour, **350 g** of sugar and **200 g** of butter.
The ratio of flour to sugar to butter is **450** : **350** : **200**



For every **9 g** of flour there are **7 g** of sugar and **4 g** of butter.
The ratio of flour to sugar to butter can be written as **9 : 7 : 4**

Level 6

Understand, use and calculate ratio.

What is a ratio?

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Uses of ratio

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Rewarding Learning

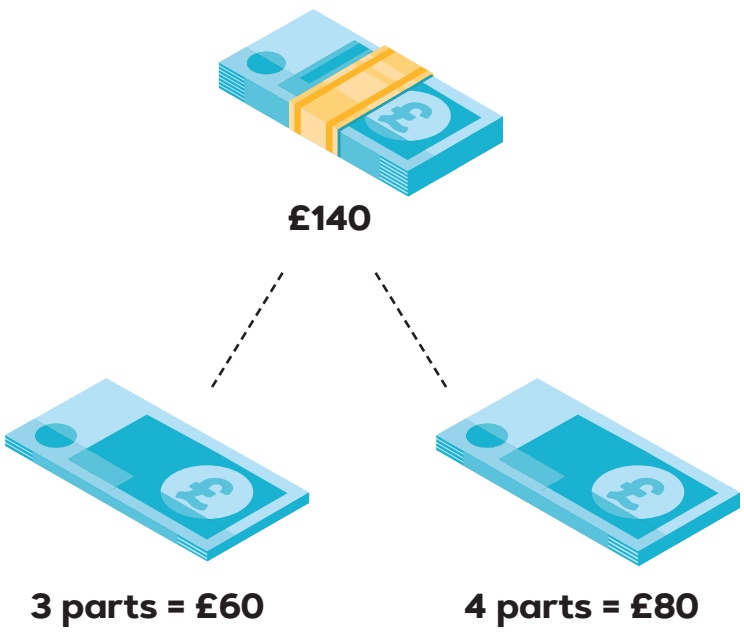
How to share a quantity in a given ratio

1. **Add** the parts to find the **total** number of parts.
2. **Divide** the quantity by the total number of parts to find what **1 part** is worth.
3. **Multiply** 1 part by the number of parts to find **each share**.

Example

Share £140 in the ratio 3 : 4

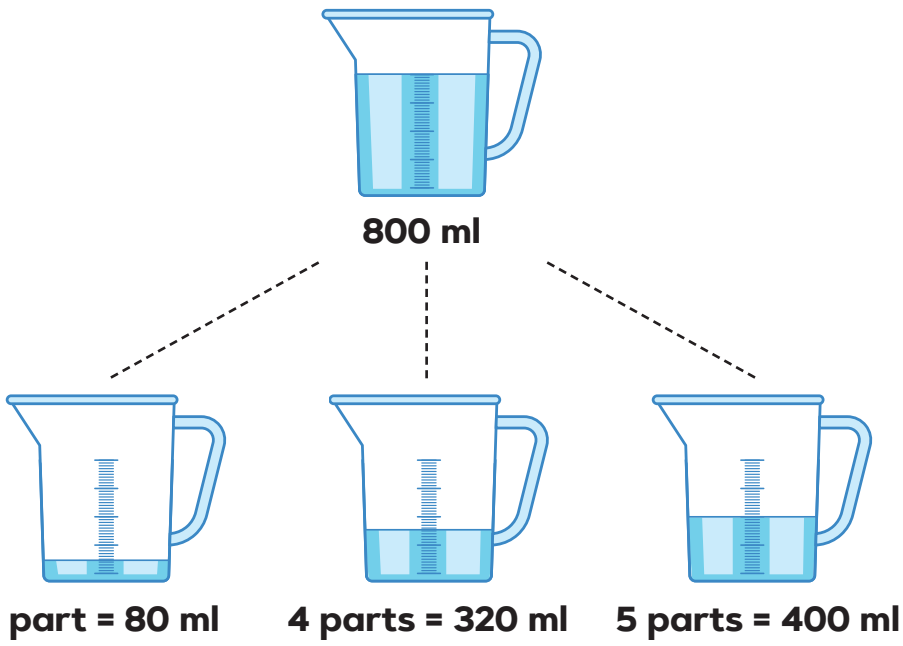
1. Total parts = 3 + 4 = 7
   7 parts = £140
2. 1 part = £140 ÷ 7 = £20
3. 3 parts = 3 × £20 = **£60**
   4 parts = 4 × £20 = **£80**



Example

Share 800 ml of ammonia solution in the ratio 1 : 4 : 5

1. Total parts = 1 + 4 + 5 = 10
   10 parts = 800 ml
2. 1 part = 800 ml ÷ 10 = 80 ml
3. 1 part = **80 ml**
   4 parts = 4 × 80 ml = **320 ml**
   5 parts = 5 × 80 ml = **400 ml**



How to identify unknown quantities given a ratio

1. **Divide** the known quantity by its ratio part to find the value of one part.
2. **Multiply** the other ratio part by this value to find the unknown quantity.

Example

Pastry is made with flour and butter in the ratio of 5 : 2
How much flour is needed for the pastry if 300 g of butter is used?

1. 1 part butter = 300 g ÷ 2 = 150 g
2. 5 parts flour = 5 × 150 g = **750 g of butter**

Level 6

Understand, use and calculate ratio.