

What the **fraction form of the ratio actually means**

- 1) Suppose in a class there's **girls and boys** in the ratio **3 : 4**.
This means there's $\frac{3}{4}$ as many girls as boys.
- 2) So if there were 20 boys, there would be $\frac{3}{4} \times 20 = 15$ girls.
You've got to be careful though — it **doesn't mean** $\frac{3}{4}$ of the **people** in the class are girls.

Treat RATIOS like FRACTIONS

Reducing Ratios to their simplest form

You reduce ratios just like you'd reduce fractions to their simplest form.

For the ratio 15:18, both numbers have a **factor** of 3, so **divide them by 3** — that gives 5:6. We can't reduce this any further. So the simplest form of 15:18 is **5 : 6**.

Treat them just like fractions — use your calculator if you can

Now this is really sneaky. If you stick in a fraction using the $\frac{a}{b}$ button, your calculator automatically cancels it down when you press $=$.

So for the ratio 8:12, just press 8 $\frac{a}{b}$ 12 $=$, and you'll get the reduced fraction $\frac{2}{3}$. Now you just change it back to ratio form ie. **2 : 3**. Ace.

If the ratio is MIXED UNITS

CONVERT BOTH SIDES into the **SMALLER UNITS** using the relevant **CONVERSION FACTOR** (see P.24)

E.g. '24mm : 7.2cm' ($\times 7.2\text{cm by } 10$) \Rightarrow 24mm : 72mm = **1 : 3** (using $\frac{a}{b}$)

To reduce a ratio to the form **1 : n or n : 1** (n can be any number)

Simply **DIVIDE BOTH SIDES BY THE SMALLEST SIDE**.

This form is often the **most useful**, since it shows the ratio very clearly.

E.g. take "**3 : 56**" — dividing both sides by 3 gives: **1 : 18.7** ($56 \div 3$) (i.e. 1 : n)

Proportional Division

In a **proportional division** question a **TOTAL AMOUNT** is to be **split in a certain ratio**.

EXAMPLE: "£9100 is to be split in the ratio 2:4:7. Find the 3 amounts."

The key word here is **PARTS** — concentrate on 'parts' and it all becomes quite painless:

- 1) **ADD UP THE PARTS:**
The ratio 2:4:7 means there will be a total of 13 **parts** i.e. $2+4+7 = 13$ **PARTS**
- 2) **FIND THE AMOUNT FOR ONE "PART"**
Just divide the **total amount** by the number of **parts**: $£9100 \div 13 = £700$ (= 1 PART)
- 3) **HENCE FIND THE THREE AMOUNTS:**
 $2 \text{ parts} = 2 \times 700 = £1400$, $4 \text{ parts} = 4 \times 700 = £2800$, $7 \text{ parts} = £4900$