

Number Skills

Equivalent Fractions | Direct Proportion | Percentages

Equivalent Fractions

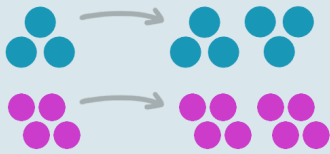
Equivalent just means **the same** or **equal to**, so this is all about writing the same fraction in different forms. The trick is to scale (multiply) the top and bottom of the fraction by the same amount. We'll look at $\frac{3}{4}$ here:

$$\frac{3}{4} \stackrel{\times 3}{=} \frac{9}{12}$$

Proportion

If 3 balls cost £4, 6 balls cost £8 and so on, we can show this on a number line like so:

Balls	3	6	9	12	15
Cost (£)	4	8	12	16	20



For every 3 balls, we need £4. The relative amounts are the same so they are **in proportion** or **proportional**.

We can see some really obvious **similarities** here between proportion and equivalent fractions!

$$\frac{3}{4} = \frac{6}{8} = \frac{9}{12} = \frac{12}{16} = \frac{15}{20} = \dots$$

Example

You need to dilute some fruit squash. The instructions say that there should be **1ml** of squash in every **10ml** of drink.

How much squash do you need for 300ml of drink?

Using a simple rearrangement we can find the missing value:

$$\frac{1}{10} = \frac{?}{300} \Rightarrow \frac{1}{10} \times 300 = ?$$
$$\Rightarrow ? = 30$$

30ml of squash needed

Percentages

Percent means "per 100", so 75% means $\frac{75}{100}$. Knowing this, we can use our rearranging and equivalent fractions to calculate percentages. If we want to know 75% of 20, we can write:

$$75\% \text{ of } 20 \text{ is the same as } \frac{75}{100} = \frac{?}{20} \text{ so } \frac{75}{100} \times 20 = 15 = ?$$

75% of 20 is 15

This look familiar? We can see above that $\frac{15}{20}$ is the same as $\frac{3}{4}$. With some quick checking you could see that $\frac{75}{100}$ is too! So proportion, equivalent fractions and percentages are all really similar.

- ✓ Get confident with manipulating fractions.
- ✓ Get all information from question written down.