SI Units

SI Units are the international system of units of measure that are used by scientists, engineers and others throughout most of the world.

The system is made up of base units and derived units and the formulae that you are given in your Science lessons, particularly Physics, will often only work if the figures you put into them are in SI Units.

These are the SI Units that you will need for the Physics GCSE course:

Base Units:

Quantity	Unit name	Symbol	Note
Length	metre	m	
Mass	kilogram	kg	
Time	second	s	
Electric current	ampere (amp)	A	
Temperature	kelvin	K	0°C = 273.15K
Temperature	degree Celsius	°C	sometimes known as centigrade. Strictly this is a derived unit.
Amount of substance	mole	mol	

Derived Units:

Quantity	Unit name	Symbol	Note
Frequency	hertz	Hz	
Force	newton	N	
Weight	newton	N	
Pressure	pascal	Pa	Also N/m^2
Energy and work	joule	J	
Power	watt	W	
Electric charge	coulomb	C	Note – not same as degree Celsius.
Voltage, potential difference	volt	V	
Electrical resistance	ohm	Ω	
Volume	metre cubed	m^3	also cm^3, litre (l) and ml

Prefixes:

There are standard prefixes that go in front of the symbol for a unit. An example of this would be the kJ, the kilojoule, where 1kJ = 1000J. An exception is the kg, whilst it does equal 1000g, the SI Unit is the kilogram not the gram.

Relevant prefixes at GCSE are:

Prefix	**Quantity**	**Symbol**	**Note**
mega	10^6	M	
kilo	10^3	k	
centi	10^{-2}	c	cm is an SI Unit but its use is not general in Science and Engineering, 1cm being written as 10mm or 0.01m instead.
milli	10^{-3}	m	
micro	10^{-6}	µ	

Writing conventions:

- SI Units are not generally used with capitals when writing their names rather than their symbols.
- SI Units named after people generally have symbols starting with a capital whereas those not named after people do not.
- When writing number with lots of figures a comma should not be used between them, a space is used instead:
    - eg: 1,000,000 is incorrect; it should be written 1 000 000 using a space instead of a comma.
- Unit symbols never have plurals – 100kgs is not correct, it is 100kg.
- When writing metres per second it should be written m/s or ms^{-1} but never mps.