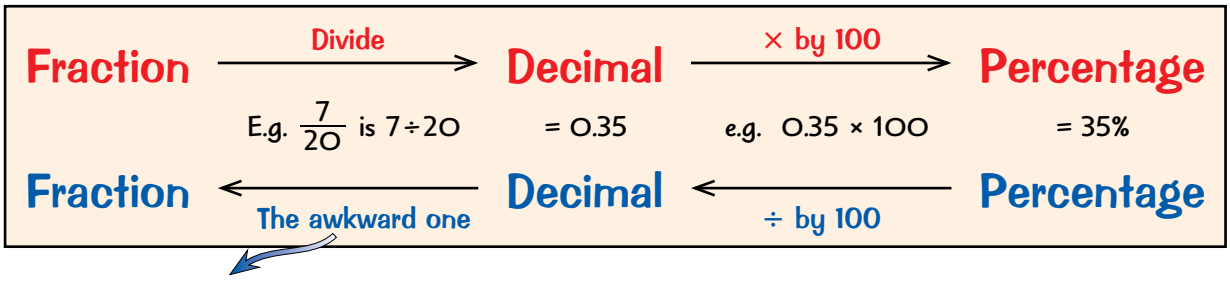
Fractions, Decimals and Percentages

The one word that describes all these three is PROPORTION. Fractions, decimals and percentages are simply three different ways of expressing a proportion of something — and it's pretty important you should see them as closely related and completely interchangeable with each other. This table shows the really common conversions which you should know straight off without having to work them out:

Fraction	Decimal	Percentage
$\frac{1}{2}$	0.5	50%
$\frac{1}{4}$	0.25	25%
$\frac{3}{4}$	0.75	75%
$\frac{1}{3}$	0.333333...	$33\frac{1}{3}\%$
$\frac{2}{3}$	0.666666...	$66\frac{2}{3}\%$
$\frac{1}{10}$	0.1	10%
$\frac{2}{10}$	0.2	20%
$\frac{1}{5}$	0.2	20%
$\frac{2}{5}$	0.4	40%

The more of those conversions you learn, the better — but for those that you don't know, you must also learn how to convert between the three types. These are the methods:



Converting decimals to fractions is awkward, because it's different for different types of decimal. There are two different methods you need to learn:

1) Terminating decimals to fractions — this is fairly easy. The digits after the decimal point go on the top, and a power of 10 on the bottom — with the same number of zeros as there were decimal places.

$0.6 = \frac{6}{10}$ $0.3 = \frac{3}{10}$ $0.7 = \frac{7}{10}$ etc.

$0.12 = \frac{12}{100}$ $0.78 = \frac{78}{100}$ $0.05 = \frac{5}{100}$ etc.

$0.345 = \frac{345}{1000}$ $0.908 = \frac{908}{1000}$ $0.024 = \frac{24}{1000}$ etc.

These can often be cancelled down — see p7.

2) Recurring decimals to fractions — this is trickier. See next page...

Eight out of ten cats prefer the perfume Eighty Purr Scent...

Learn the whole of the top table and the 4 conversion processes. Then it's time to break into a mild sweat...

Q1 Turn the following decimals into fractions and reduce them to their simplest form.
a) 0.4 b) 0.02 c) 0.77 d) 0.555 e) 5.6 [5 marks]

Q2 Which is greater: a) 57% or $\frac{5}{9}$, b) 0.2 or $\frac{6}{25}$, c) $\frac{7}{8}$ or 90%? [3 marks]