ESTIMATION AND APPROXIMATION

The most common units for length are millimetre (mm), centimetre (cm), metre (m) and kilometre (km). We use the lower units (e.g. mm and cm) for short lengths and the higher units (m and km) for longer distances.

The common units of mass are the gram (g), kilogram (kg) and tonne (t). The common units of capacity are the millilitre (ml), centilitre (cl) and litre (l).

Note: A unit expresses the size and kind of quantity you measure. For example, 3 loaves of bread, 'loaves' is a unit for measuring bread. So too we can say, we moved 3 km of distance. This implies or describes the length or distance we've moved. 'Km' is thus a unit of length or distance, however it is different from 'm' even though they both measure the same kind of quantity, their difference is in the size of the quantity they measure.

In estimation we are given an exemplary statement and then we use it to find an unknown quantity. Mathematically, we are given a fraction to find its equivalent.

For example, if 10cm makes 0.1m, then how many centimetres make 0.5 metres? To solve we convert the first clause to mathematical equations.

$$10cm = 0.1m - - - i$$

Then we convert the second clause to mathematical equation using a letter in place of the unknown number.

$$xcm = 0.5m - - - ii$$

The first and second equations are made into fractions and then linked with the equals sign (=). Thereafter, we simplify:

$$\frac{10cm}{0.1cm} = \frac{x}{0.5m}$$

$$10 \times 0.5 = 0.1x$$

$$0.1x = 5$$

$$x = \frac{5}{0.1} = \mathbf{50cm}$$