

## STANDARD UNITS

Good Science depends upon the ability to make accurate measurements. It also depends on one's ability to do calculations. These concerns are the focus of this unit.

In Chemistry 11 we will be using S.I. Units for most of our measurements. You need to know the following S.I. Units:

Length = Metre (m) - note that the standard abbreviation is a lower case (small) 'm'.

Mass = Kilogram (kg) - Mass is the measure of the amount of matter in an object. When we weigh something we are actually measuring its mass.

Time = Second (s)

Temperature = Kelvin (K) - Zero Kelvins is absolute zero, as cold as you can possibly get. How to convert to Kelvins:  
Temperature in Kelvins = °C + 273.

Therefore, 0°C = 273 K

Number of Particles = Mole (mol) - You will learn about the mole in Unit #5.

## STANDARD PREFIXES

S.I. Units are not always convenient to use. Circumstances might require units that are a lot bigger or smaller. One can adjust the units by adding prefixes to them. Prefixes can be used on ANY standard unit.

### THESE ARE THE PREFIXES THAT YOU MUST KNOW:

Giga (G) = 1,000,000,000  
e.g. 1 Gigametre (Gm) = 1,000,000,000 Metres

Mega (M) = 1,000,000  
e.g. 1 Megagram (Mg) = 1,000,000 Grams

Kilo (K) = 1,000

e.g. 1 Kilometre (km) = 1,000 Metres

Deci (d) =  $1/10 = 0.1$

e.g. 1 Decisecond (ds) = 0.1 Second

Centi (c) =  $1/100 = 0.01$

e.g. 1 Centimetre (cm) = 0.01 Metre

Milli (m) =  $1/1,000 = 0.001$

e.g. 1 Milligram (mg) = 0.001 Gram

Micro (u) =  $1/1,000,000 = 0.000\ 001$

e.g. 1 Micrometre (um) = 0.000 001 Metre

Nano (n) =  $1/1,000,000,000 = 0.000\ 000\ 001$

e.g. 1 Nanosecond (ns) = 0.000 000 001 Second

#### SOME OTHER IMPORTANT UNITS

The following are **not** S.I. Units, but they are commonly used in Science –

1) Litre (L)             $1\ \text{L} = 1,000\ \text{cm}^3$             ( $\text{cm}^3 = \text{cubic centimetre}$ )  
                              $1,000\ \text{L} = 1\ \text{m}^3$             ( $\text{m}^3 = \text{cubic metre}$ )

2) Millilitre (mL)     $1,000\ \text{mL} = 1\ \text{L}$   
                              $1\ \text{mL} = 1\ \text{cm}^3 = 1\ \text{cc}$  (cc means cubic centimetre)